Joseph B Lambert

Illinois Institute of Technology N-M-R Newsletter

No. 110
NOVEMBER, 1967

OVER

Deadline Dates: No. 111: 6 December 1967
No. 112: 6 January 1968

Reminder: For the period August 10, 1967 to August 15, 1968 inclusive, all Newsletter contributions, enquiries, etc., should be addressed as follows:

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

-continued on the outside back cover

THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF LIBERAL ARTS
DEPARTMENT OF CHEMISTRY

October 9, 1967

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Subject: Calculations of Long Range H-H Coupling Constants by a VB Method Which Uses a Sum Over Triplet-States.

Dear Barry:

A large number of H-H coupling constants have been calculated by means of a new valence-bond formalism (1) which does not make the approximation of a "mean excitation energy" in the second order perturbation sum. Results for eight electron fragments of the butadiene and allene molecules are representative and are entered in Tables I and II. The ground to triplet-state energy separations are given in the second column, and the contribution of each triplet, K, to the coupling constant is given in the last column.

Although 28 triplets occur in this formalism, convergence appears to be achieved by $K = 15$. The calculated results are in reasonably good agreement with the experimental values.

The three triplet-states which would occur for the π-electron system, alone, are identified in the tables by the symmetry species for the applicable point groups. Note that the two molecules have remarkably different contributions from the lowest triplets.

The triplet-state energy data is also of interest as the calculated value for the lowest triplet-state of butadiene is in good agreement with the experimental value of 3.2eV (2). Unfortunately, there is no experimental data for the higher triplets.

---

1. M. Barfield, J. Chem. Phys., 46, 811 (1967).
2 D. F. Evans, J. Chem. Soc. (London) 1960. 1735.

Sincerely yours,

Mike

Michael Barfield

MB/rlw

TABLE I.

Calculated VB ground to triplet-state energies $^3E_\kappa - {}^1E_o$ and the contribution, $^5J_{HH'}(\kappa)$, of each triplet κ, to the long-range proton spin coupling in trans-butadiene.

κ	$^3E_\kappa - {}^1E_o$ eV	$^5J^\pi_{HH'}(\kappa)$ Hz
1	$3.54(^3B_u)$	2.62
2	$5.45(^3A_g)$	-2.85
3	7.47	263.20
4	7.48	-262.17
5	$8.92(^3B_u)$	0.14
6	11.95	-3.43
7	11.95	3.43
8	13.94	5.13
9	13.94	-5.13
10	14.87	0.01
11	15.25	-0.02
12	15.25	0.02
13	17.74	0.04
14	17.76	-0.04
15-28	18.80-29.06	0.00
	$\sum_\kappa {}^5J^\pi_{HH'}(\kappa)$ =	0.95 *

* Experimental values of $^5J_{HH'}$ for butadiene are in the range 0.60 to 1.30 Hz according to R. T. Hobmood and J. H. Goldstein, J. Mol. Spectry., 12, 76 (1964).

TABLE II.

Calculated VB ground to triplet-state energies, $^3E_K - {}^1E_o$, and the contribution, $^4J_{HH'}(K)$, of each triplet, K, to the long-range proton spin coupling in allene.

K	$^3E_K - {}^1E_o$ eV	$^4J^{\pi}_{HH'}(K)$ Hz
1	4.36($^3A_1$)	-16.95
2	5.18($^3B_2$)	0.74
3	7.46	263.30
4	7.52	-255.26
5	10.29($^3B_2$)	0.86
6	12.00	1.56
7	12.00	-1.38
8	13.95	5.89
9	13.97	-6.28
10	15.18	0.14
11	16.99	-0.04
12	17.01	0.05
13-28	18.52-30.10	0.00
	$\sum {}^4J^{\pi}_{HH'}(K)$ =	-7.37 *

* A value of -6.7 Hz was calculated by M. Karplus, J. Chem. Phys., 33, 1842 (1960). Experimental values are in the range $|^4J_{HH'}|$ = 6.1 to 7.0 Hz according to N. Muller and D. E. Pritchard, J. Chem. Phys., 31, 768 (1959).

Carnegie-Mellon University

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October 12, 1967

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

FINITE PERTURBATION THEORY FOR NUCLEAR SPIN COUPLING CONSTANTS

We are developing a new theoretical method for studying spin coupling constants of large molecules. Basically, the technique is to calculate a molecular orbital wave function for a molecule in the presence of one finite nuclear spin and then examine the electron spin density at other nuclear positions. This gives values for all spin couplings to that particular nucleus. Preliminary results using simplified molecular orbital wavefunctions for all valence electrons (self-consistent methods with neglect of differential overlap) are given in the table.

These results are promising as they show many well established experimental trends. We hope to apply this method extensively to systematic calculations of spin coupling constants in larger molecules.

TABLE I. CALCULATED AND EXPERIMENTAL VALUES

OF COUPLING CONSTANTS J (IN CYCLES/SEC)

	Calculated	Experimental
Hydrogen H-H	408.65	280
Methane H-H	-6.13	-12.4
Ethane Geminal H-H	-5.22	
Methyl Fluoride H-H	-1.86	-9.6
Ethylene Geminal H-H	3.24	2.5
Formaldehyde H-H	31.86	40.2
Water H-H	-8.07	-7.2
Ethane Gauche Vicinal H-H	3.25	
Ethane Trans Vicinal H-H	18.63	
Ethane Vicinal H-H (Average)	8.37	8
Ethylene Cis Vicinal H-H	9.31	11.7
Ethylene Trans Vicinal H-H	25.15	19.1
Acetylene H-H	10.99	9.5
Benzene Ortho H-H	8.15	7.54
Benzene Meta H-H	2.13	1.37
Benzene Para H-H	1.15	.69

continued--

TABLE I (CONTINUED)

	Calculated	Experimental
Methane C-H	122.92	125
Ethane Bonded C-H	122.12	124.9
Ethylene Bonded C-H	156.71	156.4
Acetylene Bonded C-H	232.66	248.7
Benzene Bonded C-H	140.29	157.5
Ethane Long Range C-H	-7.20	-4.5
Ethylene Long Range C-H	-11.57	-2.4
Acetylene Long Range C-H	2.52	49.3
Benzene Ortho C-H	-4.94	1.0
Benzene Meta C-H	9.40	7.4
Benzene Para C-H	-2.27	-1.1
Ethane C-C	41.45	34.6
Ethylene C-C	82.14	67.6
Acetylene C-C	163.74	171.5

With best wishes,

Yours,

John

John A. Pople

James W. McIver, Jr.

Neil S. Ostlund

PROFESSOR OF ORGANIC CHEMISTRY
W. D. OLLIS

TELEPHONE NO. 78555 EXT. 315

DEPARTMENT OF CHEMISTRY
THE UNIVERSITY
SHEFFIELD 10

10th October, 1967

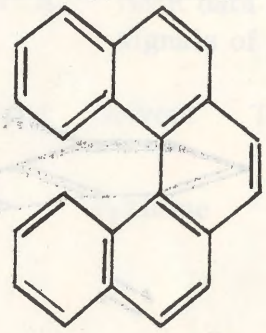
Professor B.L. Shapiro,
Department of Chemistry,
Stanford University,
Stanford, California 94305

Dear Barry,

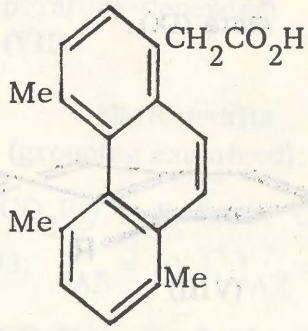
The examination of conformational changes in non-planar aromatic systems by NMR spectroscopy

The non-planarity, and resulting chirality, of certain aromatic compounds such as 3, 4, 5, 6-dibenzophenanthrene is well known,[1] and has been demonstrated both by crystallographic examination[2] of the solid phase conformation and by the preparation of suitably substituted systems in optically active form.[3] The minimum non-bonded interactions that could permit the resolution of a compound with a polycyclic benzenoid system would appear to be the interactions between the 4- and 5-methyl substituents in a 4, 5-dimethylphenanthrene derivative, and the successful resolution of 4, 5, 8-trimethylphenanthrene-1-acetic acid (II) was achieved by Newman and Hussey in 1947.[4] Resolution is, however, experimentally laborious and is possible only in those cases where the energy barrier to racemisation is sufficiently high.

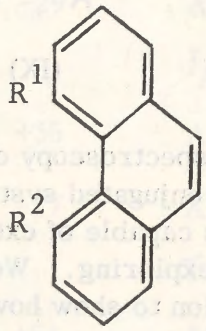
We have now shown that NMR spectroscopy provides a convenient method for the examination of the non-planarity of such compounds, in cases where appropriately placed substituents include diastereotopic[5] protons or groups of protons. Thus, the low temperature NMR spectra of the compounds (III) to (VII) show geminal non-equivalence of either methylene or isopropyl-methyl protons (see Table 1). At higher temperatures interconversion of the enantiomeric non-planar conformations (VIII) ⇌ (X) is rapid on the NMR time scale and signal averaging results. The details of the spectral changes and the derived activation parameters are given in Table 2; the exchange rates were obtained from line shape analysis of the signals associated with



(I)



(II)



(III; $R^1 = CO_2Et$, $R^2 = CO_2H$)

(IV; $R^1 = CO_2CH_2Ph$, $R^2 = CO_2H$)

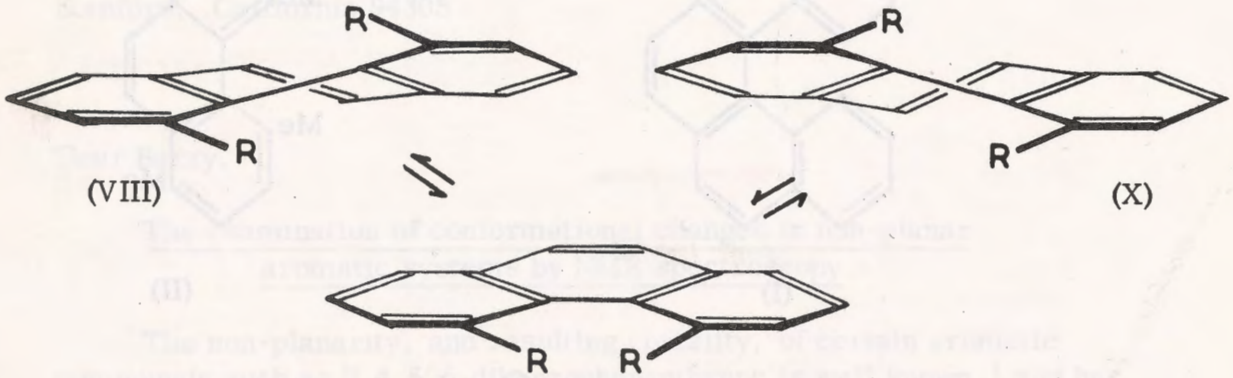
(V; $R^1 = CO_2CHMe_2$, $R^2 = CO_2H$)

(VI; $R^1 = CO_2CHMe_2$, $R^2 = CO_2Me$)

(VII; $R^1 = R^2 = CH_2OAc$)

the exchanging systems. The activation energy for the interconversion of the enantiomeric conformations (VIII) and (X) is associated with the difference in energy between the distorted, and therefore strained,[2,6]

ground state conformation and the more strained near-planar transition state (IX).



(VIII) (X)

(IX)

This study by NMR spectroscopy of the conformational changes in polycyclic aromatic or conjugated systems which result in non-planar chiral conformations, is capable of extension in a number of directions which we are currently exploring. We decided to submit this note as our obligatory contribution to show how this approach is complementary to earlier methods used for the study of this phenomonon which involve resolution and the determination of the rates of racemisation.

One of us hopes that your stay in Stanford with its association with Carl Djerassi will not result in the addition of a requirement that contributions should now be submitted at fortnightly intervals.

Yours sincerely,

R. Munday W. D. Ollis I. O. Sutherland

TABLE 1. NMR data (60 Mc/s) for the temperature-dependent signals of the compounds (III) - (VII)

Compound	Solvent	Temperature °C	NMR details System (grouping examined); τ values; J(c/s)
III	Pyridine	-27	ABX_3 ($CO_2\underline{Et}$); τ_A 5.32, τ_B 5.52, τ_X 8.93; J_{AB} = 10.4, $J_{AX} = J_{BX}$ = 7.0
		+36	A_2X_3 ($CO_2\underline{Et}$); τ_A 5.53, τ_X 8.93; J_{AX} = 7.0
IV	Pyridine	-29	AB ($C\underline{H}_2Ph$); τ_A 4.17, τ_B 4.38; J_{AB} = 12.1
		+55	A_2 ($C\underline{H}_2Ph$); τ_A 4.41
V	Pyridine	-17	AX_3Y_3 ($\underline{CHMe}_2$); τ_A 4.41, τ_X 8.73, τ_Y 8.79; $J_{AX} = J_{AY}$ = 6.0
		+54	AX_6 ($\underline{CHMe}_2$); τ_A 4.53, τ_X 8.80, J_{AX} = 6.0
VI	$CDCl_3$	-43	AX_3Y_3 ($\underline{CHMe}_2$); τ_A 4.78, τ_X 8.71, τ_Y 8.85; $J_{AX} = J_{AY}$ = 6.0
		+20	AX_6 ($\underline{CHMe}_2$); τ_A 4.85, τ_X 8.81; J_{AX} = 6.0
VII	$C_6D_5NO_2$	+35	AB ($C\underline{H}_2OAc$); τ_A 4.36, τ_B 4.69; J_{AB} = 12.4
		+120	A_2 ($C\underline{H}_2OAc$); τ_A 4.52

TABLE 2. NMR (60 Mc/s), coalescence and activation parameters for conformation changes in 4, 5-disubstituted-phenanthrenes

Compound	Solvent	Spectral change studied[a]	$(\nu_A - \nu_B)$ or $(\nu_X - \nu_Y)$[b] c/s	J_{AB} c/s	T_c °C	$\Delta G^{\ddagger}$[c] kcal/mole	E_a kcal/mole	$Log_{10}A$[d]
III	Pyridine	ABX_3 to A_2X_3	12.1	10.4	17±2	15.2±0.2		
IV	Pyridine	AB to A_2	9.4	12.1	16±2	14.9	16.5±1.1	13.9±0.9
V	Pyridine	AX_3Y_3 to AX_6	3.6		-4±2	14.9±0.2		
VI	$CDCl_3$	AX_3Y_3 to AX_6	6.0		2±3	14.5	17.3±1.5	14.9±1.2
VII	$C_6D_5NO_2$	AB to A_2	17.3	10.1	79±2	18.1	18.5±1.5	13.1±1.1

a System observed at low temperature is given first.

b This is generally temperature-dependent and it has therefore been extrapolated to T_c.

c Calculated at T_c for (III) and (V); estimated from Arrhenius parameters at O°C for (IV), (VI), and (VII).

d Rate constants, and therefore A, in sec^{-1}. units

References

1 G. Ferguson and J. M. Robertson, Adv.Phys.Org.Chem., 1963, 1, 203.

2 A. O. McIntosh, J. M. Robertson, and V. Vand, J.Chem.Soc., 1954, 1661.

3 M. S. Newman and D. J. Lednicer, J.Amer.Chem.Soc., 1956, 78, 4765; F. Bell and D. H. Waring, J.Chem.Soc., 1949, 2689; M. Crawford, R. A. M. Mackinnon and V. R. Supanekar, J.Chem.Soc., 1959, 2807.

4 M. S. Newman and A. S. Hussey, J.Amer.Chem.Soc., 1947, 69, 3023.

5 K. Kondo and K. Mislow, Tetrahedron Letters, 1967, 1325; M. Raban and K. Mislow, ibid., 1965, 4249; 1966, 3961; K. Mislow, "Introduction to Stereochemistry", W.A. Benjamin, New York, 1965, p. 72 ff.

6 C. A. Coulson and S. Senent, J.Chem.Soc., 1955, 1819; M. A. Frisch, C. Barber, J. L. Margrave, and M. S. Newman, J.Amer.Chem.Soc., 1963, 85, 2356.

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October 13, 1967

AREA CODE 812
TEL. NO.

Professor Bernard L. Shapiro
Department of Chemistry
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Dear Barry:

Thank you for the reprint request. [JCP 45, 902 (1966)]. Unfortunately I do not have any of these left.

I am no longer at Johns Hopkins. I hope I can still receive the I.I.T.N.N. here at Indiana. I realize that I am far behind in my contribution and that my name is now probably off the mailing list:

Origin of Instabilities in Carr Purcell Spin-Echo Experiments with Large Pulse Spacings.

I have been using an NMR Specialties PS-60B Pulsed NMR Spectrometer operating at 60 MH_z for proton Spin-Echo work. My magnet is a version of Varian's V-3603 twelve inch Electromagnet with a VFR-2503 Power Supply.

When the spacing between 180° pulses (t_{cp}) is larger than about 30 msec, the echo decay in a liquid sample (with T_2 = 1 sec or more) shows horrible random modulations and even phase inversions (even though I use the Meiboom-Gill modification). I have thought of several possible explanations:

1. Instabilities in the Spin-Echo system.
2. Magnet and magnet power supply trouble.
3. Sample vibrations leading to convection in the liquid
4. Other causes

A search for troubles (1) and (2) was negative as far as I could tell. However, my PS-60B Pulsed NMR Spectrometer yielded beautiful Carr-Purcell sequences when operated with a Varian V-4012A magnet with V-2100B Power Supply and a Flux Stabilizer. The latter magnet system was located two rooms away from the V-3603 and probably had a similar vibration level.

Mr. Arthur Clouse, who is in charge of our High Resolution equipment, suggested that we try to produce the Carr-Purcell instabilities on the V-4012A by introducing field fluctuations. We did this with a Hewlett-Packard 200 AB audio oscillator and a crude coil next to the probe. We introduced a 6KH_z signal which we varied manually by 10% or more, in a more or less random fashion, during the Carr-Purcell train on a water sample. We were able to produce the same type of instabilities observed on the other magnet. A more systematic study of this effect would be useful.

Sincerely yours,

Adam

Adam Allerhand
Assistant Professor

AA:pp

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October 17, 1967

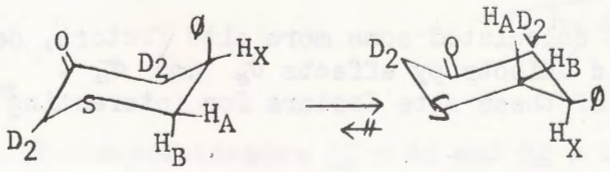
Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

Sorry that my contribution is late; there was some confusion here as to whether I or a departmental colleague would be sending one in this time.

Title: Unusual Chemical Shifts in a Thianone

We have prepared 5-phenyl-3-thianone in connection with a synthetic problem and looked at the 2,2,6,6-d_4 species, with an eye toward deducing the conformation of the C_5-phenyl group. Although an axial conformation would be free of the usual 1,3-diaxial interactions, it appears that the equatorial conformer is the major one, based on coupling constants in the ABX system.



δ_A = 2.93 ppm

δ_B = 2.65 ppm

$J_{AX} \simeq 11$ Hz

$J_{BX} \simeq 3$ Hz

$J_{AB} \simeq 13$ Hz

The unusual result, as far as we are aware, is that H_B, the equatorial proton, resonates at higher field than H_A.

Although the phenyl group certainly influences the chemical shifts of H_A and H_B, it may be that sulfur is largely responsible for the effect, similar to the effect of a carbonyl group on the chemical shift of diastereomeric adjacent protons. We hope to have more evidence on these points soon.

With best regards,

P. T. Lansbury

P.T. Lansbury
Professor of Chemistry

UNIVERSITY OF SASKATCHEWAN REGINA CAMPUS

DIVISION OF NATURAL SCIENCES REGINA, SASKATCHEWAN

October 19, 1967

Dr. B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Site factors in NMR solvent effects.

Dear Dr. Shapiro:

In the past couple of years Dr. H. J. Bernstein and I have been working on improved models for the Van der Waals term σ_W in the medium shifts of gases and liquids.[1] A new paper dealing with the medium shifts of liquids, consisting of non polar, magnetically isotropic molecules is about to be committed to the presses.[2] It has turned out that the site factor, which corrects for the peripheral location of the measured nucleus (^1H or ^{19}F) in the solute molecule, plays a decisive role in the quantitative understanding of these σ_W shifts.

Encouraged by this I have calculated some more site factors, dealing with electric and magnetic anisotropy effects σ_E and σ_a. Following below are some of these site factors for interacting pairs of molecules.

A. non polar solute
non polar isotropic solvent } $S_W = (1 + q^2) / (1 - q^2)^4$

(q = d/r, where d is distance from measured nucleus to the center of the solute molecule, and r is the distance between the centers of the solute-solvent pair.

B. non polar solute
polar solute } $S = (1 + q^2) / (1 - q^2)^4$

This is the BE^2 term in the usual nomenclature[3] so it is rather logical to find a site factor identical to that of the Van der Waals ($B\hat{F}^2$) term. The components, however, behave differently:

Dr. Shapiro, October 19, 1967, Page 2

$$S_{E^2}\ (\mu_2 /\!/ r_{12}) = \frac{1 + \frac{1}{2} q^2}{(1 - q^2)^4}, \qquad S_{E^2}\ (\mu_2 \perp r_{12}) = \frac{1 + 2q^2}{(1 - q^2)^4}$$

These expressions may be useful when dealing with polar solvents with non-random orientations.

C. polar solute
non polar solvent } $S_{E_z} = 1$!!!

So there is no site correction to the reaction field term. However, this result was derived for ideal depoles located at the center of gravity and the measured nucleus <u>on</u> the depole (+z) axis. For preferred orientations it was found that:

$$S_{E_z /\!/} = 1 / (1 \mp q)^3 \qquad S_{E_z \perp} = (1 - 2q^2) / (1 + q^2)^{5/2}$$

for μ_1 parallel to r_{12} and pointing towards (-) or away (+) from the perturbing solvent molecule, and μ_1 perpendicular to r_{12} respectively.

D. Neighbour anisotropy (non polar, but magnetically anisotropic solvent)

$$S_{a /\!/} = S_{a \perp} = S = 1$$

(where $/\!/$ and $\perp$ relates to the orientation of H_o relative to r_{12})
Very surprising perhaps, but no site factor for neighbour anisotropy, even under conditions of non-random solvent orientation.

As you may imagine, my next efforts in this field will be dealing with cases C and D.

Sincerely yours,

F. H. A. Rummens
Assoc. Prof. of Chemistry

FR:bm

1) IIT NMR newsletters <u>82</u> p 14 and <u>92</u> p 10
F. H. A. Rummens, H. J. Bernstein J. Chem. Phys. <u>43</u> (1965) 2971

2) F. H. A. Rummens, W. T. Raynes, H. J. Bernstein; Medium Effects in NMR V. Liquids consisting of non polar, magnetically isotropic molecules in press.

3) W. T. Raynes, A. D. Buckingham, H. J. Bernstein J. Chem. Phys. <u>36</u> (1962) 3481

FACULTEIT DER WISKUNDE EN NATUURWETENSCHAPPEN

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Professor Dr.B.L.Shapiro.,
Department of Chemistry,
Stanford University,
STANFORD, California 94305.

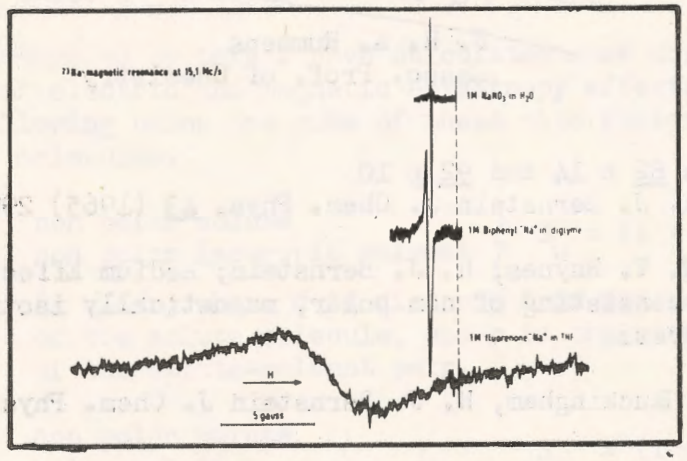
Uw kenmerk Uw brief van Ons kenmerk

Datum 18-10-1967.

Onderwerp Alkali NMR on radical ion pairs in solution.

Dear professor Shapiro,

In a former letter[1] we wrote about our investigation of the ^{7}Li chemical exchange reaction in a solution of 1M LiBr and 10^{-2} - 10^{-3}M Li^+-fluorenone$^-$ in tetrahydrofuran (THF). The measurements have been extended to solutions in which only the aromatic salt is present. In the figure some results are given of our measurements at room temperature of the Na^+-fluorenone$^-$ and the Na^+-biphenyl$^-$ ion pairs dissolved in THF and diglyme $[CH_3(OCH_2CH_2)_2OCH_3]$, respectively.



The following conclusions can be drawn from the spectra:

1. The sodium resonance line of the Na^+-fluorenone$^-$ system is very broad and shifted considerably to low field compared with the sodium resonance line in an aqueous solution of $NaNO_3$. Therefore the sodium nucleus must

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Geadresseerde Prof. Shapiro Ons kenmerk Datum 18-10-1967 Blad No 2

be subject to a large contact interaction. The downfield shift implies that the spin density at the Na nucleus is positive, which sheds some light on the spin propagation mechanism from the aromatic anion to the alkali metal nucleus.[2]

2. The sodium resonance line in the Na^+-biphenyl$^-$ system is relatively sharp and only a minor shift to low field occors compared with the sodium resonance line in an aqueous solution of $NaNO_3$. Here we are probably dealing with "solvent shared ion pairs", whereas in the former case we have "contact ion pairs". This is in accordance with the large difference in solvating power of the two solvents.

3. The sodium h.f.s.c. calculated from the sodium contact shift in the Na^+-fluorenone$^-$ system (≈1,5 gauss) is much greater than the sodium h.f.s.c. measured with E.S.R. in dilute solutions. This can be attributed to the formation of ion quadruplets at high concentrations: $(M^- Me^+)_2$ [3].

At the moment we are continuing our measurements by investigating the temperature behaviour of the alkali NMR spectra.

1) G.W.Canters, H.van Willigen, E.de Boer Mellon Letters 103,23
" " " Chem. Commun. 1967,566
2) E.de Boer, Receuil des Trav. Chim. 84, 609, 1964
3) N.Hirota, J. Am. Chem. Soc. 89, 32, 1967

G.W. Canters H.v. Willigen E. de Boer

Gee W.Canters H.van Willigen E.deBoer

SOCIETÀ EDISON
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BOLLATE, October 19, 1967
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Nella risposta citare il N° 4770/Cav/bp

Prof. B.L. Shapiro
Department of Chemistry
Stanford University
Stanford - California 94305
U.S.A.

Subject: Poly(-vinyl chloride-)$\beta,\beta d_2$

Dear Professor Shapiro,

we would like to give a preliminary account of an N.M.R. study on poly(-vinyl chloride-)$\beta,\beta d_2$. The monomer CD_2=CHCl has been synthetised following the scheme:

$$CD_3COOD \longrightarrow CD_3CH_2OH$$

$$CD_3CH_2OH \longrightarrow CD_3CH_2Cl \longrightarrow CD_3CHCl_2$$

$$CD_3CHCl_2 \longrightarrow CD_2{=}CHCl$$

Samples of the polymer have been then prepared at different temperatures with low molecular weight ($M_W \simeq 2{,}500$), with the purpose of using different solvents and concentrated solutions. NMR spectra, better resolved than those of Enemoto [1] and Satoh, could in this way be obtained.

In the Figure it is reported the NMR spectrum of PVC-β,β-d_2 run in C_2HCl_5 at 60 and 100 Mc/s. The good resolution of the 100 Mc/s spectrum has been obtained using deuterium heterodecoupling $\{D\}$.

Instead of three signals, as expected by conventional triad configuration interpretation, a complex set of signals are displayed. The main feature of the spectrum is the splitting, both at 60 and 100 Mc/s, of the heterotactic triads into two signals B_1 and B_2.

The isotactic triad configurations, on the other hand, are resolved into three signals C_1, C_2 and C_3, only at 100 Mc/s, whereas the absorption of the syndiotactic triads remains in any case unchanged. Spectra of higher molecular weight samples rule out terminal-group effects on the observed pattern.

Pentad configurations of monomer units, originally invoked by Schneider and co-workers [2], may well account for the CH-δ pattern observed. Ten signals are expected for PVC-β,β-d_2, if we consider the ten possible pentads of monomer units (sss, ssh, hsh; shh, shi, hhh, hhi; hih, hii, iii) [3].

Assignments of the six experimental peaks were also tentatively done mainly on the basis of signal intensities observed in samples polymerized at different temperatures.

The relative area of signals A, B and C were calculated for samples polymerized at three different temperatures: + 40°, 0° and - 40°C. The results are tabulated in Table II.

TABLE II

Polymerization Temp. °C	Isotactic %	Heterotactic %	Syndiotactic %	σ
+ 40	19.1	48.7	32.2	0.434
0	16.4	47.0	36.6	0.399
- 40	12.0	46.3	41.7	0.351

where σ is the probability of isotactic placement.

A detailed discussion of the results on this polymer will shortly be published.

The kind help of Dr. A. Segre (Istituto Chimica Industriale - Politecnico di Milano), in obtaining the 100 Mc/s heterodecoupling {D} spectra is acknowledged.

Yours sincerely,

Luciano Cavalli

L. Cavalli

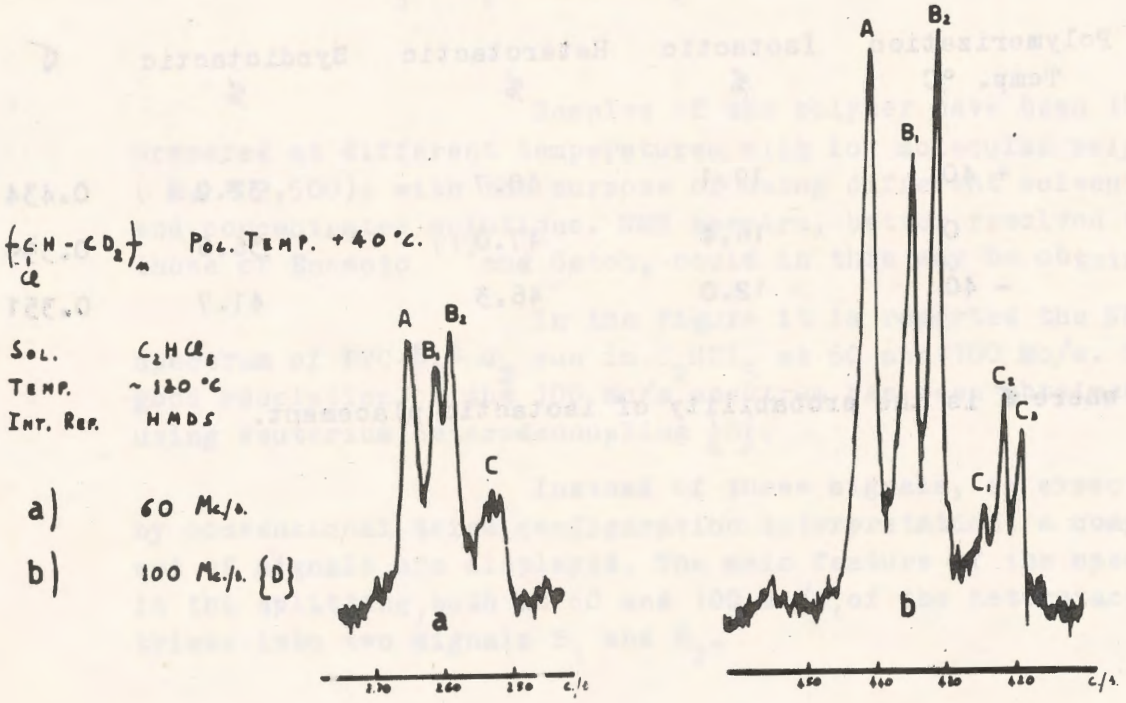
Giorgio Carraro

G. Carraro

1) S. Enemoto, M. Asahina, S. Satoh, J. Pol. Sci. A-1, 4, 1373, 1966

2) B. Schneider, J. Štokr, D. Doskočilová, M. Kolínský, S. Sýkora, D. Lím, Preprint: P 599, Prague, 1965

3) K.C. Ramey, J. Phys. Chem. 70, 2525, 1966



Universidad de Buenos Aires
Facultad de Ciencias Exactas
y Naturales

Buenos Aires, October 20th, 1967.-

Dr.Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305
U.S.A.

Short Title: Lock and Homogeneity Monitor

Dear Dr. Shapiro:

For brevity's sake: thanks for the remainder!
We have in use here a lock and homogeneity monitor which I think may be of interest to some readers of the IITNMR Newsletter. We use an internal lock, frequency swept device for our DP-60 instrument, similar in principle to the Varian HA or the one described by J.H.Noggle (R.S.I. 35; 1166, (1964)), but with some improvements. Among others our lock and homogeneity monitor instead of being a simple crystal detector instrument, is a one tube phase sensitive detector. The advantages of using a phase sensitive detector are particularly noteworthy when doing double resonane experiments of any kind: the locking signal is detected independently of the (usually) strong decoupling signal and the homogemeity is monitored all the time.

The circuit, shown in the accompaning figure, makes use of a 7360 tube, as described by B.V.Rollin (J.S.I. 41, 239 (1964)).

Universidad de Buenos Aires

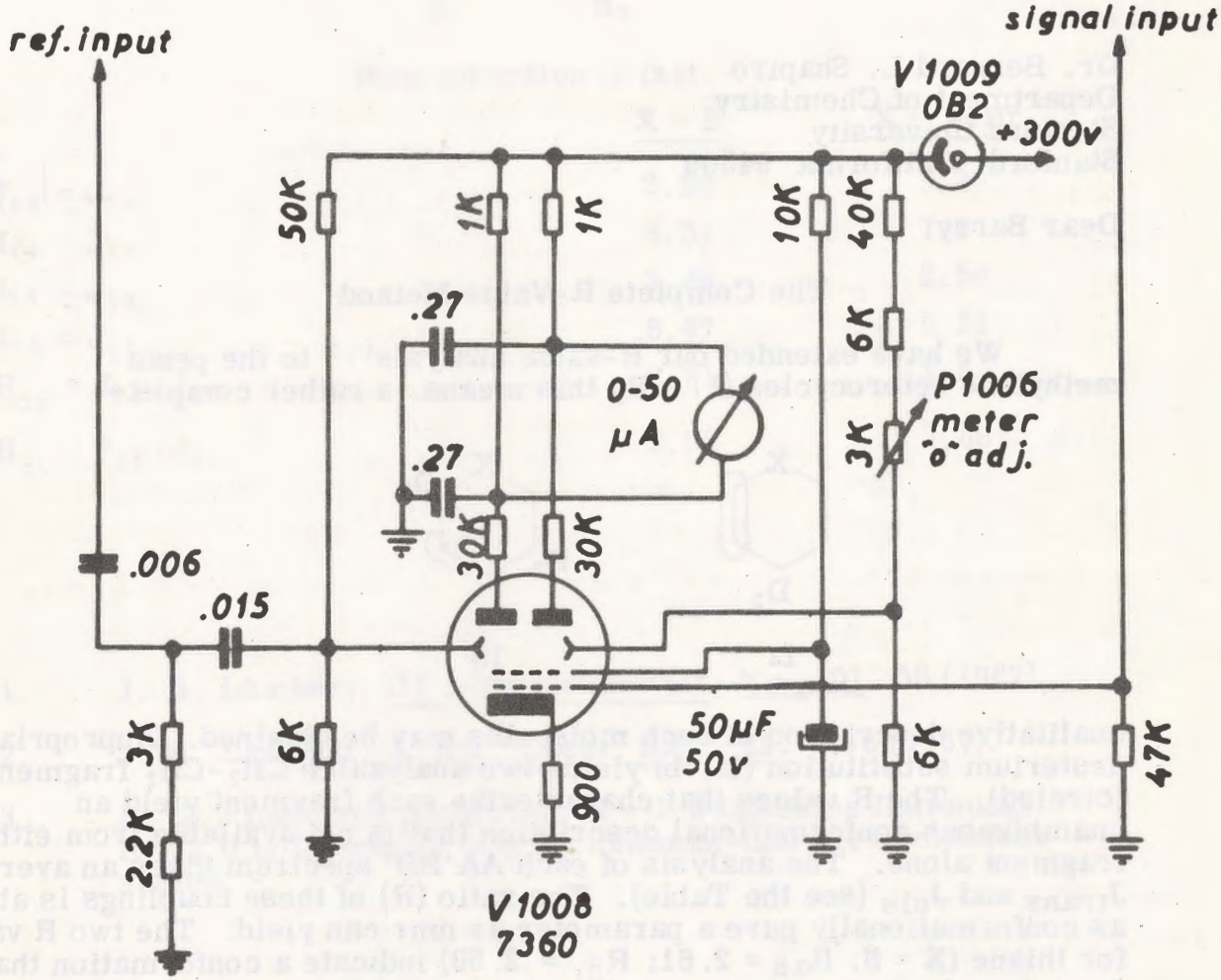
Facultad de Ciencias Exactas y Naturales

The reference signal passes through an RC network which, besides attenuating it to the proper level introduces the necessary 90° phase shift to give the v mode response, instead of the u mode used in the locking channel. A taut ribbon suspension (no friction), 50 μA instrument is used and the system is so adjusted that a deflection of 40 μA means that the locking signal is of the correct amplitude. Homogeneity controls are adjusted, as usual, maximizing this signal.

One small drawback: the zero control should be at hand since, in spite of the author's claims, zero drift is appreciable and needs to be adjusted sometimes (usually between samples). Nevertheless we found it very convenient to use.

Yours sincerely,

V.J.Kowalewski.


ref. input
signal input
V 1009
OB2
+300v
50K
1K
1K
10K
40K
6K
.27
0-50
μA
P1006
meter
"o" adj.
3K
.27
30K
30K
.006
.015
3K
6K
50μF
50v
6K
47K
900
2.2K
V1008
7360

NORTHWESTERN UNIVERSITY
EVANSTON, ILLINOIS 60201

DEPARTMENT OF CHEMISTRY

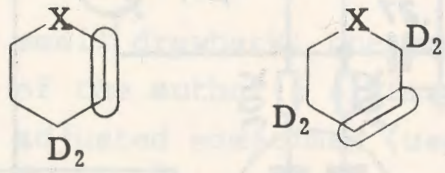
October 24, 1967

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

The Complete R-Value Method

We have extended our R-value analysis[1,2] to the pentamethylene heterocycles (I). By this means, a rather complete



Ia Ib

qualitative description of such molecules may be obtained. Appropriate deuterium substitution (Ia, b) yields two analyzable CH_2-CH_2 fragments (circled). The R values that characterize each fragment yield an unambiguous conformational description that is not available from either fragment alone. The analysis of each AA'BB' spectrum gives an average J_{trans} and J_{cis} (see the Table). The ratio (R) of these couplings is about as conformationally pure a parameter as nmr can yield. The two R values for thiane (X = S, $R_{\alpha\beta}$ = 2.61; $R_{\beta\gamma}$ = 2.58) indicate a conformation that is puckered all around the ring ("puckering" is the opposite of "flattening").[3] The values for 1,1-dibromotellurane (X = $TeBr_2$; $R_{\alpha\beta}$ = 1.5; $R_{\beta\gamma}$ = 3.60) point toward a ring that is quite flat at the heteroatom end and rather puckered at the opposite end. Almost all conformational classes may be distinguished by this double R-value method.

Sincerely yours,

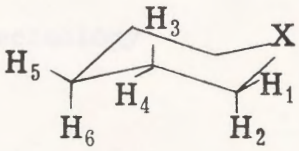
Joseph B. Lambert

R. G. Keske

JBL/kc

Dr. Bernard L. Shapiro
Page Two
October 24, 1967

TABLE



Ring inversion is fast.

	X = S	X = $TeBr_2$
$J_{13} = J_{24}$	3.26	5.2
$J_{14} = J_{23}$	8.51	7.8
$J_{35} = J_{46}$	3.28	2.56
$J_{36} = J_{45}$	8.47	9.21
$R_{\alpha\beta} = J_{14}/J_{13}$	2.61	1.5
$R_{\beta\gamma} = J_{45}/J_{46}$	2.58	3.60

1. J. B. Lambert, IIT NMR Newsletter, No. 101, 50 (1967).

2. J. B. Lambert, J. Am. Chem. Soc., 89, 1836 (1967).

3. R > 2.2 indicates puckering; R < 1.8 indicates flattening; R ~ 2.0 is indicative of a cyclohexane-like set of dihedral angles.

hooker research center

NIAGARA FALLS, NEW YORK 14302, PHONE (716) 285-6655

September 21, 1967

Dr. Bernard L. Shapiro
Dept. of Chemistry
Stanford University
Stanford California 94305

Dear Dr. Shapiro:

We have made a simple modification on our HA 100 to permit us to obtain routine calibrated sweeps of any width up to 35,000 HZ. for use in ^{19}F & ^{31}P. Admittedly our sensitivity is low in ^{31}P and requires more work but our fluorine scans have turned out very well.

The modification is as follows:

Disconnect the sweep pots on the recorder transmission from the swept oscillator with a switch and connect one fixed and one variable resistor to the swept oscillator circuit (this enables one to keep the lock at 2500 HZ). We built an International Rectifier K 206-6 volt power supply and connected this to the Mars recorder sweep pots and fed this output to the input of a Wavetex 114 VCG (a 100μF capaciter was added across the power supply to remove ripple). The frequency dial on the VCG sets the lower frequency, a 200 ohm helipot replaces the upper frequency limit knob, and the Mars gives a time base calibrated in frequency.

We have a step-by-step procedure to run spectra if anyone desires it. A schematic of the switch is also available on request.

In general we run Field sweep spectra and then utilize the modification suggested by Douglas at the 1965 ENC to spread out each individual absorption region to determine coupling constants and accurate chemical shifts.

It was also necessary to increase the range of the Mars recorder to 100 mv. This is readily accomplished by adding a resister in series with the pen pot and increasing the gain of this recorder.

Yours sincerely

James G. Colson — Eugene Kanski — William Allen

James G Colson — Eugene Kanski — William Allen

Title: Wide sweep calibrated spectra in fluorine.

EPS

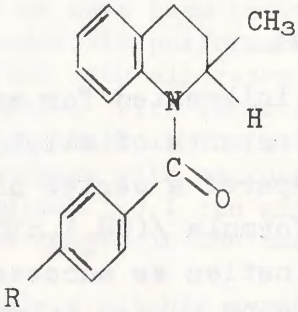
CIBA RESEARCH CENTRE
Bombay 63, India

September 27, 1967

Dr. B. L. Shapiro
Department of Chemistry
Illinois Institute of Technology
Chicago, Illinois

Dear Doctor Shapiro:

I am sorry that our contribution is coming in rather late. In continuation of our earlier work,[1] part of which was also communicated to IITNN, Dr. Nair and I have looked at the n.m.r. spectra of a series of 1-benzoyltetrahydroquinaldines of general structure I, carrying substituents para to the carbonyl group.



I: R = H, NO_2, F, Cl, Br, $-OCH_3$, $-NH_2$

We had proposed earlier that the amide bond in I (R=H) had the configuration shown and that the C-2 methine proton was preferentially equatorial. We hoped to utilize the present series to study the influence of para substituents on the carbonyl field effect by looking at the chemical shift of the C-2 proton. In the event, we found that these shifts were within two CPS (at 60 Mc) of one another. Dr. G. Kartha of the Biophysics Division, Rosewell Park Memorial Institute, Buffalo, New York, has carried out an X-ray crystallographic study of the derivative I (R=Br). Preliminary results show that in the solid state, I (R=Br) has the carbonyl group oriented as shown, that the methine proton is equatorial and that the p-bromophenyl group is considerably out of plane with respect to the carbonyl group. Literature indicates that in several cases it is possible to extrapolate conclusions on solid state structures to solutions. The present X-ray study can then be taken to confirm our proposals.[1] Further, it offers a possible explanation for the negligible change in the chemical shift of the methine proton in this series.

With regards,

Sincerely yours,

K. Nagarajan

K. Nagarajan

KN|sb

Reference: 1) K. Nagarajan, M. D. Nair and P. M. Pillai, Tetrahedron, 1683 (1967)

110-28

INSTITUTE OF CHEMICAL PROCESS FUNDAMENTALS
CZECHOSLOVAK ACADEMY OF SCIENCE
PRAHA-SUCHDOL 2

October 18, 1967
2421/Schr

Prof. B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, Calif. 94305
U.S.A.

re.: N.M.R. determination of Hammett σ constants

Dear Professor Shapiro:

We have been interested for some time in determination of Hammett σ constants of silylgroups. Dr. Mareš of this institute had prepared a series of p-silylsubstituted benzoic acids of the formula $/(CH_3)_3SiO/_n(CH_3)_{3-n}SiC_6H_4COOH$. For the N.M.R. determination we successfuly tried to use the linear dependence of -COOH proton shift on σ. This dependence was recently found by Y. Kondo (and others in Chem. Pharm. Bull. 1966) to hold in dry pyridine solutions. For the purpose of checking our experimental arrangement we repeated some of Kondo's measurements. A very small, but systematic, difference of about 0.07 ppm, in average, was noticed. This difference could mean that our values of σ as determined from Kondo's plot are up to 0.03 lower than the "true" values.

The σ values for $/(CH_3)_3SiO/_n(CH_3)_{3-n}Si$- groups are: -0.045, -0.080, -0.060, -0.015 for n = 0,1,2 and 3, resp. The trend can be easily interpreted in the terms of current ideas of organosilicon chemistry.

From the N.M.R. point of view it is more important that the same trend and very close values were obtained by Dr. Mareš and Mr. Bílek who measured the kinetics of esterification of the acids by diphenyldiazomethane and the potentials of half neutralization in titration by tetrabutylamonium methoxide.

Sincerely yours,

Jan Schraml

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
WESTERN UTILIZATION RESEARCH AND DEVELOPMENT DIVISION
800 BUCHANAN STREET
ALBANY, CALIFORNIA 94710

October 27, 1967

Re: Syringe Filter for
Microcell Samples

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

For quite some time we have been convinced that the poor performance and/or lack of reproducible performance that we, along with many other workers, have observed with all types of microcells is principally caused by dirty samples. With large samples the probability that a particle or two will remain in the active region of the sample is reasonably small; whereas with microcells the entire volume is "active." This is the only explanation I can give for the radically different behavior of the same sample in the two types of cells.

Since all commercially available syringe filter assemblies have far too much dead space for microcell sample volumes, Bob Flath and I designed, and Bob built a microfilter chuck assembly from teflon that could be slipped over the shortened needle of a 50 µl fixed-needle syringe and held a 4 mm filter disk. After determining that the unit performed as expected, we persuaded the Hamilton Syringe Co., Whittier, California, to manufacture the unit. It is now available for $69 as the Flath-Lundin filter kit, which includes a special 50 µl syringe with a thick-wall needle and a die for cutting the filters from larger filter disks. Several workers here have been using the Hamilton model for about two months with excellent results.

Best regards.

Sincerely yours,

R E Lundin

R. E. Lundin, Research Chemist
Molecular Structure Investigations
Wool and Mohair Laboratory

CARLETON UNIVERSITY

OTTAWA 1, CANADA

DEPARTMENT OF CHEMISTRY

October 26th, 1967

Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Dr. Shapiro:

I would like to report further devices for the measurement of angles and distances in Dreiding molecular models[1,2]: These are shown in the attached photographs. There are two types -

(a) for the benzene ring
(b) a general device which we hope will serve for any bond in the models.

I will be happy to provide working drawings and further details to any reader.

Yours sincerely

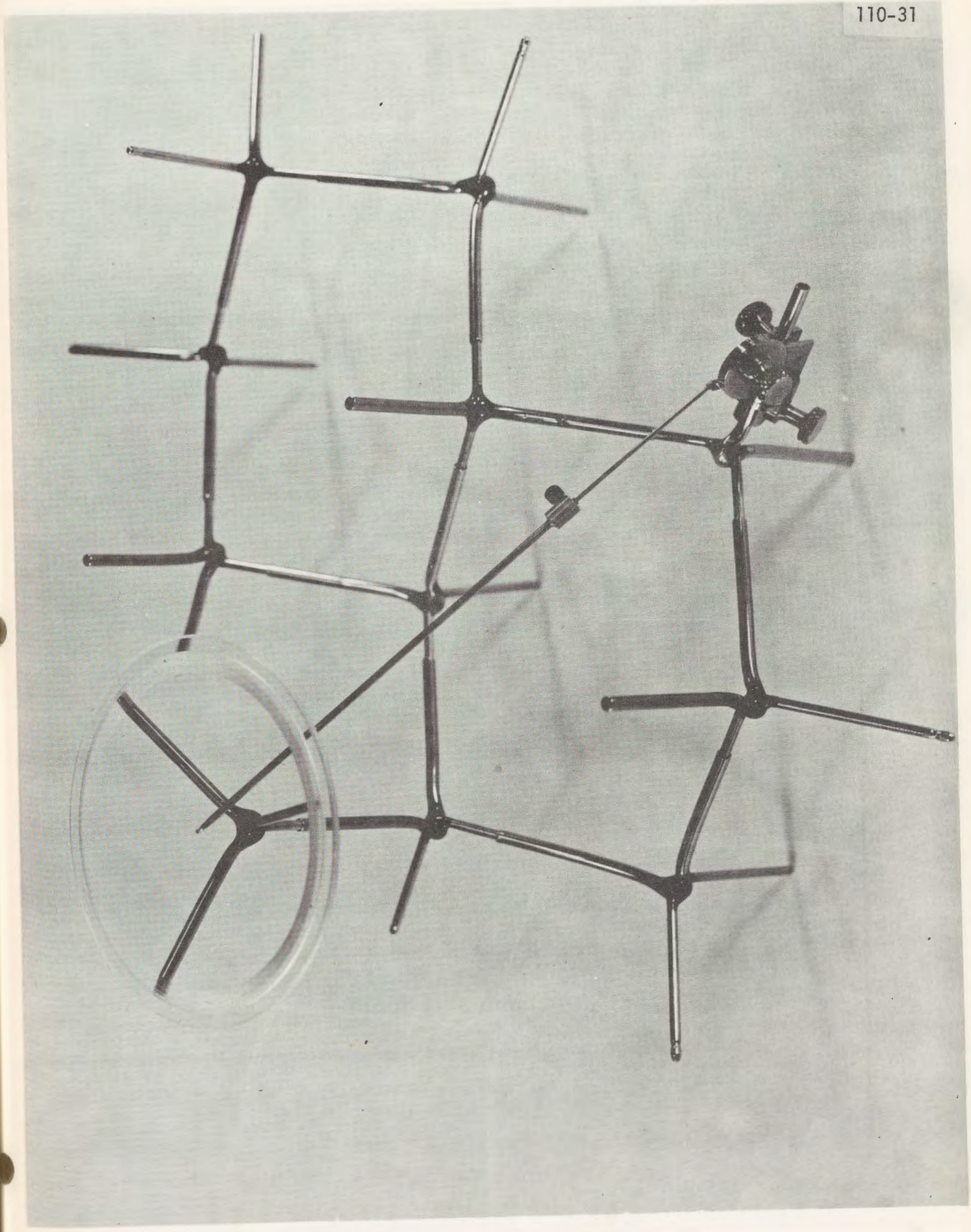
John ApSimon

J.W. ApSimon
Associate Professor

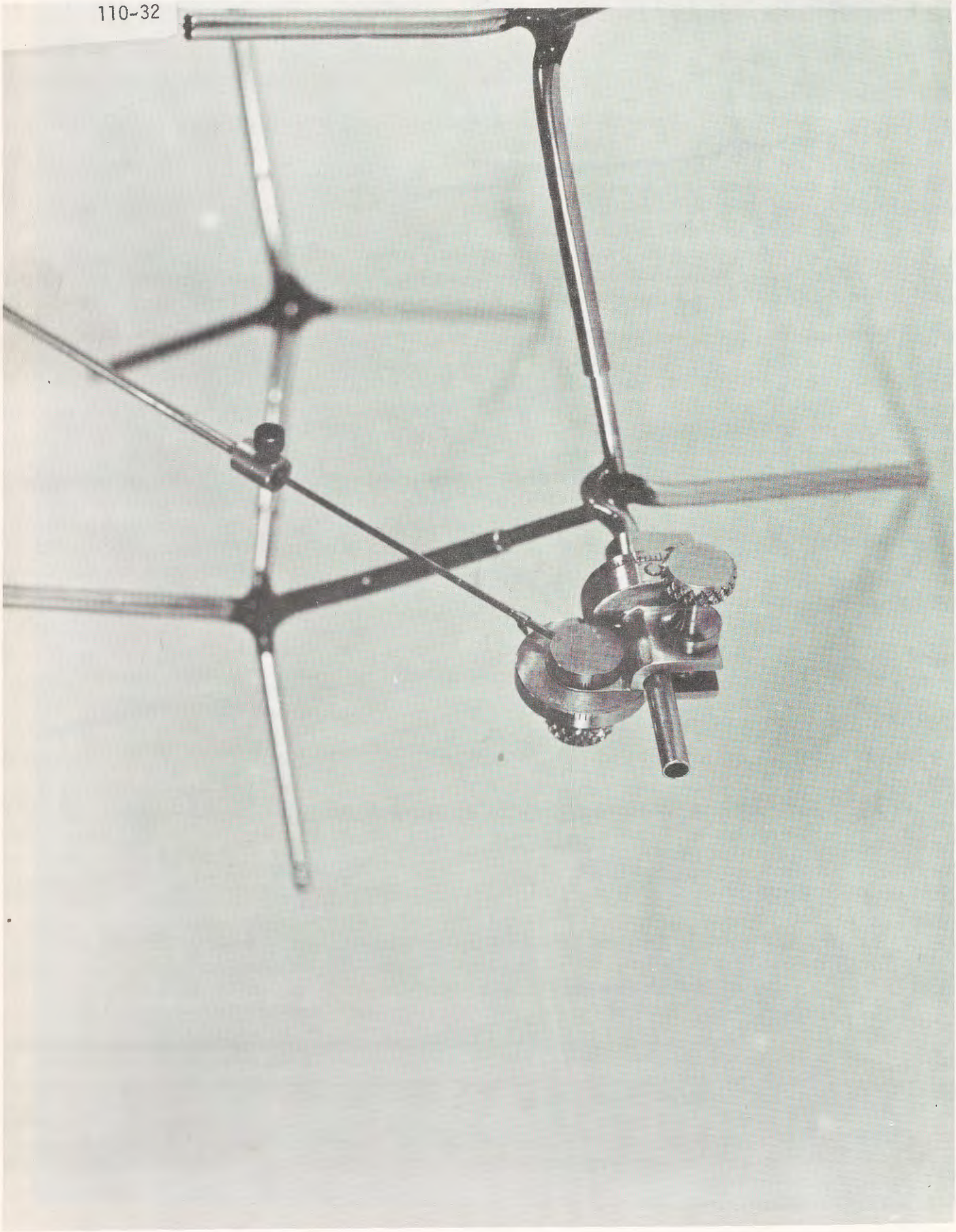
JWA:jet

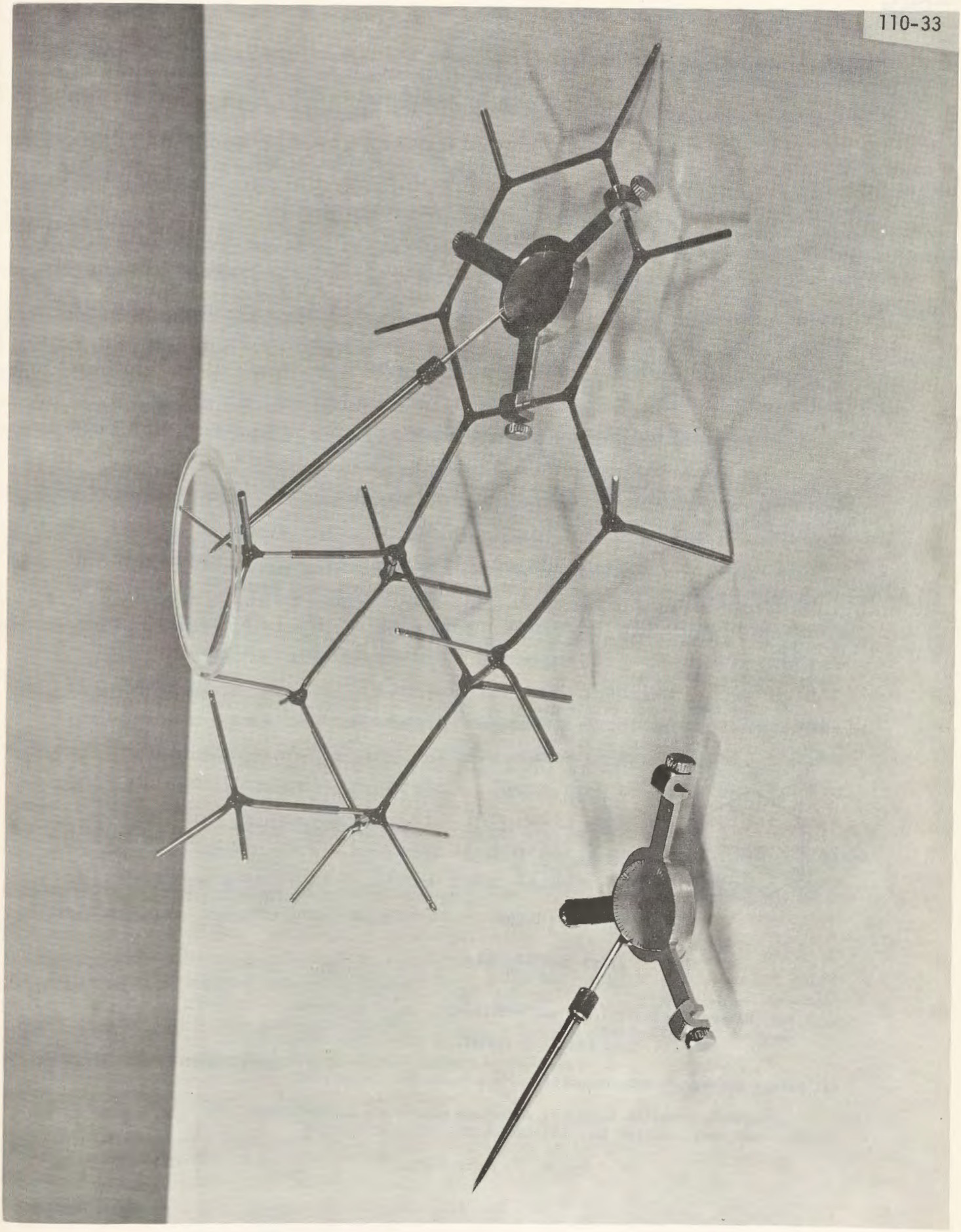
1. IITNMR 92-46
2. J.W. ApSimon, P.V. Demarco and A. Raffler, Chem. + Ind. 1792 (1966)

Title: Measuring Devices for Molecular Models



110-32





Battelle Memorial Institute · COLUMBUS LABORATORIES

505 KING AVENUE · COLUMBUS, OHIO 43201 · AREA CODE 614, TELEPHONE 299-[illegible] · CABLE ADDRESS: BATMIN

October 27, 1967

Dr. B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

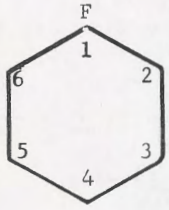
Dear Barry:

Virtual Coupling in Fluorobenzene

We have noted, as have others,(1) that the ^{19}F spectrum of fluorobenzene is not symmetrical. This observation is at first surprising, considering that the ^{19}F spectrum arises from a single nucleus located on a plane of symmetry. In addition, we have found that the ^{19}F fluorobenzene spectrum is solvent, concentration and frequency dependent.

It has been suggested that negative spin-spin coupling might be responsible for the asymmetry in the ^{19}F spectrum of fluorobenzene. However, all of the H-F couplings in fluorobenzene were shown(1) to be of the same sign (probably positive). From spectral analysis of the ^{1}H and ^{19}F NMR spectra we find that all H-H couplings can have the same sign as the H-F couplings. Therefore, the ^{19}F nucleus must be both directly and virtually coupled to the ^{1}H nuclei.

The NMR parameters (in Hertz) we find for neat flurobenzene from spectral fitting of both the ^{1}H (60 MHz) and ^{19}F (56.44 MHz) spectra are



$J_{F2} \equiv J_{F6} = 9.08$	$J_{23} \equiv J_{56} = 8.42$
$J_{F3} \equiv J_{F5} = 5.82$	$J_{24} \equiv J_{46} = 1.12$
$J_{F4} = 0.351$	$J_{25} \equiv J_{36} = 0.322$
$\delta_H^{ortho} = 12.00$	$J_{26} = 3.13$
$\delta_H^{meta} = 0.000$	$J_{34} \equiv J_{45} = 7.56$
$\delta_H^{para} = 10.46$	$J_{35} = 2.13$

(1) Bak, Borge, Shoolery, J.N., and Williams, G. A., III, J. Mol. Spectros., 2, 525 (1958).

All values are believed to be accurate to ± 0.01 Hertz or better.

A more detailed amount of these and some other fluorobenzene results have been accepted for publication in Molecular Physics.

Yours truly,

Tom

Thomas F. Page, Jr.
Research Spectroscopist
Organic Chemistry Division

DEPARTMENT OF CHEMISTRY

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA

31 October, 1967.

Dear Barry:

TWOSUM, AGAIN.

Listings of our high-resolution spectral analysis program, TWOSUM (IITNMR 101, p 18), have gone out in response to about twenty requests. As feared, there have been some minor bugs, and a couple of less-than-minor (but, fortunately, not frequently encountered) ones, for whose detection we are indebted to C. W. Haigh of University College, Swansea:

1. As anticipated, the missing-energy-level option doesn't work. We think we know why, and we're fixing it.
2. The program as listed will only handle 100 energy levels in the molecule. Fixing this is simply a matter of redimensioning: in NMREN, CE(512); in ADJAB, EMS(21,512).
3. Mysterious failure to read Tape 3 in NMRIT usually means that NMREN failed to converge, and thus didn't put anything on Tape 3. We are putting in a booby-trap to prevent this.

We are at present involved in that disaster known as conversion to an IBM 360-65/67. We make no promises, but shall, if requested, send listings and revisions, appropriate to the 360 FORTRAN IV, Level H version. These may be relevant to the 7040 version we have sent out. They will not be sent out until we're confident they'll work. At present, we have a 360 version which works almost as well as last year's 7040 version. 'Nuff said!

Sincerely,

John Martin

John S. Martin

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C. 20234

October 31, 1967

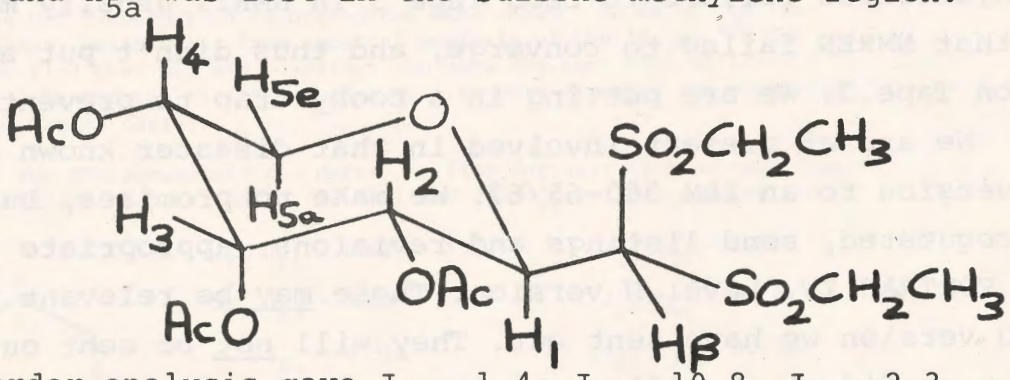
IN REPLY REFER TO:
310.07

* AIR MAIL
Dr. Bernard L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Dr. Shapiro:

A minor mystery; the case of the disappearing deuterium.

We have worked recently on a carbohydrate disulfone whose PMR parameters (and other evidence) show that it has the configuration and conformation depicted in the Figure. The 60MHz proton spectrum showed a doublet for H_β, quartets for H_1, H_2, and H_{5e}, a triplet for H_3, an unresolved octet for H_4, and H_{5a} was lost in the sulfone methylene region.



First order analysis gave $J_{1,\beta}$ 1.4, $J_{1,2}$ 10.8, $J_{2,3}$ 2.3, $J_{3,4}$ 2.7, $J_{4,5e}$ 5.8, and $J_{4,5a}$ 10.8 Hz. Wishing to confirm the assignment of the H_β doublet, we equilibrated the $CDCl_3$ solution of the sulfone with D_2O, but no change in the spectrum of the $CDCl_3$ layer resulted. However, when the experiment was repeated with a small amount of trimethylamine present, the H_β doublet disappeared and the H_1 quartet became a doublet, as expected for deuterium exchange of the weakly acidic H_β. Since we intended to recover the 'deuterated material', the mixture of two layers was carefully evaporated to dryness on the oil pump, and the spectrum of the residue redetermined immediately in $CDCl_3$. The H_β doublet had reappeared, and the H_1 signal was once more a quartet. No trimethylamine signal could be seen in the

spectrum. Incidentally, the Et methyl groups appeared as non-equivalent triplets in $CDCl_3$, but with a trace of trimethylamine present, they were equivalent.

Our problem (possibly somewhat trivial) is why deuterium was lost so readily from the apparently exchanged sulfone derivative.

Yours sincerely,

Bruce Coxon

Bruce Coxon, Chemist
Organic Chemistry Section
Analytical Chemistry Division

Duke University
DURHAM
NORTH CAROLINA

DEPARTMENT OF CHEMISTRY

POSTAL CODE 27706
TELEPHONE 919-684-2414

October 30, 1967

Professor B. L. Shapiro
Department of Chemistry
Illinois Institute of Technology
Chicago, Illinois 60616

Re: P^{31} Longitudinal Relaxation Times

Dear Professor Shapiro,

Reported below are some data which we recently collected for the spin-lattice relaxation times of the P^{31} atoms in some heterocyclic organoposphorus compounds. The samples measured were the same as those for which P^{31} chemical shifts were reported in IIT-NMR Newsletter No. 101.

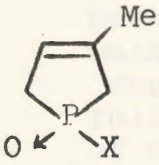
We measured the phosphorus T_1 values by the saturation-recovery technique using a Varian 4300 B spectrometer at a frequency of 19.3 Mc. The probe temperature was approximately 26°C. The values of T_1 are reported with the standard deviation of the mean value for four to ten measurements.

Prior to the communication from Chapman and Mowthorpe in Newsletter No. 108, we had measured the T_1 value for P_4O_6 at 26°C and found it to be 15.3 ± 0.3 seconds, about 3.6 seconds longer than their value at 21°C.

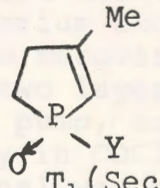
We are currently studying the above and related compounds to determine the relative importance of various mechanisms in relaxing the phosphorus. Since few P^{31} relaxation data have been reported for organophosphorus compounds we think these values may be of interest.

Sincerely,

Marcus E. Hobbs Stephen W. Dale



X	T_1 (Sec.)	Sample
Cl	5.59±0.12	Neat
OMe	4.93±0.15	Neat
Me	3.75±0.16	Neat
Φ	0.90±0.02	In $CDCl_3$



Y	T_1 (Sec.)	Sample
Cl	4.24±0.13	Neat
OMe	3.70±0.17	Neat
Me	2.43±0.16	Neat
Φ	1.05±0.12	In $CDCl_3$

STATE UNIVERSITY OF NEW YORK
AT STONY BROOK

DEPARTMENT OF CHEMISTRY

STONY BROOK, N.Y. 11790

November 2, 1967

Dr. B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

Our work on proton shielding tensors in trichloroacetic acid crystals was rushed to completion just in time to be presented at the Second Materials Research Symposium on Molecular Dynamics and Structure of Solids at NBS on October 18 of this year. Since publication of the Proceedings of the conference is some months off, we thought that our results might still be eligible for IITNMRN.

100 MHz proton NMR measurements were made on single crystals of trichloroacetic acid. After some travail, the results shown in the table below were obtained.

Site	σ_1 [a] ppm	θ_1 [b] deg	σ_2 [a] ppm	θ_2 [b] deg	σ_3 [a] ppm	θ_3 [b] deg	σ_{ave} [c]
A	11	79°	-2	51°	-9	52°	-12
B	13	85°	-5	30°	-8	64°	-12
Ave	12	82°	-4	40°	-8	58°	-12

a Principal components of the traceless tensor
b Angle relative to the proton-proton line in the respective dimer
c Relative to tetramethylsilane

The tensors at sites A and B should be identical. Since an experimental uncertainty of 1 to 2 ppm is probable, there does not appear to be any serious discepancy. The tensor does not seem to have axial symmetry. Its orientation relative to the molecular axes is not yet known with certainty. Various considerations lead us to believe that σ_1 lies roughly in the O-H···O direction, but a neutron diffraction study should soon settle the point.

A full account of this work is being written and should be available later this year.

Yours truly,

Paul

Paul C. Lauterbur

David C. Haddix

David C. Haddix

110-40

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Dr. B.L. SHAPIRO
Dept. of Chemistry
Stanford University
STANFORD, Cal. 94.305
U.S.A.

Paris, le 3 Novembre 1967.

Dear BARRY,

Thanks for your blue note (certainly a Pacific coast reminder) and, while you are tanning and surfing, I have to turn to more severe objects.

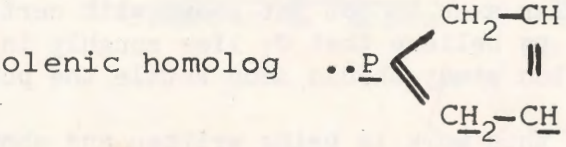
RELATIVE SIGN OF PROTON-PHOSPHORUS COUPLINGS.

Besides the now popular phosphorus-vinyl system[1], the allylic systems*

$\underline{P}\ C\underline{H}_2\ C\underline{H} = C\ C\underline{H}_3$ (resp. - + -)

$\underline{P}\ C\underline{H}_2\ C(C\underline{H}_3) = C\underline{H}$ (all negative)

and their phospholenic homolog



(all negative)[2]

we turned to a less trivial case, with the following ylid.

.../...

*In all cases, we assumed a negative ..$\underline{P}(O)C\underline{H}_2$.. coupling as in $\underline{P}(O)\ (CH_2\ CH_3)_3$[1].

The rather unstable $(CH_3)_3P{=}CH_2$ has been recently synthesized and some PMR data reported[3]. Through the courtesy of Prof. H. SCHMIDBAUR, we have had at our disposal a sample of this ylid. Spin decoupling gives opposite signs for $\underline{P}C\underline{H}_3$ and $\underline{P}{=}C\underline{H}_2$ couplings. As $\underline{P}C\underline{H}_3$ couplings for pentavalent phosphorus appear systematically negative[4], we can guess

$$(CH_3)_3\ P{=}CH_2$$

Last, we obtained the same sign (probably positive) in $\emptyset_3\ P{=}CHCHO$.

P_{31} - C_{13} SPIN SPIN COUPLINGS

Using heteronuclear tickling in proton resonance[5], Overhauser effect in double resonance[6] or, less directly, full analysis of highly symmetrical spectra[7], magnitude and, in the former case, relative sign have been estimated and reported for phosphorus-carbon couplings. Briefly, they are -14 and +56 Hz ($\pm$1) in $(CH_3)_2\ P\ C_6H_5$ and $(CH_3)_2\ \overset{+}{P}\ H(C_6H_5)$[5]; (-) 13,97 in $(CH_3)_3P$[6b]. We now report an investigation directly using C_{13} spectra*, kindly obtained through the courtesy of PERKIN-ELMER Ltd and M.J. GREEN. The attached figure, displays the observed data for $CH_3\ P(O)F_2$ with the following results

$\underline{C}_{13}\underline{P}$: 147 Hz

$\underline{C}_{13}\underline{H}$: 133 Hz

$\underline{C}_{13}\underline{F}$: ca. 22 Hz

.../...

*Recorded at 15.1 MHz on neat compounds (without enrichment), using CAT signal enhancement, with a PERKIN-ELMER R 10 machine.

Other data are as follows

$(C_2H_5O)_2\ P(O)\ CH_2\ COCH_3$ -----	$\underline{C}_{13}\ (H_2)\ \underline{P}$	127 ± 2 Hz
	$\underline{C}_{13}\ (H_2O)\underline{P}$	undetectable ($<$ 5 Hz)
	$\underline{C}_{13}O$ not recorded	
———— $C \equiv C\ CH_3$ ------	$\underline{P}(O)\ \underline{C} \equiv$	304 ± 2 Hz
	$\underline{P}(O)\ C \equiv \underline{C}$	54 ± 2 Hz

Further investigation is in progress, and I hope to comment on this in a near future.

Do'nt tackle too much magnetic fishes. With my best regards

G. MAVEL

(1) S.L. MANATT, G.L. JUVINALL, R.I. WAGNER and D.D. ELLEMAN, J.A.C.S., 88, 2689, 1966 and ref. therein.

(2) G. MAVEL and R. MANKOWSKI-FAVELIER, J. Chim. Phys., to appear.

(3) H. SCHMIDBAUR and W. TRONICH, Angew. Chem., 79, 412, 1967.

(4) G. MAVEL, Progress in NMR Spectroscopy, vol. 1, chap. 4, 1966.

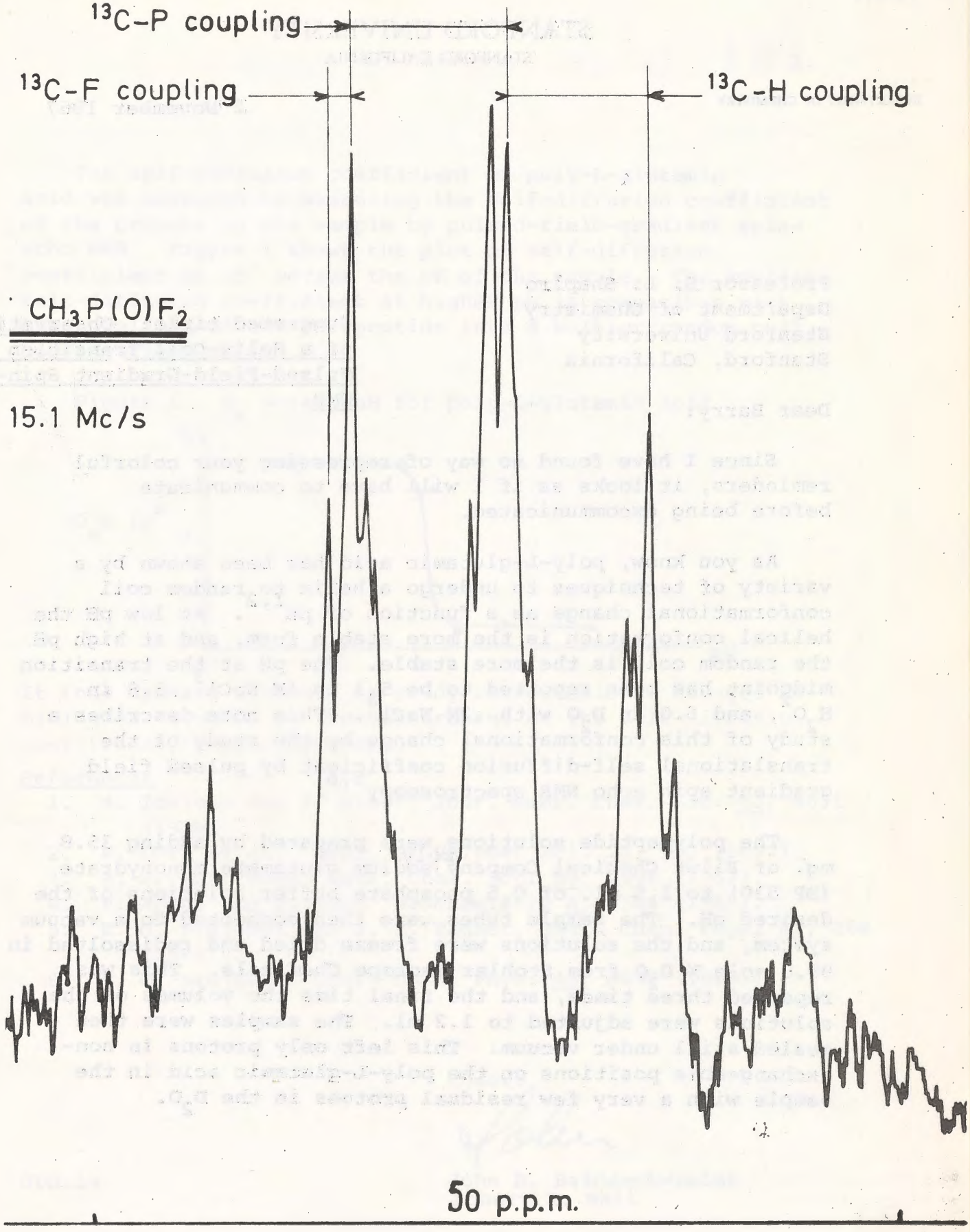
(5) W. Mc FARLANE, Chem. Comm., 1967, p. 58.

(6) a/D.D. ELLEMAN, S.L. MANATT, A.J.R. BOURN and A.H. COWLEY, J. Amer. Chem. Soc., to appear.

b/D.D. ELLEMAN and S.L. MANATT, 8th Expl. NMR Conf., PITTSBURGH, March 3, 1967.

(7) E.G. FINER and R.K. HARRIS, Mol. Phys., 13, 65, 1967.

CB


^{13}C-P coupling
^{13}C-F coupling
^{13}C-H coupling
$CH_3P(O)F_2$
15.1 Mc/s
50 p.p.m.

STANFORD UNIVERSITY
STANFORD, CALIFORNIA

DEPARTMENT OF CHEMISTRY

2 November 1967

Professor B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, California

Suggested title: Observation of a Helix-Coil Transition by Pulsed-Field-Gradient Spin-Echo NMR.

Dear Barry:

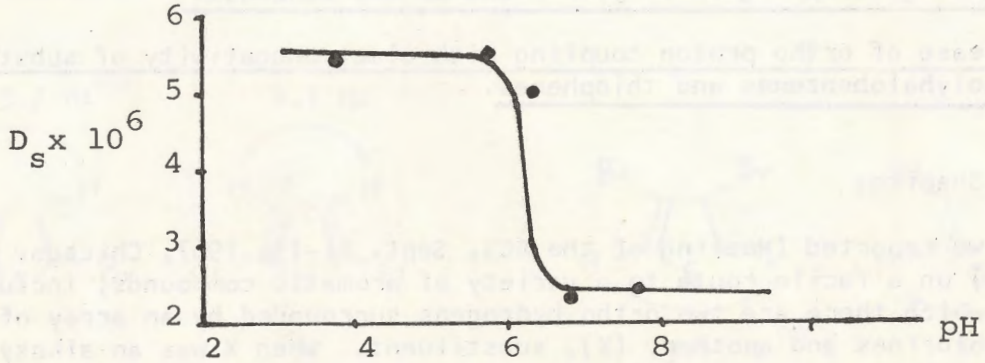
Since I have found no way of repressing your colorful reminders, it looks as if I will have to communicate before being excommunicated.

As you know, poly-L-glutamic acid has been shown by a variety of techniques to undergo a helix to random coil conformational change as a function of pH[1,2]. At low pH the helical conformation is the more stable form, and at high pH the random coil is the more stable. The pH at the transition midpoint has been reported to be 5.1 in 1M NaCl[3], 5.8 in H_2O[2], and 6.0 in D_2O with .2M NaCl[4]. This note describes a study of this conformational change by the study of the translational self-diffusion coefficient by pulsed field gradient spin echo NMR spectroscopy[5,6].

The polypeptide solutions were prepared by adding 35.8 mg. of Pilot Chemical Company poly sodium glutamate monohydrate (DP 530) to 1.5 ml. of 0.5 phosphate buffer solutions of the desired pH. The sample tubes were then connected to a vacuum system, and the solutions were freeze dried and redissolved in 99.8 mole % D_2O from Stohler Isotope Chemicals. This was repeated three times, and the final time the volumes of the solutions were adjusted to 1.2 ml. The samples were then sealed still under vacuum. This left only protons in non-exchangeable positions on the poly-L-glutamic acid in the sample with a very few residual protons in the D_2O.

The self-diffusion coefficient of poly-L-glutamic acid was measured by measuring the self-diffusion coefficient of the protons in the sample by pulsed-field-gradient spin-echo NMR. Figure 1 shows the plot of self-diffusion coefficient at 25° versus the pH of the sample. The smaller self-diffusion coefficient at higher pH is compatible with the unfolding of the polypeptide into a bulkier random coil conformation.

Figure 1. D_s versus pH for poly-L-glutamic acid



It thus appears feasible to study conformational changes in biological systems by the measurement of the self-diffusion coefficient by spin-echo NMR.

References

1. M. Idelson and E. Blout, Jour. Amer. Chem. Soc. 80, 4631 (1958).
2. P. Doty et al., Jour. of Polymer Sci. 23, 951 (1957).
3. R. Bryant, Jour. Amer. Chem. Soc. 89, 2496 (1967).
4. P. Appel and J. Yang, Biochemistry 4, 1244 (1965).
5. E. O. Stejskal and J. E. Tanner, Jour. Chem. Phys. 42, 288 (1965).
6. E. O. Stejskal, Jour. Chem. Phys. 43, 3597 (1965).

Cheers,

JDB:la

John D. Baldeschwieler
Robert E. Moll

hooker research center

NIAGARA FALLS, NEW YORK 14302, PHONE (716) 285-6655

November 3, 1967

Professor Barry Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

1. Long range coupling in alkylthio and alkoxy benzenes.

2. Increase of ortho proton coupling with electronegativity of substituents in polyhalobenzenes and thiophenes.

Dear Dr. Shapiro:

Recently we reported (Meeting of the ACS, Sept. 11-15, 1967, Chicago, paper no. S-121) on a facile route to a variety of aromatic compounds, including those in which there are two ortho hydrogens surrounded by an array of three vicinal chlorines and another, (X), substituent. When X was an alkoxy or alkylthio substituent, containing hydrogen on the alpha carbon (see Table I), we noted that in the aromatic AB pattern of the proton nmr spectrum the upfield doublet was always shorter and broader than its counterpart. Irradiation of the alkyl proton(s) of the carbon alpha to the hetero atom resulted in the sharpening of the upfield aromatic doublet, thus confirming the coupling between the aliphatic and the closest aromatic proton. Under optimal resolution conditions the fine structure became visible and, for instance, in the spectrum of the compound illustrated in Table I, the B portion of the aromatic pattern consisted of two quadruplets with a separation of 8.55 and 0.35-0.40 Hz., respectively. On oxidation to the sulfoxide and sulfone the effect noted in the alkylthio substitutent vanished. The last column of Table I containes additional examples of the long range (through five bonds) coupling involving the H-sp^3C-X-sp^2C=sp^2C-H system. No coupling was observed in the tert-butylthio- and phenylthio compounds, in which there is an additional intervening carbon atom.

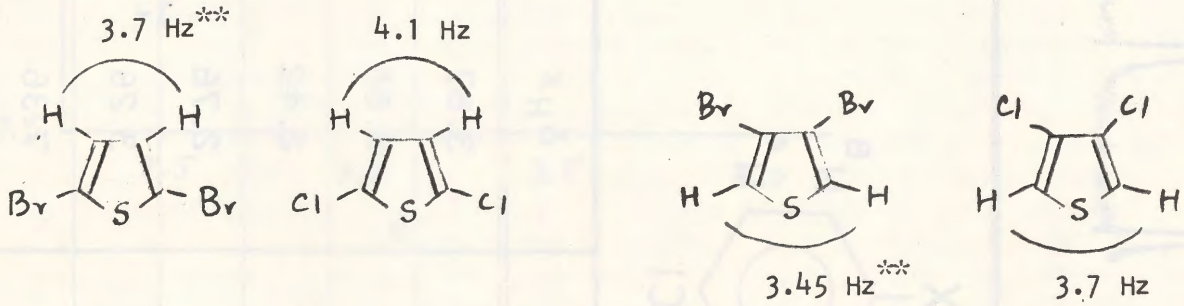
The observed peak broadening was helpful in assigning the correct chemical shifts to protons A and B, the shorter peaks being those of the proton adjacent to X (proton B in the Table). Experiments, including Overhauser resonance, are under way to obtain better insight into the coupling mechanism.

It was also noted that substituent X had the following effect on the magnitude of the aromatic AB coupling:

alkoxy > Cl > alkylthio

Plotting J_{AB} against the Pauling electronegativities of the substituents (oxygen and sulfur for the alkoxy and alkylthio groups), the relationship illustrated in Figure I resulted (solid line), thus indicating that increased electronegativity effects increased coupling. Recently Castellano and Sun reported on a similar relationship in monosubstituted benzenes [J. Am. Chem. Soc., 88, 4741 (1966)]. Plotting their values in Fig. I a parallel but lower lying line resulted (dotted line). The higher coupling constants in the tetrasubstituted benzenes are expected due to the influence of chlorines both adjacent to* and removed from the protons. Currently we are looking at systems to possibly separate these effects.

Not only substituted benzenes, but thiophenes also show enhanced coupling with substituents of higher electronegativity. The following examples are illustrative:



*Dr. Richard Cox, from the Carnegie-Mellon Institute, kindly informed us about the additivity relationship between benzene, mono-and para-disubstituted benzenes, resulting from the studies of Dr. Castellano and coworkers. Applying this rule-of-thumb to 2,3,4-trichloroanisole, a J_{AB} of 8.84 Hz results (anisole, J_{12} 8.35 Hz; chlorobenzene, J_{12} 8.05 Hz; benzene 7.56 Hz.) which compares very favorably with the experimental value, J_{AB} 8.95 Hz.

**K. Takahashi, T. Sone, Y. Matsuki and G. Hazato, Bull. Chem. Soc. Japan, 38, 1041 (1965).

Sincerely

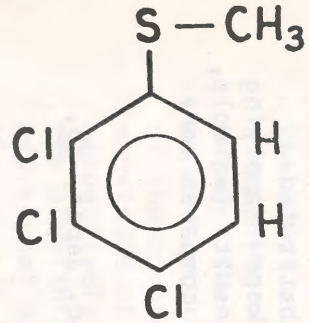
Victor Mark

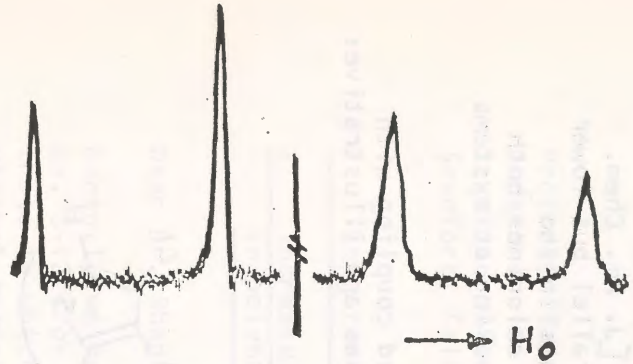
Leon Zergieski

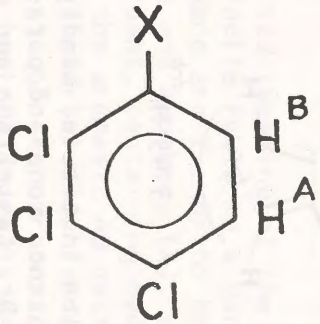
Victor Mark

Leon Zergieski

TABLE 1.

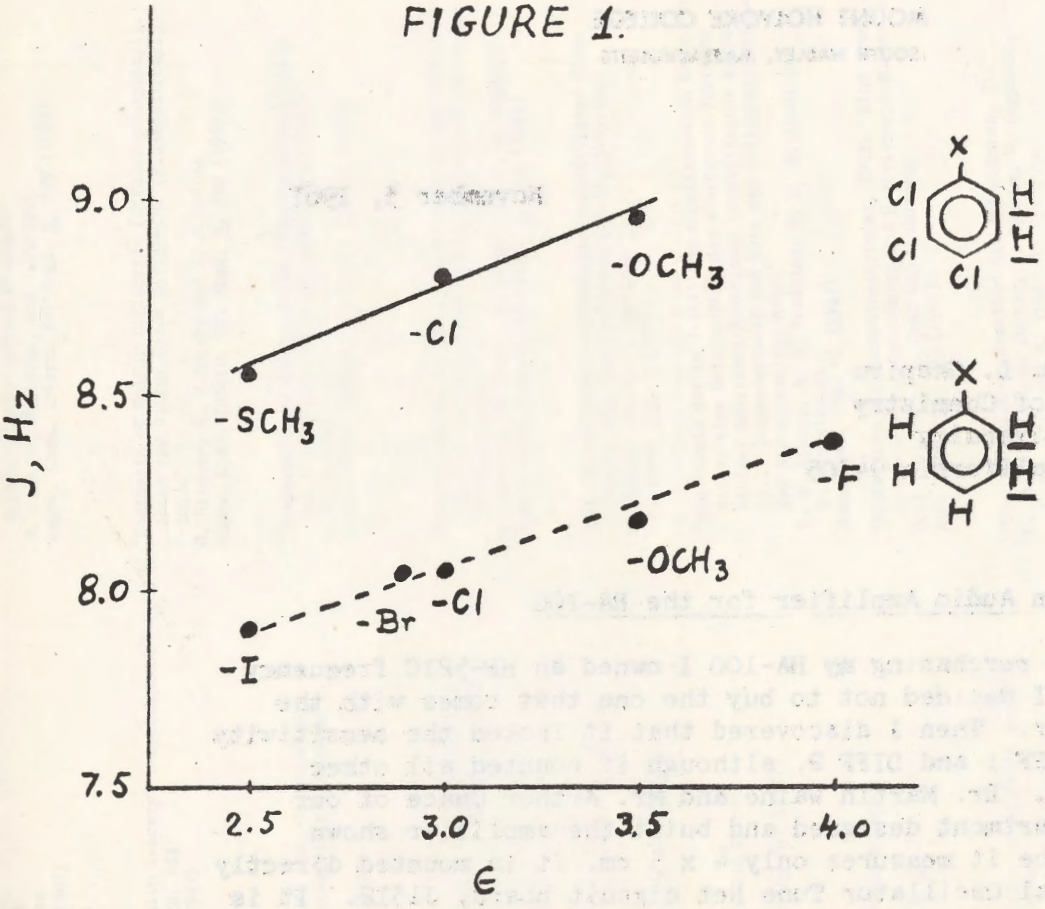






X	δ_{H^A}	δ_{H^B}	δ_{H^X}	$J_{H^AH^B}$	$J_{H^BH^X}$
CH_3O-	7.32	6.83	3.87	8.95	0.1_5
$CH_3CH_2CH_2^xO-$	7.29	6.81	3.88	8.95	0.1_7
CH_3S-	7.33	6.97	2.42	8.55	0.3_7
$CH_3S(0)-$	7.67	7.83	2.76	8.43	0.00
$CH_3S(0)_2-$	7.64	8.02	3.26	8.45	0.00
C_6H_5S-	7.12	6.64	7.36	8.40	0.00
Cl	7.16	7.16		8.80	

FIGURE 1.


9.0
8.5
8.0
7.5
J, Hz
2.5
3.0
3.5
4.0
ε
-SCH3
-Cl
-OCH3
-I
-Br
-Cl
-OCH3
-F
X
Cl
Cl
Cl
H
H
X
H
H
H
H
H
H

MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MASSACHUSETTS

DEPARTMENT OF CHEMISTRY
CARR LABORATORY

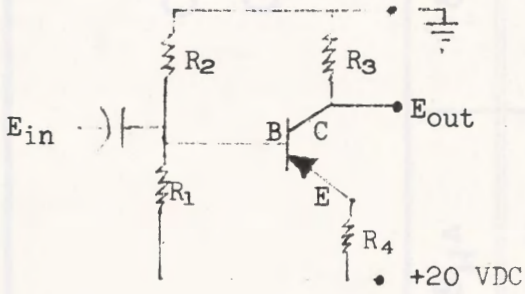
November 3, 1967

Professor B. L. Shapiro
Department of Chemistry
Stanford University
Stanford, California 94305

Dear Barry:

An Audio Amplifier for the HA-100

Before purchasing my HA-100 I owned an HP-521C frequency counter so I decided not to buy the one that comes with the spectrometer. Then I discovered that it lacked the sensitivity to count DIFF 1 and DIFF 2, although it counted all other frequencies. Dr. Martin Waine and Mr. Artner Chace of our Physics Department designed and built the amplifier shown below. Since it measures only 4 x 5 cm. it is mounted directly on the Manual Oscillator Tune Net circuit board, J1312. It is inserted in the filtered DIFF frequency leading to pin P and employs the otherwise unused 20 v available at pin M.



R_1	47K
R_2	390K
R_3	12K
R_4	2.2K

Sincerely yours,

Ken

Kenneth L. Williamson
Assoc. Professor of Chemistry

MELLON-CARNEGIE UNIVERSITY

BIBLIOGRAPHY

"Bacterial Carotenoids XXII. The Carotenoids of Thiorhodaceae 5. Structural Elucidation of Okenone"
S. L. Jensen
Acta Chem. Scand. 21, 961 (1967)

"Bacterial Carotenoids XXIII. The Carotenoids of Thiorhodaceae 6. Total Synthesis of Okenone and Related Compounds"
A. J.Assen and S. L. Jensen
Acta Chem. Scand. 21, 970 (1967)

"Quaternization Reactions. II. Pyridazines"
H. Lund and P. Lunde
Acta Chem. Scand. 21, 1067 (1967)

"Notiz über die Produkte der Addition von Thioglykolsäure an Citraconsäure"
E. Larsson
Acta Chem. Scand. 21, 1102 (1967)

"Chemical Studies on Lichens 8. Schizopeltic Acid, a Novel Lichen Dibenzofuran"
J. Santesson
Acta Chem. Scand. 21, 1111 (1967)

"Studies on Methylated 1,2,3-Triazoles. IV. Preparation of 1-Methyl-4-hydroxy-1,2,3-triazole"
M. Begtrup, K. Hansen and C. Pedersen
Acta Chem. Scand. 21, 1234 (1967)

"Rearrangement of Tetra-O-benzoyl-2-deoxy-β-D-arabinohexopyranose into 3,6-Di-O-benzoyl-2-deoxy-α-D-ribohexopyranosyl Fluoride with Anhydrous Hydrogen Fluoride"
I. Lundt and C. Pedersen
Acta Chem. Scand. 21, 2139 (1967)

"NMR Determination of Reactivity Ratios in the Competitive O-Nitration Reactions of Benzyl and Thenyl Alcohols"
B. Ostman
Acta Chem. Scand. 21, 1257 (1967)

"Quasi-Wittig-Reaktionen mit N-Sulfinylverbindungen III. Darstellung weiterer N-Sulfonylguanidine"
A. Senning
Acta Chemica Scand. 21, 1293 (1967)

"Synthesis and Characterization of the L-Cysteine-Glutathione Mixed Disulfide"
B. Eriksson and S. A. Eriksson
Acta Chem. Scand. 21, 1304 (1967)

"Reactions of Some Enamines with 1-Acetyl-1-cyclohexene"
L. H.Hellberg and M. F. Stough, III
Acta Chem. Scand. 21, 1368 (1967)

"Chlorination of Cholesterol in Aqueous Solution: Isolation of a trans-Diequatorial Chlorohydrin"
B. O.Lindgren
Acta Chem. Scand. 21, 1397 (1967)

"Photochemical Studies. X. On the Photolysis of 2,3-Diphenylquinoxaline N-Oxide to 2,4-Diphenylbenz[d[-1, 3,5-oxadiazepine. An NMR Study"
O. Buchardt and J. Feeney
Acta Chem.Scand. 21, 1399 (1967)

"Valence Isomerizations of Hydrocarbons Containing Three-Membered Rings"
E. Wiskott and P. v. R.Schleyer
Angew. Chem. Intern. Ed. Engl. 6, 694 (1967)

"1,6-Benzodioxocin: Synthesis and Properties"
W. Schroth and B. Werner
Angew. Chem. Intern. Ed. Engl. 6, 697 (1967)

"(Halogenocarbonyl)sulfur Pseudohalides"
A. Haas and H.Reinke
Angew. Chem. Intern. Ed. Engl. 6, 705 (1967)

"Isomeric Chlorides and Fluorides of Sulfenic Acids"
F. Seel, W. Gombler, and R. Budenz
Angew. Chem. Intern. Ed. Engl. 6, 706 (1967)

"Dimethylfluorophosphine"
F. Seel, K. Rudolph, and W. Gombler
Angew. Chem. Intern. Ed. Engl. 6, 708 (1967)

"Cycloaddition of Ketoximes"
E. Winterfeldt and W. Krohn
Angew. Chem. Intern. Ed. Engl. 6, 709 (1967)

"N-(Cyano)phenylphosphonimidic Difluoride and N-(Cyano) diphenylphosphinimidic Fluoride"
O. Glemser, E.Niecke, and J.Stenzel
Angew. Chem. Intern. Ed. Engl. 6, 709 (1967)

"Synthesis of Sulfur Difluoride (Difluorophosphinyl)-imide and Sulfur Oxide Difluoride (Fluorosulfonyl) imide"
O. Glemser, H. W.Roesky and P. R.Heinze
Angew. Chem. Intern. Ed. Engl. 6, 710 (1967)

"Preparation of Sulfur Oxide (Fluorosulfonyl)imide and Sulfur Dichloride (Fluorosulfonyl)imide"
H. W. Roesky
Angew. Chem. Intern. Ed. Engl. 6, 711 (1967)

"Determination, by ESR Spectroscopy, of the Constitution of the Phosphorus Radicals formed on Oxidation of Phosphorins"
K. Dimroth, N. Greif, W. Städe, and F. W. Steuber
Angew. Chem. Intern. Ed. Engl. 6, 711 (1967)

"Protonenresonanz-Spektroskopie ungesättigter Ringsysteme, IV. Das Cyclohexadien-(1.3)-System"
H. Günther und H.-H. Hinrichs
Ann. Chem. 706, 1 (1967)

"Die Chemie der in 7-Stellung substituierten Norbornadiene; eine Untersuchung des sterischen Verlaufs einiger Additions-Reaktionen ungesättigter Bicyclo [2.2.1]heptaderivate und über den Gültigkeitsbereich der Alderschen exo-Regel"
G. W. Klumpp, A. H. Veefkind, W. L. de Graaf und F. Bickelhaupt
Ann. Chem. 706, 47 (1967)

"Reaktionen mit Phosphinalkylenen, XVII. Eine neue Synthese von γ-Ketosäuren und β-Acyl-acrylsäureestern"
H.-J. Bestmann, G. Graf und H.Hartung
Ann. Chem. 706, 68 (1967)

"Über die Einhorn-Reaktion mit Aminosäuren, III"
C. Bernardelli, G. Bucher, F. Lauria, W. Logemann, G. Tosolini und G. Vita
Ann. Chem. 706, 243 (1967)

"Étude des Carbocations par Résonance Magnétique Nucléaire. II. Les Ions Carbonium Non Saturés"
H.Cheradame et G. Mavel
Ann. Chim. (Paris) 2, 91 (1967)

"Bemerkungen zu der Arbeit "A Note on the Spin-Lattice Relaxation of Nuclei in Liquids" von J. G. Powles und R. Figgins"
D. Fenzke und H.Schneider
Ann. Physik 19, 321 (1967)

"Carbonylation of Perhydro-9b-boraphenalene to Form Perhydro-9b-phenalenol. A New General Synthesis of Polycyclic Derivatives"
H. C. Brown, and E. Negishi
J. Am. Chem. Soc. 89, 5478 (1967)

"The Temperature-Dependent Behavior of 3-Methoxy-4-azatricyclo[3.3.2.0^{2,8}]deca-3,6,9-triene(Methoxy-azabullvalene)"
L. A. Paquette, and T. J. Barton, and E. B. Whipple
J. Am. Chem. Soc. 89, 5481 (1967)

"Nonequivalence of the Nuclear Magnetic Resonance Spectra of Enantiomers in Opitcally Active Solvents. IV. Assignment of Absolute Configuration"
W. H. Pirkle, and S.D. Beare
J. Am. Chem. Soc. 89, 5485 (1967)

"Magnetically Oriented Lyotropic Liquid Crystalline Phases"
K. D. Lawson, T. J. Flautt
J. Am. Chem. Soc. 89, 5489 (1967)

"Alkyldiazonium Cations. I. Direct Observation of the 2,2,2-Trifluoroethyldiazonium Ion"
J. R. Mohrig, and K. Keegstra
J. Am. Chem. Soc. 89, 5492 (1967)

"Phosphaboranes and Carbaphosphaboranes"
J. L. Little, J. T. Moran, and L. J.Todd
J. Am. Chem. Soc. 89, 5495 (1967)

"Proton Magnetic Resonance Spectra ofCalcium Nitrate Tetrahydrate Melts"
C. T.Moynihan and A.Fratiello
J. Am. Chem. Soc. 89, 5546 (1967)

"A Phosphorus-31 Nuclear Magnetic Resonance Study of Tertiary Phosphine Derivatives of Group VI Metal Carbonyls"
S. O. Grim, D. A. Wheatland and W. McFarlane
J. Am. Chem. Soc. 89, 5573 (1967)

"The Electronic Properties of Three-Membered Rings. I. σ_I and σ_R. Substituent Constants from F^{19} Nuclear Magnetic Resonance"
R. G. Pews
J. Am. Chem. Soc. 89, 5605 (1967)

"Transfer Reactions Involving Boron. XIV. The Stereochemistry of α-Transfer Reactions"
D. J. Pasto and J. Hickman
J. Am. Chem. Soc. 89, 5608 (1967)

"Photochemical Transformations of an o-Vinylbenzophenone"
K. R. Huffman and E. F. Ullman
J. Am. Chem. Soc. 89, 5629 (1967)

"The Photochemistry of 2,3-Homotropone"
L. A. Paquette and Osvaldo Cox
J. Am. Chem. Soc. 89, 5633 (1967)

"The Syntheses of Some Optically Active ε-Caprolactones"
C. G. Overberger and H. Kaye
J. Am. Chem. Soc. 89, 5640 (1967)

"Stereochemistry and Synthesis of α-Agarofuran"
H. C.Barrett and G. Büchi
J. Am. Chem. Soc. 89, 5665 (1967)

"1,3-Bridged Aromatic Systems. II. A New Synthesis of Metacyclophanes"
W. E. Parham and J. K.Rinehart
J. Am. Chem. Soc. 89, 5668 (1967)

"Hydrogen Cyanide Dimer. Aminocyanocarbene"
R. E. Moser, J. M. Fritsch, T. L. Westman, R. M. Kliss, and C. N. Matthews
J. Am. Chem. Soc., 89, 5673 (1967)

"Stable Carbonium Ions. XLV. Benzyl Cations"
J. M. Bollinger, M. B. Comisarow, C. A. Cupas, and G. A. Olah
J. Am. Chem. Soc. 89, 5687(1967)

"Stable Carbonium Ions. LI. Fluorobenzenonium Ions"
G. A. Olah and T. E.Kiovsky
J. Am. Chem. Soc. 89, 5692 (1967)

"Stable Carbonium Ions. LII. Protonated Esters and Their Cleavage in Fluorosulfonic Acid-Antimony Pentafluoride Solution"
G. A. Olah, D. H. O'Brien, and A. M. White
J. Am. Chem. Soc. 89, 5694 (1967)

"The Isolation, Structural Elucidation, and Synthesis of Solapalmitine and Solapalmitenine, Two Novel Alkaloid Tumor Inhibitors from Solanum triparitum"
S. M. Kupchan, A. P.Davies, S. J. Barboutis, H.K. Schnoes, and A. L.Burlingame
J. Am. Chem. Soc. 89, 5718 (1967)

"Reduction of gem-Halofluorocyclopropanes with Tri-n-butyltin Hydride"
T. Ando, F. Namigata, H. Yamanaka, and W. Funasaka
J. Am. Chem. Soc. 89, 5719 (1967)

"The Pinacol Rearrangement of 3-endo-Phenyl-2,3-exo,cis-Bornanediol. An endo-endo Hydride Migration"
A. W. Bushell, and P. Wilder, Jr.
J. Am. Chem. Soc. 89, 5721 (1967)

"An Anomalous Neber Rearrangement. Synthesis of α-Imino Ortho Esters"
K. R. Henery-Logan, and T. L. Fridinger
J. Am. Chem. Soc. 89, 5724 (1967)

"Ozonolysis. Evidence for Carbonyl Oxide Tautomerization and for 1,3-Dipolar Addition to Olefins"
P. R. Story and J. R. Burgess
J. Am. Chem. Soc. 89, 5726 (1967)

"Tosylhydrazones. V. Reaction of Tosylhydrazones with Alkyllithium Reagents. A New Olefin Synthesis"
R. H.Shapiro, and M. J. Heath
J. Am. Chem. Soc. 89, 5734 (1967)

"The Structure of Monensic Acid, a New Biologically Active Compound"
A. Agtarap, J. W. Chamberlin, M. Pinkerton, and L. Steinrauf
J. Am. Chem. Soc. 89, 5737 (1967)

"Structure, Isomerization, and Cleavage of 1,2-Bis (dichloroboryl)ethylene"
T. D. Coyle and J. J.Ritter
J. Am. Chem. Soc. 89, 5739 (1967)

"Graft Copolymerization of Methyl Methacrylate and Natural Rubber"
P. Ghosh, and P. K.Sengupta
J. Appl. Polymer Sci. 11, 1603 (1967)

"Lipid of Cancer Tissues. II. Neutral Glycolipids of Nakahara-Fukuoka Sarcoma Tissue"
J. Kawanami
J. Biochem. 62, 105 (1967)

"NMR Studies of Inorganic Fluorides. III. Si_3F_8"
R. B. Johannesen
J. Chem. Phys. 47, 955 (1967)

"Cyclocopolymerization ofBicyclopentene and Other Dicyclic Dienes with Sulfur Dioxide to Fused Ring Systems"
K. Meyersen and J. Y. C. Wang
J. Polymer Sic.: Pt. A-1 5, 1827 (1967)

"Studies on Tacticity of Polyacrylonitrile. II. High-Resolution Nuclear Magnetic Resonance Spectra of 2,4-Dicyanopentanes"
M. Murano and R. Yamadera
J. Polymer Sci.: Pt. A-1 5, 1855 (1967)

"Effect ofReaction Medium on Copolymerization of Acrylonitrile and Methyl Acrylate"
Z. Izumi and H. Kitagawa
J. Polymer Sci.: Pt. A-1 5, 1967 (1967)

"Synthesis of 5(6)-Vinylbenzimidazole and of 2-Vinylbenzimidazole"
C. G. Overberger, B. Kösters and T. St. Pierre
J. Polymer Sci.: Pt. A-1 5, 1987 (1967)

"Cyclopolymerization of Diastereomeric Diepoxides"
J. K. Stille and J. J. Hillman
J. Polymer Sci.: Pt. A-1 5, 2067 (1967)

"Stereoregularity of Poly(methyl Acrylate)"
K. Matsuzaki, T. Uryu, and A. Ishida, and M. Takeuchi
J. Polymer Sci.: Pt. A-1 5, 2167 (1967)

"Crystalline Poly-p-tert-butylstyrene"
F. L. Saunders
J. Polymer Sci.: Pt. A-1 5, 2187 (1967)

"Linear Polymers from Diepoxides"
R. S Bauer
J. Polymer Sci.: Pt. A-1 5, 2192 (1967)

"Formation of Cyclic Co-oligomers in Copolymerization of Acetaldehyde With Cyclohexyl Isocyanide"
T. Saegusa, N. Taka-ishi, and H. Fujii
J. Polymer Sci., Pt. B, 5, 779 (1967)

"NMR Study of Poly(Methyl Methacrylate): Diads and Triads, and Tetrads and Pentads"
K. C.Ramey
J. Polymer Sci., Pt. B, 5, 859 (1967)

"Concerning NMR Line Ordering and Multiplicity Owing to Tactic Structures in Polymers" (J. Polymer Sci. B, 4, 853-860, 1966)
W. M.Ritchey and F. J. Knoll
J. Polymer Sci., Pt. B, 5, 887 (1967)

"Polymerization of α-Methacrolein and the Structure of the Polymers"
I. V. Andreeva, M. M. Koton, Yu. P. Getmanchuk, L. Ya. Madorskaya, E. I. Pokrovskii and A. I. Koltsov
J. Polymer Sci.: Part C, No.16, 1409 (1967)

"Influence de l'Initiateur de Polymerisation et de la Masse Moleculaire du Produit Formé, sur l'Absorption des Ultrasons par les Solutions de Polyméthacrylate de Methyle"
C. Tondre et R. Cerf
J. Polymer Sci.: Part C, No.16, 1813 (1967)

"Infrarot- und Kernresonanzspektroskopische Untersuchungen der Umwandlungen des Polytetrafluoräthylens bei 20 und 20 C"
H. Kriegsmann, G. S ifert, K. Frigge und G. Dube
J. Polymer Sci.: Part C, No.16, 1843 (1967)

"An Automatic Swept-frequency Spin-echo Spectrometer for Nuclear Magnetic Resonance in Ferromagnetic Materials"
R. H.Dean, P. C. Riedi, R. G.Scurlock and T. H. Wilmshurst
J. Sci. Instr. 44, 761 (1967)

"Attenuation of Spin Echo Signals During Diffusion of Particles in Magnetic Fields with Changing Gradients"
J. Struct. Chem. USSR (Engl. Transl.) 7, 777 (1966)

"Nuclear Magnetic Relaxation in a Liquid Determined by Intermolecular Nuclear Spin Interactions. II. Quadrupole Relaxation"
M. Yul'met'ev
J. Struct. Chem. USSR (Engl. Transl.) 7, 783 (1966)

"Analysis of the NMR Spectra of H^1 and F^{19} Isomers of β-Fluorostyrene"
N. M. Sergeev, N. N. Shapet'ko, and G. V. Timofeyuk
J. Struct. Chem. (English Transl.) 8, 34 (1967)

"Investigation of the Reaction Products of Dialkylaminosilanes with Ketene and Diketene by the Method of High-Resolution PMR"
L. I. Petrovskaya, E. I. Fedin, V. D.Sheludyakov, and V. P. Kozyukov
J. Struct. Chem. (English Transl.) 8, 40 (1967)

"N^{14} NMR in Paramagnetic Complexes of Co^{2+} and Ni^{2+} with Ethylenediamine and Pyridine"
Yu. N. Molin and E. E. Zaev
J. Struct. Chem. (English Transl.) 8, 140 (1967)

"PMR of Esters of Silicon and Germanium Derivatives of Acetic Acid"
L. I. Petrovskaya, I. Yu. Belavin, G. S. Burlachenko, E. I. Fedin, Yu. I. Baukov, and I. F. Lutsenko
J. Struct. Chem. (English Transl.) 8, 141 (1967)

"Proton N.M.R.-spectroscopic Studies of Substituted Aromatic Compounds. I. Ring-current and Charge Effects on Para-hydrogen Chemical Shifts in Monosubstituted Benzenes"
H. P. Figeys and R. Flammang
Mol. Phys. 12, 581 (1967)

"Proton Resonance Spectra of N,N-dimethylaniline and Deuterated Derivatives"
E. O. Bishop, P. R.Carey and M. A. Jensen
Mol. Phys. 12, 589 (1967)

"N.M.R. Spectra of 1,3-difluoro-4,6-dinitrobenzene and Solvent Effects on Coupling Constants"
A. Kumar
Mol. Phys. 12, 593 (1967)

"Reaction of Alkylidenemalononitriles with Diazomethane"
J. Bus, H. Steinberg and Th. J. de Boer
Monatsh. Chem. 98, 1155 (1967)

"Konformations-Enantiomerie, 3. Mitt. Kinetik und thermodynamische Daten der Racemisierung von optisch aktivem 4,5-6,7-Dibenzo-1,2-dithia-cyclooctadien"
A. Lüttringhaus und H.J. Rosenbaum
Monatsh. Chem. 98, 1323 (1967)

"Reaktion der α, γ, δ, ζ -Tetraketone mit Selentetrachlorid und Schwefeldichlorid. Synthese von 2,5-Diacyl-3,4-dihydroxy-selenophenen und - thiophenen"
K. Balenovic, A. Deljac, B. Gaspert und Z. Stefanac
Monatsh. Chem. 98, 1344 (1967)

"Synthese des 2,3,4-Tri-O-acetyl-6-O-[(benzylthio) carbonyl]-α-D-galaktopyranosylbromids"
H. Libert und L. Schmid
Monatsh. Chem. 98, 1375 (1967)

"Heterocyclen, 51. Mitt.: Synthesen einiger disubstituierter 1,3,5-Triazine"
J.Kobe, B.Stanovnik und M.Tisler
Monatsh. Chem. 98, 1460 (1967)

"β-Polycarbonylverbindungen, 3.Mitt.: Uber Synthesen mit den Trimethylsilylestern der Acetessigsäure und Malonsäure. Ein neuer Weg zu Diacyl-methanen und Diacyl-essigsäureestern"
U. Schmidt und M.Schwochau
Monatsh. Chem. 98, 1492 (1967)

"Cyclocopolymerization ofBicyclopentene and Other Dicyclic Dienes with Sulfur Dioxide to Fused Ring Systems"
K. Meyersen and J. Y. C. Wang
J. Polymer Sic.: Pt. A-1 5, 1827 (1967)

"Studies on Tacticity of Polyacrylonitrile. II. High-Resolution Nuclear Magnetic Resonance Spectra of 2,4-Dicyanopentanes"
M. Murano and R. Yamadera
J. Polymer Sci.: Pt. A-1 5, 1855 (1967)

"Effect ofReaction Medium on Copolymerization of Acrylonitrile and Methyl Acrylate"
Z. Izumi and H. Kitagawa
J. Polymer Sci.: Pt. A-1 5, 1967 (1967)

"Synthesis of 5(6)-Vinylbenzimidazole and of 2-Vinylbenzimidazole"
C. G. Overberger, B. Kösters and T. St. Pierre
J. Polymer Sci.: Pt. A-1 5, 1987 (1967)

"Cyclopolymerization of Diastereomeric Diepoxides"
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J. Polymer Sci.: Pt. A-1 5, 2067 (1967)

"Stereoregularity of Poly(methyl Acrylate)"
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J. Polymer Sci.: Pt. A-1 5, 2167 (1967)

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J. Polymer Sci.: Pt. A-1 5, 2192 (1967)

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"NMR Study of Poly(Methyl Methacrylate): Diads and Triads, and Tetrads and Pentads"
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J. Polymer Sci., Pt. B, 5, 887 (1967)

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J. Struct. Chem. USSR (Engl. Transl.) 7, 777 (1966)

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M. Yul'met'ev
J. Struct. Chem. USSR (Engl. Transl.) 7, 783 (1966)

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J. Struct. Chem. (English Transl.) 8, 40 (1967)

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Yu. N. Molin and E. E. Zaev
J. Struct. Chem. (English Transl.) 8, 140 (1967)

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L. I. Petrovskaya, I. Yu. Belavin, G. S. Burlachenko, E. I. Fedin, Yu. I. Baukov, and I. F. Lutsenko
J. Struct. Chem. (English Transl.) 8, 141 (1967)

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H. P. Figeys and R. Flammang
Mol. Phys. 12, 581 (1967)

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Mol. Phys. 12, 589 (1967)

"N.M.R. Spectra of 1,3-difluoro-4,6-dinitrobenzene and Solvent Effects on Coupling Constants"
A. Kumar
Mol. Phys. 12, 593 (1967)

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Monatsh. Chem. 98, 1155 (1967)

"Konformations-Enantiomerie, 3. Mitt. Kinetik und thermodynamische Daten der Racemisierung von optisch aktivem 4,5-6,7-Dibenzo-1,2-dithia-cyclooctadien"
A. Lüttringhaus und H.J. Rosenbaum
Monatsh. Chem. 98, 1323 (1967)

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K. Balenovic, A. Deljac, B. Gaspert und Z. Stefanac
Monatsh. Chem. 98, 1344 (1967)

"Synthese des 2,3,4-Tri-O-acetyl-6-O-[(benzylthio) carbonyl]-α-D-galaktopyranosylbromids"
H. Libert und L. Schmid
Monatsh. Chem. 98, 1375 (1967)

"Heterocyclen, 51. Mitt.: Synthesen einiger disubstituierter 1,3,5-Triazine"
J.Kobe, B.Stanovnik und M.Tisler
Monatsh. Chem. 98, 1460 (1967)

"β-Polycarbonylverbindungen, 3.Mitt.: Uber Synthesen mit den Trimethylsilylestern der Acetessigsäure und Malonsäure. Ein neuer Weg zu Diacyl-methanen und Diacyl-essigsäureestern"
U. Schmidt und M.Schwochau
Monatsh. Chem. 98, 1492 (1967)

"Photochemical Reaction of 1,3,4,6-Tetraphenylhexa-1,3,5-triene"
W. G. Dauben and J. H. Smith
J. Org. Chem. 32, 3244 (1967)

"Ketimine Syntheses. Use of Titanium Tetrachloride in a New Procedure for Their Preparation"
H. Weingarten, J. P. Chupp and W. A. White
J. Org. Chem. 32, 3246 (1967)

"The Identification of Dehydrocorydalmine and a New Protoberberine Alkaloid, Stepharanine in Stephania glabra Tubers"
R. W. Doskotch, M. Y. Malik, and J. L. Beal
J. Org. Chem. 32, 3253 (1967)

"Isolation, Structure, and Synthesis of Hymenoxin, a New Flavone from Hymenoxys scaposa (Compositae)"
M. B. Thomas and T. J Mabray
J. Org. Chem. 32, 3254 (1967)

"Slow Rotation in a Thiourea Detected by Proton Magnetic Resonance"
T. H.Siddall, III, and W. E. Stewart
J. Org. Chem. 32, 3261 (1967)

"Temperature Dependence of the NMR Spectrum of Palladium bis-π-allyl"
J. K. Becconsall and S. O'Brien
J. Organometal. Chem. 9, P27 (1967)

"Beitrag zur Kenntnis von Allyl-Zink-Verbindungen II. Darstellung und Eigenschaften von Dimethallylzink und Dicrotylzink"
K.-H. Thiele, G. Engelhardt, J. Köhler und M Arnstedt
J. Organometal. Chem. 9, 385 (1967)

"Organotin and Organothallium Dithiophosphinates and Dithiocarbamates"
F. Bonati, S. Cenini and R. Ugo
J. Organometal. Chem. 9, 395 (1967)

"Preparation of Alkylsilicon Hydrides"
E. A.Groschwitz, W. M. Ingle and M. A. Ring
J. Organometal. Chem. 9, 421 (1967)

"Organometallic Acetylene Chemistry. II. Disubstituted Acetylenes of the Type $R_3MC{\equiv}CM'R_3$"
W.Findeiss, W.Davidsohn and M. C.Henry
J. Organometal. Chem. 9, 435 (1967)

"Carbonyl-π-Allyl Complexes of Molybdenum and Tungsten"
C. G. Hyll and M. H. B. Stiddard
J. Organometal. Chem. 9, 519 (1967)

"π-Allylic Complexes of Rhodium(III) and Platinum(II) I. Preparation, Properties and Structure"
H. C. Volger and K. Vrieze
J. Organometal. Chem. 9, 527 (1967)

"π-Allylic Complexes of Rhodium(III) and Platinum(II) II. Intramolecular Rearrangement of the Allyl Ligand as Influenced by Group V Donor Ligands"
K. Vrieze and H. C.Volger
J. Organometal. Chem. 9, 537 (1967)

"Proton Magnetic Resonance Spectra of Some Dimethyl-lead(IV) Complexes"
Y. Kawasaki
J. Organometal. Chem. 9, 549 (1967)

"Spiro[4.4]nona-1,3-dieneiron tricarbonyl"
G. F. Grant and P. L. Pauson
J. Organometal. Chem. 9, 553 (1967)

"N-Halogen-Silylamine II. Zur Darstellung von N-Halogen-Silyaminen"
N. Wiberg und F. Raschig
J. Organometal. Chem. 10, 15 (1967)

"N-Halogen-Silyamine III. Zur Chemie der N-Halogen-Hexamethyldisilazane"
N. Wiberg, F. Raschig und K. H.Schmid
J. Organometal. Chem. 10, 29 (1967)

"Organometallic Photochemistry. Photochemistry of Some Acyclic Ketosilanes"
H. G.Kuivila and P.L. Maxfield
J. Organometal. Chem. 10, 41 (1967)

"New Sulfoxide and Amide Complexes of Methyltin Cations"
V. G. Kumar Das and W. Kitching
J. Organometal. Chem. 10, 59 (1967)

"Some Ferrocene-Substituted Carbosilanes"
M. Kumada, H. Tsunemi and S. Iwasaki
J. Organometal. Chem. 10, 111 (1967)

"Synthesis of π-(β-Chlorovinyl Ketone) Tetracarbonyl-iron Complexes"
A. N. Nesmeyanov, K. Ahmed, L. V.Rybin, M. I. Rybinskaya and Yu. A. Ustynyuk
J. Organometal. Chem. 10, 121 (1967)

"Some New 5,10-Dihydrophenazastannine Derivatives. The Novel Conversion of 5,10,10-trimethyl-5,10-dihydrophenazastannines into Their Phosphorus(III) Analogs"
E. J. Kupchik and V. A. Perciaccante
J. Organometal. Chem. 10, 181 (1967)

"Evidence for an Iron-carbene Complex"
M. L. H.Green and C. R. Hurley
J. Organometal. Chem. 10, 188 (1967)

"Proton Relaxation Rates in Aqueous Solutions Containing Cupric Ion Chelated with Various Alkyl-Substituted Ethylenediamines"
M. Griffel
J. Phys. Chem. 71, 3284 (1967)

"Carbon-13 Satellite Interference with Chemical Shift Measurements in Cyclohexane-Diethylamine Solutions"
R. A. Murphy and J. C. Davis, Jr.
J. Phys. Chem. 71, 3361 (1967)

"Pulsed Nuclear Magnetic Resonance Study of Irradiated Lithium Hydride"
P. C. Souers, T. A. Jolly and C. F. Cline
J. Phys. Chem. Solids 28, 1717 (1967)

"Proton and Deuteron Magnetic Resonances in Glycine Compounds"
V. Saraswati and R. Vijayaraghavan
J. Phys. Soc. Japan 23, 590 (1967)

"Nuclear Spin Lattice Relaxation Time of V^{51} Impurity in Fe Metal in Applied Magnetic Field"
M. Kontani and J. Itoh
J. Phys. Soc. Japan 23, 646 (1967)

"F^{19} Magnetic Resonance in Polycrystalline VF_3"
V. Sarawati
J. Phys. Soc. Japan 23, 647 (1967)

"Polymers of the Vinyl Esters of Perchlorocyclopentadiene Adducts of Petroselinic and Oleic Acids"
R. Liepins and C. S. Marvel
J. Polymer Sci.: Pt. A-1 5, 1809 (1967)

"Synthesis of the Methyl D-Allopyranosides and of D-Allose from 1,2:5,6-Di-O-Isopropylidene-3-O-p-Tolylsulfonyl-α-D-Glucofuranose"
R. Ahluwahlia, S. J. Angyal and M. H. Randall
Carbohyd. Res. 4, 478 (1967)

"Synthesis and Properties of Anomerically Unsubstituted Hepta-O-Acetyl Disaccharides"
R. M. Rowell and M. S. Feather
Carbohyd. Res. 4, 486 (1967)

"The Preparation of Amino Sugars from Methyl Glycopyranosiduloses: Methyl 4-Acetamido-4,6-Dideoxy-α-L-Talopyranoside"
S. W.Gunner, W. G. Overend and N. R. Williams
Carbohyd. Res. 4, 498 (1967)

"The Favored Conformation of 2,3,4-tri-O-acetyl-β-D-xylopyranosyl Fluoride and Other Pentopyranosyl Fluorides: the Anomeric Effect of a Fluorine Substituent"
L. D. Hall and J. F. Manville
Carbohyd. Res. 4, 512 (1967)

"TheStereospecificity of Long-range Coupling Constants of Saturated Carbohydrate Derivatives"
L. D. Hall, J. F. Manville and A. Tracey
Carbohyd. Res. 4, 514 (1967)

"Synthesis of O-β-D-Galactopyranosyl-(1→3)-O-β-D-Galactopyranosyl-(1→4)-D-Glucose"
D. Beith-Halahmi, H. M. Flowers and D.Shapiro
Carbohyd. Res. 5, 25 (1967)

"Nucleosides. XLI. The onformation of 1,3,4-Tri-OO Benzoyl-2-Deoxy-2-Fluoro-β-D-Ribose and of 1,3,4-Tri-O-Benzoyl-2-Deoxy-α- (And β-)-D-erythro-Pentose"
R. J. Cushley, J. F.Codington and J. J. Fox
Carbohyd. Res. 5, 31 (1967)

"Nucleophilic Displacement Reactions in Carbohydrates. The Formation of 1,4-anhydro-6-deoxy-2,3,-O-Isopropylidene-β-L-talopyranose (1,5-anhydro-6-deoxy-2,3-O-isopropylidene-α-L-talofuranose)"
J. S. Brimacombe and L. C. N. Tucker
Carbohyd. Res. 5, 36 (1967)

"Asymmetric Synthesis. Part I. A Stereoselective Synthesis of Benzylic Centres. Derivatives of 5-C-Phenyl-D-gluco-Pentose and 5-C-Phenyl-L-ido-Pentose"
T. D. Inch
Carbohyd. Res. 5, 45 (1967)

"Glycol-Cleavage Products from 1,2-O-Isopropylidene-α-D-Glucofuranose
T. D. Inch
Carbohyd. Res. 5, 53 (1967)

"Studies on Cyclic Polyols. Part IX. Directive Effects in the Reactions of Polysubstituted Cyclopentanes"
B. Tolbert, R. Steyn, J. A. Franks, Jr., and H. Z. Sable
Carbohyd. Res. 5, 62 (1967)

"A 4-Hydroxy-L-proline Glycoside of 2-amino-2-deoxy-D-glucose"
J.R. Vercellotti and E. K.Just
Carbohyd. Res. 5, 102 (1967)

"Über die Bildung gemischter Perchlorallen-Allen-Dimeren bei der Zersetzung von Natriumtrichloracetat in Gegenwart von Allenen"
E. V. Dehmlow
Chem. Ber. 100, 2779 (1967)

"Isolierung vonFontaphillin, Gentianin und 4-Aminonicotinsäure-methylester aus Blattextrakten von Fontanesia phillyreoides Labill"
H. Budzikiewicz, C. Horstamann, K. Pufahl und K. Schreiber
Chem. Ber. 100, 2798 (1967)

"σ-oder π-Bindung bifunktioneller Donatoren in monosubstituierten Metallcarbonylen"
J.-F. Guttenberger und W. Strohmeier
Chem. Ber. 100, 2807 (1967)

"Einfache Synthese von D-Idose aus D-Glucose durch mehrfache Acetoxonium-Ion-Umlagerungen. Darstellung eines stabilen Acetoxonium-Salzes der Tetraacetylidose"
H. Paulsen, W.-P. Trautwein, F. Garrido Espinosa und K. Heyns
Chem. Ber. 100, 2822 (1967)

"Über den Verlauf der Dehydrobromierung bei 4-Brom-2.2-dimethyl-cyclohexandion-(1.3)"
H. Stetter und H.-J. Sandhagen
Chem. Ber. 100, 2837 (1967)

"3.3'(5.5')-Bipyrazolyl-Derivate durch Oxydation des Diazomethan-Adduktes von Bis-[naphthochinon-(1.4)-yl-(2)]"
H. Brockmann und Z. Zeeck
Chem. Ber. 100, 2885 (1967)

"Weitere Versuche mit Acetessigaldehyd in der Benzo[a]chinolizin-Reihe sowie eine einfache Allylierungsreaktion"
H. J. Teuber und H.-C. Jochum
Chem. Ber. 100, 2930 (1967)

"Über den Einfluß der Konformation auf die Bildung von Bicyclo[3.1.1]-bzw.-[3.2.0]heptanonen-(6) und Hepten-(6)-säuren aus cis- und trans-2-Methyl-2-p-toluolsulfonyloxymethyl-4-tert.-butyl-cyclohexanon"
F. Nerdel, D. Frank und K. Rehse
Chem. Ber. 100, 2978 (1967)

"Acylierung von 1-Morpholino-cyclohexen-(1) mit Lactim-sulfonaten"
S. Hünig, W. Gräßmann, V. Meuer und E. Lücke
Chem. Ber. 100, 3024 (1967)

"Synthese langkettiger ω-Aminosäuren"
S. Hünig, W. Gräßmann, V. Meuer, E. Lücke, und W. Brenninger
Chem. Ber. 100, 3039 (1967)

"^{31}P-Resonanz und Bindungsverhältnisse in Imidothiophosphinaten"
A. Schmidpeter, H. Brecht und H. Groeger
Chem. Ber. 100, 3063 (1967)

"^{1}H-NMR-Spektroskopische Untersuchungen an Chromtricarbonyl-Komplexen Kondensierter Aromaten"
B. Deubzer, E. O. Fischer, H. P. Fritz, C. G.Kreiter, N. Kriebitzsch, H.D. Simmons jr. und B. R.Willeford jr.
Chem. Ber. 100, 3084 (1967)

"Über die Reaktion vonDiazofluoren mit Acetylen"
H. Reimlinger
Chem. Ber. 100, 3097 (1967)

"Darstellung und einige Eigenschaften von Phenylhydrazino-acetaldehyd-phenylhydrazon, insbesondere die Umsetzung zu Tetrahydro-1.2.4-triazin-Derivaten"
H. Simon, G. Heubach und H. Wacker
Chem. Ber. 100, 3101 (1967)

"Zum Mechanismus der Osazonbildung"
H. Simon, G. Heubach und H. Wacker
Chem. Ber. 100, 3106 (1967)

"Über die Dimerisierungsprodukte von α-Cyan-zimtsäureamiden"
G. Dietz, W. Fiedler und G. Faust
Chem. Ber. 100, 3127 (1967)

"Notiz über die Oxydation der Aporphin-benzylisochinolin-Alkaloide Thalicarpin und Thalmelatin"
H. B. Dutschewska und N. M. Mollov
Chem. Ber. 100, 3135 (1967)

"Extractives from Khaya senegalensis A. Juss"
G. A. Adesida, E. K. Adesogan, and D. S. H. Taylor
Chem. Commun. 790 (1967)

"2,3-Dicyanoquadricyclane. Synthesis and Isomerization"
J. R. Edman
J. Org. Chem. 32, 2920 (1967)

"Steroids. CCCV. Synthesis of 11-Hydroxy-1-methyl-19-norretrotestosterone"
P. Crabbe and A. Bowers
J. Org. Chem. 32, 2921 (1967)

"The Structure of Resistomycin"
W. Rosenbrook, Jr.
J. Org. Chem. 32, 2924 (1967)

"Orientational Effects in the Addition of Acetylthiolsulfenyl Chloride to Olefins"
W. H. Mueller and P. E. Butler
J. Org. Chem. 32, 2925 (1967)

"3-Hydroxydamsin, a New Pseudoguaianolide from Ambrosia Psilostachya DC (Compositae)
H. E. Miller and T. J. Mabry
J. Org. Chem. 32, 2929 (1967)

"The Preparation os Spiro[3,4]oct-1-ene"
C. F. Wilcox, Jr. and G. C. Whitney
J. Org. Chem. 32, 2933 (1967)

"The Preparation of Esters of 4-Alkyl-2,4-pentadienoic Acids by the P osphonate Modification of the Wittig Reaction"
R. J. Sundberg, P. A. Bukowick and F. O. Holcombe
J. Org. Chem. 32, 2938 (1967)

"4-Cycloheptatrienylidene-2,6-dibromocyclohexa-2,5-dienone. A Stable Quinocycloheptatriene"
J. J. Looker
J. Org. Chem. 32, 2941 (1967)

"Some Claisen Rearrangements in Heterocyclic Systems"
J. K. Elwood and J. W. Gates, Jr.
J. Org. Chem. 32, 2956 (1967)

"Heterocycles from Fluoro Ketones and Alkyl Isocyanates, 1,3-Oxazetidinones, 1,3,5-Dioxazines, and 1,3,5-Oxadiazines"
R. J.Shozda
J. Org. Chem. 32, 2960 (1967)

"The Synthesis of the Pyrido[2,1-a]isoindole System by an Intramolecular Photochemical Cyclization"
A. Fozard and C. K. Bradsher
J. Org. Chem. 32, 2966 (1967)

"Pyrolysis Products of Cycloalkano[a]pyrroles"
J. M. Patterson and S. Soedigdo
J. Org. Chem. 32, 2969 (1967)

"Cyclization of 1-Alkylamino-3-halo-2-alkanols to 1-Alkyl-3-azetidinols"
V. R. Gaertner
J. Org. Chem. 32, 2972 (1967)

"Nuclear Magnetic Resonance Spectra of Bicyclo[n.1.0] alkane Derivatives"
W. G. Dauben and W. T. Wipke
J. Org. Chem. 32, 2976 (1967)

"Oligomers of Allene. IV. Pentamers Formed in the Thermal Polymerization of Liquid Allene"
B. Weinstein and A. H. Fenselau
J. Org. Chem. 32, 2988 (1967)

"Resin Acids. XI. Configuration and Transformations of the Levopimaric Acid-p-Benzoquinone Adduct"
W. Herz, R. C. Blackstone and M. G. Nair
J. Org. Chem. 2992 (1967)

"Contribution to the Stereochemistry and Mechanisms of the Reduction of Enedione Systems by Zinc and by Lithium-Ammonia"
S. K. Pradhan, G. Subrahmanyam, and H. J. Ringold
J. Org. Chem. 32, 3004 (1967)

"Tautomerism of 2-Substituted Benzo[b]thiophenes. Ultraviolet Spectral Correlation of Tautomer Structure with Aromaticity"
G. W. Stacy and T. E. Wollner
J. Org. Chem. 32, 3028 (1967)

"Synthesis of Guanosine and Its Derivatives from 5-Amino-1-β-D-ribofuranosyl-4-imidazolecarboxamide. II. Ring Closure with Sodium Methylxanthate"
A. Yamazaki, I. Kumashiro, and T. Takenishi
J. Org. Chem. 32, 3032 (1967)

"Studies of Nucleosides and Nucleotides. XXXIV. Purine Cyclonucleosides. 4. Synthesis of a Cyclonucleoside Having an O Cyclo Linkage Derived from Guanosine"
M. Ikehara and K. Muneyama
J. Org. Chem. 32, 3039 (1967)

"Flavins. XIII. Rearrangement Reactions of 1,3,10-Trialkylflavinium Salts"
K. H. Dudley and P. Hemmerich
J. Org. Chem. 3049 (1967)

"Photolytic Reaction of Ethyl Azidoformate with Enol Acetates"
J. F. W.Keana, S. B. Keana, and D. Beetham
J. Org. Chem. 32, 3057 (1967)

"Concerning the Hydrolysis and Aminolysis of Phenyl N-Methylacetimidate"
M. Kandel and E. H. Cordes
J. Org. Chem. 32, 3061 (1967)

"Photocyclization of Methyl-o-benzyloxyphenylglyoxylate"
S. P. Pappas, B. C. Pappas, and J. E. Blackwell, Jr.
J. Org. Chem. 32, 3066 (1967)

"A Total Synthesis of 8-Isoestrone via Novel Intermediates. The Unique Salt Formation of 2-Methylcyclopentane-1,3-dione with Strong Acids"
R. D. Hoffsommer, D. Taub, and N. L. Wendler
J. Org. Chem. 32, 3074 (1967)

"Byckear Nagbetuc Resonance Studies on Acetylated 1-Thioaldopyranose Derivatives"
C. V. Holland, D. Horton, M. J. Miller, and N. S. Bhacca
J. Org. Chem. 32, 3077 (1967)

"Photochemically Induced Cyclization of Some Furyl- and Thienylethenes"
R. M. Kellogg, M. B. Groen, and H. Wynberg
J. Org. Chem. 32, 3093 (1967)

"On the Mechanism of Formation of p-Aminobenzyl Aryl Sulfides, Selenides, or Sulfones by the Acid-Catalyzed Condensations of Aromatic Amines with Formaldehyde and Arenethiols, Selenols, or Sulfinic Acids"
I. E. Pollak and G. F. Grillot
J. Org. Chem. 32, 3101 (1967)

"Reactions of Sulfides with t-Butyl Hypochlorite"
L. Skattebøl, B. Boulette, and S. Solomon
J. Org. Chem. 32, 3111 (1967)

"Arylation by Aromatic Nitro Compounds at High Temperatures. III. Reactions of Nitrobenzene with Aromatic Fluorine Derivatives"
E. K. Fields and S. Meyerson
J. Org. Chem. 32, 3114 (1967)

"NMR Relaxation Mechanisms at Solid-Gas Interfaces. CH_3OH, CD_3OH, and CH_3OD Adsorbed on Porous Glass"
D. Fiat and J. Reuben, and M. Folman
J. Chem. Phys. 46, 4453 (1967)

"Deuteron Nuclear Magnetic Resonance in Anthracene Crystals"
D. M. Ellis and J. L. Bjorkstam
J. Chem. Phys. 46, 4460 (1967)

"Nuclear-Spin-Internal-Rotation Coupling"
A. S. Dubin and S. I. Chan
J. Chem. Phys. 46, 4533 (1967)

"Calculation of Magnetic Susceptibility and Proton Shielding in Methane"
R. Hegstrom and W. N. Lipscomb
J. Chem. Phys. 46, 4538 (1967)

"Experimental Test of the Theory of Carbon Chemical Shifts in Conjugated Molecules"
H. L. Retcofsky, J. M. Hoffman, Jr. and R. A. Friedel
J. Chem. Phys. 46, 4545 (1967)

"Comments on the Bloom-Oppenheim Theory of Spin Relaxation"
J. W. Riehl, J. L. Kinsey, and J. S. Waugh
J. Chem. Phys. 46, 4546 (1967)

"NMR Studies of Single Crystal ND_4Cl"
M. Linzer and R. A.Forman
J. Chem. Phys. 46, 4690 (1967)

"Nuclear Magnetic Resonance Study of V_2O_5"
S. D. Gornostansky and C. V.Stager
J. Chem. Phys. 46, 4959 (1967)

"Excitation Energy in the Nuclear Spin-Spin Interaction"
E. Duval
J. Chem. Phys. 46, 4989 (1967)

"On the Hamiltonian Trace in High-Resolution NMR Analysis"
S. N.Stuart
J. Chem. Phys. 47, 342 (1967)

"ERRATUM: NMR Studies of Aqueous Electrolyte Solutions"
E. R. Mallinowski and P. S. Knapp
J. Chem. Phys. 47, 347 (1967)

"Proton Spin-Lattice Relaxation Temperature Dependence in Ammonium Bromide"
D. E.Woessner and B. S. Snowden, Jr.
J. Chem. Phys. 47, 378 (1967)

"Oxygen-17 NMR Linewidths as Influenced by Proton Exchange in Water"
S. W. Rabideau and H.G. Hecht
J. Chem. Phys. 47, 544 (1967)

"Theory of Isotropic Nuclear Resonance Shifts in Octahedral Co^{2+} Systems"
J. P. Jesson
J. Chem. Phys. 47, 579 (1967)

"Isotropic Nuclear Resonance Shifts in Some Trigonal Co(II) and Ni(II) Chelate Systems"
J. P. Jesson
J. Chem. Phys. 47, 582 (1967)

"Proton Magnetic Resonance of Dimethyl Phthalates"
J. C. Schug and B. P.Smith
J. Chem. Phys. 47, 849 (1967)

"Heterocyclic Conformational Analysis. Ring Inversion in Hexahydropyrimidines"
F. G.Riddell
J. Chem. Soc., B, Phys. Org. 560 (1967)

"Chlorination of αβ-Unsaturated Carbonyl Compounds. Part I. The Addition ofChlorine to Methyl trans-Cinnamate in Acetic Acid"
M C. Cabaleiro and M. D. Johnson
J. Chem. Soc., B, Phys. Org. 565 (1967)

"Conformational Changes inBridged Anthracene and Tetracene Systems"
B. J. Price and I. O. Sutherland
J. Chem. Soc., B, Phys. Org. 573 (1967)

"Cyclic Organophosphorus Compounds. Part VI. The Hydrolysis of Some 1,3,2-Dioxaphorpholans and 1,3,2-Dioxaphosphorinans in Aqueous Alkali-Dioxan Solution"
R. S. Edmundson and A. J. Lambie
J. Chem. Soc., B, Phys. Org. 577 (1967)

"The Stereoselective Reduction of Ketones by Aluminium Hydride"
D. C. Ayres and R. Sawdaye
J. Chem. Soc., B, Phys. Org. 581 (1967)

"The Tautomerism of 3-Hydroxyisoquinolines"
D. A. Evans, G. F. Smith and M. A. Wahid
J. Chem. Soc., B, Phys. Org. 590 (1967)

"Carbonium-ion Rearrangements in the Addition of Bromine to Some Olefins"
R. O. C. Norman and C. B. Thomas
J. Chem. Soc., B, Phys. Org. 598 (1967)

"Reactions of Lead Tetra-acetate. Part X. Mechanism of Oxidative Rearrangement of Two 3,3,3-Triaryl-propenes with Lead Tetra-acetate and in the Prévost Reaction"
R. O. C.Norman and C. B. Thomas
J. Chem. Soc., B, Phys. Org. 604 (1967)

"Mixed Halides of Phosphorus(V). Part IV. Addition of Fluorine to Phosphorus Trichloride"
T. Kesavadas and D. S.Payne
J, Chem. Soc., A, Inorg., Phys. Theoret. 1001 (1967)

"Palladium Hydride Complexes"
E. H. Brooks and F.Glockling
J. Chem. Soc., A, Inorg., Phys. Theoret. 1030 (1967)

"Transition Metal-Carbon Bonds. Part VIII. Methyl Derivatives of Iridium(III) containing Dimethyl-phenylphosphine or Dimethylphenylarsine as Ligands"
B. L. Shaw and A.C. Smithies
J. Chem. Soc., A, Inorg. Phys. Theoret. 1047 (1967)

"Organosilyl and Organogermyl Complexes of Platinum(II)"
F. Glockling and K. A. Hooton
J. Chem. Soc., A, Inorg., Phys. Theoret. 1066 (1967)

"Nuclear Magnetic Resonance Studies on Metal Complexes. Part V. Dimethylphenylphosphine and Dimethyl-phenylarsine Complexes of Rhodium(III)"
P. R. Brookes and B. L. Shaw
J Chem. Soc., A, Inorg., Phys. Theoret. 1079 (1967)

"The Preparation and Properties of Tungsten Chloride Fluorides"
G. W. Fraser, M. Mercer, and R. D. Peacock
J. Chem. Soc., A, Inorg., Phys. Theoret. 1091 (1967)

"Isolation of Yuzurimines A and B from Daphniphyllum Macropodum Miquel"
H. Sakurai, H. Irikawa, S. Yamamura and Y.Hirata
Tetrahedron Letters 2883 (1967)

"Synthesis of (±)-Isolongifolene"
R. R. Sobti and S.Dev
Tetrahedron Letters 2893 (1967)

"Synthesis of (±)-Bakuchiol Methyl Ether"
N. P. Damodaran and S.Dev
Tetrahedron Letters 2897 (1967)

"(-) Isodiospyrin - A Novel Binaphthaquinone Showing Atropisomerism and Other Extractives from Diospyros Chloroxylon"
G. S. Sidhu and K. K. Prasad
Tetrahedron Letters 2905 (1967)

"HMO-Berechnungen an Monosubstituierten trans-Stilbenen Ein Vergleich mit den kernmagnetischen Resonanzspektren"
H. Güsten und L. Kasinc
Tetrahedron Letters 2923 (1967)

"Nature of the Structural Cheange During the Mutarotation of Sugar Osazones"
L. Mester, E. Moczar, G. Vass and A. Schimpl
Tetrahedron Letters 2943 (1967)

"Stable Furanonium Ions"
U. E.Wiersum and H. Wynberg
Tetrahedron Letters 2951 (1967)

"H-N-C-H Coupling in the NMR Spectra of 3-Aminoacrylic Esters"
W. Bottomley, J. N. Phillips and J. G. Wilson
Tetrahedron Letters 2957 (1967)

"The Effect of Delocalization of Proton Spin-Spin Coupling Constants in Unsaturated Systems"
H. Günther
Tetrahedron Letters 2967 (1967)

"Determination de la Stereoisomerie D'α-Alcynols Tertiaires: Etude en R. M. R. des Oxydes de Phosphine Alleniques"
A. Sevin et W. Chodkiewicz
Tetrahedron Letters 2975 (1967)

"The Conversion of Friedlin into Methyl Tetranorshionanoate"
T. Takahashi, T. Tsuyuki, T. Hoshino and M. Ito
Tetrahedron Letters 2997 (1967)

"Reaction of Some Tropones with Ethyl Azodicarboxylate"
Y. Kitahara, I. Murata and T. Nitta
Tetrahedron Letters 3003 (1967)

"Oospolide: A Ten-Membered Ring Lactone Compound Isolated from Oospora Astringenes"
K. Nitta, Y. Yamamoto, and Y. Tsuda
Tetrahedron Letters 3013 (1967)

"Beckmann Fragmentation of α-Difluoramino Fluorimines; A Route to α-Difluoramino Fluorides"
T. E. Stevens
Tetrahedron Letters 3017 (1967)

"The Synthesis and R arrangement of an Allenamide"
W. B. Dickison and P. C. Lang
Tetrahedron Letters 3035 (1967)

"The Autoxidation of Alkylpyrroles"
E. Höft, A. R. Katritzky, and M. R. Nesbit
Tetrahedron Letters 3041 (1967)

"On the Synthesis of Aryl Methoxymethyl Sulfones"
R. J. Mulder, A. M. van Leusen and J. Strating
Tetrahedron Letters 3061 (1967)

"The Conformation of Open-chain Compounds I. Dipole Moments and Vicinal Proton Spin Coupling Constants of 1,1,2-Trichloro- and 1,1,2-Tribromoethane"
H. R. Buys, C. Altona and E.Havinga
Tetrahedron Letters 3067 (1967)

"The Steric Purity of Model Peptides by N.M.R. Spectroscopy"
B. Halpern and D. E. Nitecki and B. Weinstein
Tetrahedron Letters 3075 (1967)

"Solvolysis of Bridgehead-Substituted Bicyclo[2.2.0] Hexanes"
K. V. Scherer, Jr. and K. Satsumoto
Tetrahedron Letters 3079 (1967)

"Cyclopropanones. VI. Reaction of Cyclopropanone with Amines"
N. J. Turro and W. B. Hammond
Tetrahedron Letters 3085 (1967)

"The Structure of Mikanolide, A New Sesquiterpene Dilactone from Mikania Scandens (L.) Willd."
W. Herz, P. S. Santhanam, P. S.Subramaniam and J. J. Schmid
Tetrahedron Letters 3111 (1967)

"All-cis-1,6-Dichlorocyclodeca-1,3,6,8-Tetraene and all cis-1-Chlorocyclodeca-1,3,8-trien-6-yne, Derivatives of Dihydro-[10]Annulene"
K. Grohmann and F. Sondheimer
Tetrahedron Letters 3121 (1967)

"The Structure of Glycerol Acetals"
Gj. Stefanovic and Dj. Petrovic
Tetrahedron Letters 3153 (1967)

"The Conversion of Tri-O-Methylsolorinic Acid into Tetra-O-Methylaverythrin"
J. A. Elix, P. Roffey and M. V. Sargent
Tetrahedron Letters 3161 (1967)

"Structure and Stereochemistry of the Tetracyclic Diterpene Phorbol from Caroton Tiglium L"
E. Hecker, H. Bartsch, H. Bresch, M. Gschwendt, E. Härle, G. Kreibich, H. Kubinyi, H. U. Schairer, Ch. v. Szczepanski and H. W. Thielman
Tetrahedron Letters 3165 (1967)

"The Structure of Digacetigenin"
C. W. Shoppee, N. W. Hughes, R. E. Lack, and B. C. Newman
Tetrahedron Letters 3171 (1967)

"The Structure of Pseudoascaridole and Some of Its Chemistry"
J. Hudec and R. S. A.Kelly
Tetrahedron Letters 3175 (1967)

"Isolation and Structure Determination of Pachysandiol —A and a Note on the Stereochemistry of Cerin"
T. Kikuchi and T. Toyoda
Tetrahedron Letters 3181 (1967)

"Structure of Cyasterone, a Novel C_{29} Insect-Moulting Substance from Cyathula Capitata"
T. Takemoto, Y. Hikino, K. Nomoto and H. Hikino
Tetrahedron Letters 3191 (1967)

"Studies on the 1H-1-Pyrindine System"
A. G. Anderson, Jr. and H. L. Ammon
Tetrahedron 23, 3601 (1967)

"Hydrogenolysis of Bicyclic Monoterpene Epoxides in the Presence of Raney Nickel and Determination of the Structures of α- and β-3,4-Epoxy Caranes"
A. Suzuki, M. Miki and M. Itoh
Tetrahedron 23, 3621 (1967)

"Carbenoid Reaction. The Reaction of Dibromodiphenylmethane 9,9-Dibromofluorene and 9,9-Dichloro-9H-Tribenzo[2.c.e] Cycloheptene with Alkyllithium in the Presence of Olefins"
S. Murahashi and I. Moritani
Tetrahedron 23, 3631 (1967)

"Reduction of gem-Dibromocyclopropanes with Chromium(II) Sulphate"
H. Nozaki, T. Aratani and R. Noyori
Tetrahedron 23, 3645 (1967)

"A Novel Method of the Synthesis of Substituted Furans With the Use of Acetylenic Alkoxy β-Ketoesters"
Zh. A. Krasnaya, S. S. Yufit, T.S. Levchenko and V. F. Kucherov
Tetrahedron 23, 3687 (1967)

"Stereochemistry of 3-Hydroxy- and 3-Acetoxyflavanone Oximes"
G. Janzso, F. Kallay and I. Koczoş and L. Radics
Tetrahedron 23, 3699 (1967)

"Kernresonanzuntersuchungen zum Mills-Nixon-effekt. Ringstromdefekt bei Benzolmolekulen mit ankondensierten gesattigten ringen"
H. Meier, Eu. Muller und H. Suhr
Tetrahedron 23, 3713 (1967)

"NMR-Studien an Chinonanilen. der Einfluss Parastandiger substituenten im phenylring auf die thermische isomerisierung"
A. Reiker und H. Kessler
Tetrahedron 23, 3723 (1967)

"5-Bromo- and 5-Chloro-3-Thiolene-2-one Allylic Rearrangement in 5-Bromo-3-Thiolene-2-one"
H. J. Jakobsen
Tetrahedron 23, 3737 (1967)

"Alkylation of Indole Sodium Salt as Ambifunctional Nucleophilic System"
B. Cardillo, G. Casnati, A. Pochini and A. Ricca
Tetrahedron 23, 3771 (1967)

"The Reaction of Trithione and Its Salts With Amines
E. J. Smitny and W. Turner, and E. D. Morgan, and R. Robinson
Tetrahedron 23, 3785 (1967)

"Studies in the Biochemistry of Micro-organisms—VI. The Structure and Sterochemistry of the Phthalan Curvulol, and Other Metabolic Products of Curvularia Siddiqui"
A. Ali Qureshi and R. W. Richards
Tetrahedron 23, 3801 (1967)

"The Seed Alkaloids of Hunteria Umbellata"
C. W. L. Bevan, M. B. Patel and A. H. Rees, and A. G. Loudon
Tetrahedron 23, 3809 (1967)

"Separation and Characterization of the Alkaloids of Sarcococca Pruniformis"
J. M. Kohli, A. Zaman and A. R. Kidwai
Tetrahedron 23, 3829 (1967)

"Boron Trifluoride Catalysed Rearrangement of 1,2-Epoxy Lupan-3-one"
A. K. Ganguly, T. R. Govindachari and A. Manmade
Tetrahedron 23, 3847 (1967)

"The Photolysis of 1-Phenyl and 1-Cyano Substituted Isoquinoline N-Oxides to Benz[f]-1,2-oxazepines"
O. Buchardt, C. Lohse, A. M. Duffield and C. Djerassi
Tetrahedron Letters 2741 (1967)

"New Total Syntheses of (+)-Equilenin Methyl Ether and (+)-Isoequilenin Methyl Ether: Some Remarks on Polyphosphoric Acid Cyclisations"
A. J. Birch and G. S. R. Subba Rao
Tetrahedron Letters 2763 (1967)

"Stereochemistry of the Cyclopropyl-Allyl Rearrangements. 1. Thermal Ring Opening of Cyclopropyl Chlorides"
L. Ghosez, P. Laroche and G. Slinckx
Tetrahedron Letters 2767 (1967)

"Stereochemistry of the Cyclopropyl-Allyl Rearrangements. II. Thermal Ring Opening of the Chlorofluorocarbene-norbornene Adducts"
L. Ghosez, G. Slinckx, M. Glineur, P. Hoet and P. Laroche
Tetrahedron Letters 2773 (1967)

"Reactions des Aryldiazomethanes sur la N-Phenylmaleimide"
J. Jaz et W.Millet
Tetrahedron Letters 2777 (1967)

"Uber Sarsaparillosid, ein Saponinderivat mit Bisglykosidischer Furostanolstruktur"
R. Tschesche, G. Ludke und G. Wulff
Tetrahedron Letters 2785 (1967)

"Uber einige Neue Derivate des Dichlormaleinmids"
H.-G. Schmelzer, E. Degener und H. Holtschmidt
Tetrahedron Letters 2801 (1967)

"Dryobalanone, A 21-Hydroxydammarane Triterpene"
H. T. Cheung
Tetrahedron Letters 2807 (1967)

"The Structure of Zizanoic Acid, a Novel Sesquiterpene in Vetiver Oil"
F. Kido, H. Uda, and A. Yoshikoshi
Tetrahedron Letters 2815 (1967)

"The Total Synthesis of Chamaecynone"
T. Nozoe, T. Asao, M. Ando and K. Takase
Tetrahedron Letters 2821 (1967)

"The Stereochemisjry, and Ring-Closure and Ring-Opening Reactions of the Ferrocenophane Ethers"
K. Yamakawa and M. Hisatome
Tetrahedron Letters 2827 (1967)

"The Direct Formation of Cyclopropane Tricarboxylic Esters from Acyclic α-Haloesters"
E. Abushanab
Tetrahedron Letters 2833 (1967)

"Synthesis of Noradamantane Functionalized at C-2"
A. Nickon, G. D. Pandit, and R. O.Williams
Tetrahedron Letters 2851 (1967)

"A New Synthesis of Some 1-Alkyl-2,4-Diphenylpyrroles"
R. M. Rodebaugh and N. H.Cromwell
Tetrahedron Letters 2859 (1967)

"Flavinine, A New Morphinandienone Alkaloid from Cronton Flavens L."
K. L.Stuart and C. Chambers
Tetrahedron Letters 2879 (1967)

"Some Stereochemically Identical Biflavanols from the Bark Tannins of Acacia mearnsii"
S. E. Drewes, D. G. Roux, H. M. Saayman, S. H. Eggers, and J. Feeney
J. Chem. Soc., C, Org. 1302 (1967)

"Organometallic Reactions. Part VIII. Addition Reactions of Dibutyltin Dimethoxide and Related Compounds"
A. G.Davies and P. G. Harrison
J. Chem. Soc., C, Org. 1313 (1967)

"Synthesis of (±)-Eschscholtzine. The Absolute Configuration of (-)-Argemonine, (-)-Eschscholtzine, and Related Alkaloids"
A. C. Barker and A. R. Battersby
J. Chem. Soc., C, Org. 1317 (1967)

"Quinone Epoxides. Part II. Synthesis of (±)-Terreic Acid and Some Related Epoxides"
A. Rashid and G. Read
J. Chem. Soc., C, Org. 1323 (1967)

"Tembamide from Fagara hyemalis (St. Hill.) Engler"
S. M. Albonico and A. M. Kuck, and V. Deulofeu
J. Chem. Soc., C, Org. 1327 (1967)

"Application de la résonance magnétique nucléaire a l'étude de l'eau de constitution des solides divisés. I. Théorie des mesures"
J. Kermarec, J. Fraissard et B. Imelik
J. Chim. Phys. 64, 911 (1967)

"Essais de détermination de la structure associée des solutions alcooliques en solvant inerte par résonance magnétique nucléaire. I. Étude théorique de modèles de solutions idéales associées. Applications à un alcool stériquement encombré"
J. Biais, B. Lemanceau et C. Lussan
J. Chim. Phys. 64, 1019 (1967)

"Essais de détermination de la structure associée des solutions alcooiques en solvant inerte par résonance magnétique nucléaire. II. Étude du triéthylcarbinol. Modèle d'association en chaînes à constantes d'équilibres décroissantes"
J. Biais, B. Lemanceau et C. Lussan
J. Chim. Phys. 64, 1030 (1967)

"Etude par RMN des réorientations moleculaires dans le trichloro-1,2,3 trimethyl-et le dichloro-1,2 tetraméthyl-benzènen cristallisés"
C. Brot et I. Darmon
J. Chim. Phys. 64, 1061 (1967)

"Methods of Preparation and Properties of Organofluorine Compounds. V. Values of Chemical Shifts in NMR Spectra of Perfluorinated Nitrogen-Containing Heterocyclic Compounds"
S. V.Sokolov, A. P. Stepanov, L. N. Pushkina, S. A. Mazalov, and O. K. Shabalina
J. Gen. Chem. USSR. (English Transl.) 36, 1615 (1966)

"Methods of Preparation and Properties of Organofluorine Compounds. VI. Some Tertiary Perfluorinated Heterocyclic Amines and Their Transformation Products"
L. N. Pushkina, V. F. Follegov, A. P. Stepanov, S. A. Mazalov, and S. V. Sokolov
J. Gen. Chem. USSR (English Transl.) 36, 1620 (1966)

"Phosphorus-Containing Heterocycles. VIII. Condensations of Cyclic Alkylene Phosphorochloridites With α,β-Unsaturated Acids"
K. I. Novitskii, N. A.Razumova, and A. A. Petrov
J. Gen. Chem. USSR (English Transl.) 36, 1649 (1966)

"Orientation in the Electrophilic Halogenation of o- and m-Barenes"
V. I. Stanko, Yu. T. Struckhov, A. I. Klimova, L. V. Bryukhova, and G. K. Semin
J. Gen. Chem. USSR (English Transl.) 36, 1703 (1966)

"Fluorination of Amines With Cobalt Trifluoride"
V. S. Plashkin, G. P. Taturov, and S. V. Sokolov
J. Gen. Chem. USSR (English Transl.) 36, 1705 (1966)

"Reaction of Trichlorogermane With Ketene and Acetone"
T. K. Gar and V. F. Mironov
J. Gen. Chem. USSR (English Transl.) 36, 1706 (1966)

"7-Oxabicyclo[2.2.1]Hept-anes and -enes XXXV. Stereochemistry of the Addition of 2,4-Dinitrobenzenesulfenyl Chloride to 7-Oxabicyclo[2.2.1]Hept-ene and -adiene Derivatives"
N. S. Zefirov, A. F. Davydova, V. F. Bystrov, A. U. Stepanyants, and Yu. K. Yur'ev
J. Gen. Chem. USSR (English Transl.) 36, 1734 (1966)

"Fluoro Derivatives of Polyhydric Alcohols VI. Synthesis and Properties of 2-Methyl-4-Methylene-2-(Trifluoromethyl)-1,3-Dioxolane"
G. M. Zarubinskii, N. M.Geller, and S. N. Danilov
J. Gen. Chem. USSR (English Transl.) 36, 1782 (1966)

"Redistribution of Substituents on the Methylgermanium Moiety"
K. Moedritzer and J. R. Van Wazer
J. Inorg. Nucl. Chem. 29, 1571 (1967)

"Nuclear Magnetic Resonance Studies of Helix-Coil Transitions in Polyamino Acids"
J. L.Markley, D. H. Meadows and O. Jardetzky
J. Mol. Biol. 27, 25 (1967)

"Stereochemical Studies. VI. Asymmetric Selection via Elimination. Pyrolyses of Optically Active Sulfoxides to Optically Active Olefins"
S. I.Goldberg and M. S. Sahli
J. Org. Chem. 32, 2059 (1967)

"Trifluoromethylthiaolkanes, -olefins, and -acetylenes"
J. F. Harris, Jr.
J. Org. Chem. 32, 2063 (1967)

"The Thiazolo[2,3-b]thiazolium Cation. A New Aromatic System"
C. K.Bradsher and W. J. Jones, Jr.
J. Org. Chem. 32, 2074 (1967)

"The Thiazolo[2,3-b]oxazolium Cation. A New Aromatic System"
C. K. Bradsher and W. J. Jones, Jr.
J. Org. Chem. 32, 2079 (1967)

"The Role of Allylic Reversal in Free-Radical Thiol Additions to Allylic Halides"
D. N. Hall
J. Org. Chem. 32, 2082 (1967)

"The Structures of the Camphene Sultones"
J. Wolinsky, D. R.Dimmel, and T. W.Gibson
J. Org. Chem. 32, 2087 (1967)

""Aprotic" Solvolysis of p-Toluenesulfinic Esters"
J. W. Wilt, R. G. Stein, and W. J. Wagner
J. Org. Chem. 32, 2097 (1967)

"The Overoxidation of Carbohydrates with Sodium Metaperiodate"
B. G. Hudson and R. Barker
J. Org. Chem. 32, 2101 (1967)

"Photochemistry of Nitroso Compounds in Solutions. VII. Photoaddition of Nitrosamines to Various Olefins"
Y. L. Chow, C. Colon, and S. C. Chen
J. Org. Chem. 32, 2109 (1967)

"Photochemical Reactions with Phenols. I. The Photochemical Reaction of Benzophenone with 2,6-Di-t-butylphenol"
H.-D. Becker
J. Org. Chem. 32, 2115 (1967)

"Effect of β Substituents on the Reactions of Amines with α-Bromo-α,β-Unsaturated Ketones"
N. H. Cromwell and M. C. McMaster
J. Org. Chem. 32, 2145 (1967)

"Terpenoids from the Sonchus. VI. Tuberiferine from Sonchus Tuberifer Svent"
J. B. Barrera, J. L. Breton, M. Fajardo and A. G. Gonzalez
Tetrahedron Letters 3475 (1967)

"The Homo-Isoflavones, A New Class of Natural Product. Isolation and Structure of Eucomin and Eucomol"
P. Bohler and Ch. Tamm
Tetrahedron Letters 3479 (1967)

"Arsa-methin-cyanine"
G. Märkl und F. Lieb
Tetrahedron Letters 3489 (1967)

"Revised Structures of Diphyllin and Justicidin A"
T. R. Govindachari, S. S.Sathe and N. Viswanathan, and B. R. Pai, and M. Srinivasan
Tetrahedron Letters 3517 (1967)

"Novel Meliacins (Limonoids) from the Wood of Pseudocedrela Kotschyii"
D. E. U. Ekong and E. O. Olagbemi
Tetrahedron Letters 3525 (1967)

"Heterocyclic Steroids IX. A Convenient Synthesis of 14-Aza-11-Keto Steroids"
U. K. Pandit, (Mrs.) K. de Jonge, G. J. Koomen and H. O. Huisman
Tetrahedron Letters 3529 (1967)

"Nimbinin: A New Tetranortriterpenoid"
C. R. Narayanan, R. V. Pachapurkar and (in part) B. M. Sawant
Tetrahedron Letters 3563 (1967)

"Occurrence of 31-Norcycloartanol in Smilax Aspera Linn"
K. N. N. Ayengar and S. Rangaswami
Tetrahedron Letters 3567 (1967)

"Lansic Acid, a Bicyclic Triterpene"
A. K.Kiang, E. L. Tan, F. Y. Lim, K. Habaguchi, K. Nakanishi, L. Fachan and G. Ourisson
Tetrahedron Letters 3571 (1967)

"2,5,7-Triphenylnorcaradiene and Related Cycloheptatrienes"
T. Mukai, H.Kubota and T. Toda
Tetrahedron Letters 3581 (1967)

"Reaction of Benzyne With Disulfides"
I. Tabushi, K. Okazaki and R. Oda
Tetrahedron Letters 3591 (1967)

"Palladium Catalyzed Reaction of Ethylene, γ-Butyrolactone and Cupric Chloride"
T. Saegusa, T. Tsuda and K. Isayama
Tetrahedron Letters 3599 (1967)

"Camphor Enol and Homoenol Acetates"
G. C. Joshi, W. D. Chambers, and E. W. Warnhoff
Tetrahedron Letters 3613 (1967)

"Direct Observation of a 1,1'-di-α-Ferrocenyl Carbonium Ion"
C. U. Pittman, Jr.
Tetrahedron Letters 3619 (1967)

"Bemerkungen zu einem Formelvorschlag für "Silybin""
R. Hänsel und G. Schöpflin
Tetrahedron Letters 3645 (1967)

"Zur Struktur der Alkaliprodukte asu N-Phenacyl-Isochinoliniumsalzen"
H. Ahlbrecht, J. Fröhlich, U.Habermalz und F. Kröhnke
Tetrahedron Letters 3649 (1967)

"Zur Reaktion von Isochinoliniumsalzen mit Aromatischen Aldehyden"
H. Ahlbrecht und F. Kröhnke
Tetrahedron Letters 3653 (1967)

"The Establishment of Oxime Anchimerism Using Isotopic Techniques"
F. L.Scott and R. J. MacConaill
Tetrahedron Letters 3685 (1967)

"Transformation Reactions of α-Pinene II. Magnetic Anisotropy of the Cyclobutane System"
L. R. Subramanian and G. S. Krishna Rao
Tetrahedron Letters 3693 (1967)

"Addition to Steroid Polyenes IV. Ring D-fission and Ring C-Aromatization in 4,4-dimethyl-$\Delta^{5,7}$-steroidal Systems"
J. Lakeman, W. N. Speckamp and H. O. Huisman
Tetrahedron Letters 3699 (1967)

"Recherches dans la Serie des Azoles Protonation et Quaternarisation des Pyrazolines-3"
J.-L. Aubagnac, J.Elguero, R. Jacquier et D. Tizane
Tetrahedron Letters 3709 (1967)

"Synthese et Pyrolyse de Methylenequadricyclenes"
H. Prinzbach et J. Rivier
Tetrahedron Letters 3713 (1967)

"Effets de Solvants en R.M.N. II. Cetones Cyclopropaniques et Epoxydiques"
J. Seyden-Penne, P. Arnaud, J.-L. Pierre et M. Pia
Tetrahedron Letters 3719 (1967)

"Reactions of Epoxides Part XVI. The Boron Trifluoride Catalysed Rearrangement of 3α-Acetoxy-5,6α-Epoxy-5α-Cholestane"
J. M. Coxon, M. P. Hartshorn, C. N. Muir and K. E. Richards
Tetrahedron Letters 3725 (1967)

"Macrolide Antibiotics XV. Nystatin — The Structure of the Aglycone"
M. Ikeda, M. Suzuki and C. Djerassi
Tetrahedron Letters 3745 (1967)

"Intermolecular Proton Transfer from Bicyclooctyl Carbonium Ion to Cyclooctadiene"
I. Tabushi, K. Fujita and R. Oda
Tetrahedron Letters 3755 (1967)

"A C_{32} Triterpenoid from a Hong Kong Plant"
H. R. Arthur and S. N. Loo
Tetrahedron Letters 3767 (1967)

"Enamine Chemistry. I. Dipolar Cycloaddition Reaction of Enamines with Nitrones"
O. Tsuge, M. Tashiro and Y. Nishihara
Tetrahedron Letters 3769 (1967)

"Thermal Decomposition of Tropyl Acetoaldehyde Tosylhydrazone"
H. Tsuruta, K. Kurabayashi and T. Mukai
Tetrahedron Letters 3775 (1967)

"A New Bitter Principle of Isodon Japonicus Hara"
T. Kubota and I. Kubo
Tetrahedron Letters 3781 (1967)

"Mass Spectrometry in Structural and Stereochemical Problems. CXXXIV. Electron Impact Induced Alkyl and Aryl Rearrangements in α-Arylidene Cyclic Ketones"
R. L. N. Harris and F. Komitsky, Jr., and C. Djerassi
J. Am. Chem. Soc. 89, 4775 (1967)

"Configurational Correlation of Phosphinates by Nuclear Magnetic Resonance and Optical Rotatory Dispersion"
R. A. Lewis, O. Korpiun, and K. Mislow
J. Am. Chem. Soc. 89, 4786 (1967)

"The Structure and Configuration of 'Neutral Plasmalogens'"
H. H. O. Schmid, W. J. Baumann, and H. K. Mangold
J. Am. Chem. Soc. 89, 4797 (1967)

"Bicyclo[6.2.0]deca-2,4,6,9-tetraene"
S. Masamune, C. G. Chin, K. Hojo and R. T. Seidner
J. Am. Chem. Soc. 89, 4804 (1967)

"Epimerization of 2,4-Diphenylpentane, an Oligomer of Polystyrene"
A. D. Williams, J. I. Brauman, N. J. Nelson and P.J.Flory
J. Am. Chem. Soc. 89, 4807 (1967)

"The Structure of Streptozotocin"
R. R. Herr, H. K. Jahnke and A. D. Argoudelis
J. Am. Chem. Soc. 89, 4808 (1967)

"Structures of the Excited States of Furan Produced on Mercury ($^3P_1$) Photosensitization"
R. Srinivasan
J. Am. Chem. Soc. 89, 4812 (1967)

"Chemical Shift Nonequivalence of Diastereotopic Protons Due to Restricted Rotation aroung Aryl-Nitrogen Bonds in Substituted Amides"
Y. Shvo, E. C. Taylor, K. Mislow, and M. Raban
J. Am. Chem. Soc. 89, 4910 (1967)

"Photosensitized Internal Addition of Dienes to Olefins"
R. S. H. Liu and G. S.Hammond
J. Am. Chem. Soc. 89, 4936 (1967)

"Boron-Pyrazole Chemistry. III. Chemistry of Pyrazaboles"
S. Trofimenko
J. Am. Chem. Soc. 89, 4948 (1967)

"7,12-Dihydropleiadenes. VII. Application of Nuclear Overhauser Effects to Stereochemical Problems"
J. G. Colson, P. T. Lansbury, and F. D. Saeva
J. Am. Chem. Soc. 89, 4987 (1967)

"The Preparation and Properties of 1,2-Bis(triphenylphosphoranyl)benzocyclobutene"
A. T. Blomquist and V. J. Hruby
J. Am. Chem. Soc. 89, 4996 (1967)

"Further Studies of the Nuclear Magnetic Resonance Spectra of Unsymmetrical ortho-Disubstituted Benzenes"
W. B. Smith and J. L. Roark
J. Am. Chem. Soc. 89, 5018 (1967)

"Enzyme-Substrate Interaction by Nuclear Magnetic Resonance"
T. McL. Spotswood, J. M.Evans, and J. H. Richards
J. Am. Chem. Soc. 89, 5052 (1967)

"Dipole-Dipole Interactions of a Spin-1/2 Nucleus with a Quadrupole-Coupled Nucleus"
D. L. VanderHart, H. S. Gutowsky, and T. C. Farrar
J. Am. Chem. Soc. 89, 5056 (1967)

"The Chemistry ofBisiminium Cations. I. A Synthesis of 1-Deuterio Aldehydes"
R. A. Olofson and D. M.Zimmerman
J. Am. Chem. Soc. 89, 5057 (1967)

"Structure of Nuclear Magnetic Resonance. XIV. On the Anisotropic Effects of the Carbonyl Group"
G. J. Karabatsos, G. C. Sonnichsen, N. Hsi, and D. J.Fenoglio
J. Am. Chem. Soc. 89, 5067 (1967)

"Preparation and Magnetic Resonance of Nitroxide Polymers"
O. H. Griffith, J. F. W. Keana, S. Rottschaefer, T. A.Warlick
J. Am. Chem. Soc. 89, 5072 (1967)

"New Synthesis of Cyclobutadieneiron Tricarbonyl"
M. Rosenblum, and C.Gatsonis
J. Am. Chem. Soc. 89, 5074 (1967)

"[1,2:5,6]Di[c]furocyclooctatetraene and [3,4-c] Furooctalene"
J. A.Elix, M. V. Sargent, and F. Sondheimer
J. Am. Chem. Soc. 89, 5080 (1967)

"The Photorearrangement of 7-Methylene-8-chloromethylenecycloocta-1,3,5-triene"
J. A. Elix, M. V. Sargent, and F.Sondheimer
J. Am. Chem. Soc. 89, 5081 (1967)

"Deamination of Methylenecyclopropylcarbinylamine"
A. Nishimura, H. Kato, and M. Ohta
J. Am. Chem. Soc. 89, 5083 (1967)

"The Stereochemistry of the Base Hydrolysis of trans-$[Co(NH_3)_4(^{15}NH_3)X]^{2+}$ Ions"
D. A.Buckingham, I. I. Olsen, and A. M. Sargeson
J. Am. Chem. Soc. 89, 5129 (1967)

"Proton Exchange and Mutarotation of Chelated Amino Acids via Carbanion Intermediates"
D. A. Buckingham, L. G. Marzilli, and A. M. Sargeson
J. Am. Chem. Soc. 89, 5133 (1967)

"Bis(triphenylphosphine) (π-allyl)rhodium Complexes"
C. A. Reilly and H. Thyret
J. Am. Chem. Soc. 89, 5144 (1967)

"Fluorocarbonyl Hypofluorite"
R. L. Cauble and G. H. Gady
J. Am. Chem. Soc. 89, 5161 (1967)

"Pathways Leading From Excited-State Reactant to Ground-State Products in Dienone Photochemistry. Mechanistic Organic Photochemistry. XXVI"
H. E. Zimmerman and J. O. Grunewald
J. Am. Chem. Soc. 89, 5163 (1967)

"Mass Spectrometry in Structural and Stereochemical Problems. CXXXVII. Examples of Interaction of Remote Functional Groups after Electron Impact"
M. M.Green and C. Djerassi
J. Am. Chem. Soc. 89, 5190 (1967)

"Photochemistry of Cycloalkenes. III. Ionic Behavior in Protic Media and Isomerization in Aromatic Hydrocarbon Media"
P. J.Kropp and H. J. Krauss
J. Am. Chem. Soc. 89, 5199 (1967)

"Spiroconjugation"
H. E. Simmons and T. Fukunaga
J.Am. Chem. Soc. 89, 5208 (1967)

"Infrared and Nuclear Magnetic Resonance Studies of Some Tin Phthalocyanines and Hemiporphyrazines"
L. E. Sutton and M. E. Kenney
Inorg. Chem. 6, 1869 (1967)

"Organometallic Compounds with Metal-Metal Bonds. XI. Some Cobalt Carbonyl Derivatives of Six-Coordinate Tin"
D. J. Patmore and W.A. G.Graham
Inorg. Chem. 6, 1879 (1967)

"The Reaction of Hexafluoroacetone with Silanes. II. Possible Ionic Intermediates"
A. F. Janzen and C. J. Willis
Inorg. Chem. 6, 1900 (1967)

"The Preparation and Some Reactions of Phosphoramidic Difluoride"
S. Kongricha and W. C. Preusse
Inorg. Chem. 6, 1915 (1967)

"Proton Magnetic Resonance Shifts and Spin Delocalization in Nickel(II) Complexes with Macrocyclic Schiff Base Ligands"
G. N. La Mar
Inorg. Chem. 6, 1921 (1967)

"Complexes Derived from the Reaction of Hexaamminenickel(II) Ion with Acetone"
N. J.Rose, M. S. Elder and D. H. Busch
Inorg. Chem. 6, 1924 (1967)

"Clarification of Discrepancies in the Characterization of Lanthanum Series Complexes of 2,2,6,6-Tetramethyl-3,5-heptanedione"
J. E. Schwarberg, D. R. Gere, R. E. Sievers, and K. J. Eisentraut
Inorg. Chem. 6, 1933 (1967)

"Structural vs. Ligand Field Strength Effects on Covalency in Pseudo-Tetrahedral Complexes of Cobalt(II) and Nickel(II) Dihalides, as Determined by Proton Magnetic R sonance"
G. N. La Mar
Inorg. Chem. 6, 1939 (1967)

"Photodecomposition of Dieldrin and Aldrin"
G. L. Henderson and D. G.Crosby
J. Agr. Food Chem. 15, 888 (1967)

"The Chemical Properties of Chlorodifluoramine"
Robert C. Petry
J. Am. Chem. Soc. 89, 4600 (1967)

"Copper(II) and Samarium(III) Catalysis of the Hydrolysis of Ethyl Glycinate-N,N-diacetic Acid
R. J. Angelici and B. E. Leach
J. Am. Chem. Soc. 89, 4605 (1967)

"Proton Magnetic Resonance Spectra of Platinum(II) Complexes. I. Pyramidal Configuration and Inversion at Sulfur in cis-Bis(dibenzyl sulfide)dichloroplatinum(II). Temperature and Solvent Effects on AB Chemical Shifts"
P. Haake and P. C. Turley
J. Am. Chem. Soc. 89, 4611 (1967)

"Proton Magnetic Resonance Spectra of Platinum(II) Complexes. II. cis- and trans-Bis(dialkyl sulfide)dichloroplatinum(II) Complexes. Mechanism of Inversion of Sulfur and Vicinal Platinum-Proton Couplings"
P. C. Turley and P. Haake
J. Am. Chem. Soc. 89, 4617 (1967)

"[3.2]Metacyclophanes. Conformation Studies
R. W. Griffin, Jr., and R. A. Coburn
J. Am. Chem. Soc. 89, 4638 (1967)

"Macro Rings. XXXV. Stereochemistry of [2.2]Paracyclophanyl Nucleus as a Neighboring Group in Solvolyses Reactions"
D. J. Cram and F. L. Harris, Jr.
J. Am. Chem. Soc. 89, 4642 (1967)

"Electrophilic Substitution at Saturated Carbon. XXXIII. The Stereochemical Fate of the α-Sulfonylcarbanion in Which Both Anion and Sulfone Groups are Incorporated in Five-Membered Ring Systems"
D. J. Cram and T. A. Whitney
J. Am. Chem. Soc. 89, 4651 (1967)

"2-Oxo-1,3-alkadiyl Diradicals. Dehalogenation of α,α'-Dihalo Ketones with Potassium Vapor"
R. G. Doerr and P. S. Skell
J. Am. Chem. Soc. 89, 4684 (1967)

"Tirmethylenemethane"
P. S. Skell and R. G. Doerr
J. Am. Chem. Soc. 89, 4688 (1967)

"Reaction of Triphenylmethyl with Diazomethane"
D. B. Denney and N. F. Newman
J. Am. Chem. Soc. 89, 4692 (1967)

"Insertion Reactions of Nortricyclene with Ethyl Diazoacetate"
R. R. Sauers and R. J. Kiesel
J. Am. Chem. Soc. 89, 4695 (1967)

"Aggregation of Metallochlorophylls"
L. J. Boucher and J. J. Katz
J. Am. Chem. Soc. 89, 4703 (1967)

"Chromic Acid Oxidation of Allyl Alcohols"
S. H. Burstein and H. J. Ringold
J. Am. Chem. Soc. 89, 4722 (1967)

"Sulfoxide-Carbodiimide Reactions. V. Reactions of 2,6-Disubstituted Phenols"
M. G. Burdon and J. G. Moffatt
J. Am. Chem. Soc. 89, 4725 (1967)

"Stable Carbonium Ions. XLVI. Protonated Acetyl- and Benzoylpyridinium Ions"
G. A. Olah and M. Calin
J. Am. Chem. Soc. 89, 4736 (1967)

"Stable Carbonium Ions. XLVII. Alkylcarbonium Ion Formation from Alkanes via Hydride (Alkide) Ion Abstraction in Fluorosulfonic Acid-Antimony Pentafluoride-Sulfuryl Chlorofluoride Solution"
G. A. Olah and J. Lukas
J. Am. Chem. Soc. 89, 4739 (1967)

"Stable Carbonium Ions. XLVIII. Halonium Ion Formation via Neighboring Halogen Participation. Tetramethylethylene Halonium Ions"
G. A. Olah and J. M. Bollinger
J. Am. Chem. Soc., 89, 4744 (1967)

"Stable Carbonium Ions. XLIV. Protonated Decarboxylic Acids and Anhydrides and Their Cleavage to Oxocarbonium Ions"
G. A. Olah and A. M. White
J. Am. Chem. Soc. 89, 4752 (1967)

"Stable Carbonium Ions. L. Protonated Imines"
G. A. Olah and P. Kreienbuhl
J. Am. Chem. Soc. 89, 4756 (1967)

"1-Cyano-km2m3-triazole-α-Diazo-N-cyanoimine Tautomers from Cyanogen Azide and Acetylenes"
M. E. Hermes and F. D. Marsh
J. Am. Chem. Soc. 89, 4760 (1967)

"Mass Spectrometry in Structural and Stereochemical Problems. CXXXII. Electron Impact Induced Alkyl and Aryl Rearrangements in α,β-Unsaturated Cyclic Ketones"
R. L. N. Harris, F. Komitsky, Jr., and C. Djerassi
J. Am. Chem. Soc. 89, 4765 (1967)

"The Synthesis and Structure of α-Sinensal"
A. F. Thomas
Chem. Commun. 947 (1967)

"The Reaction of o-Chloranil with Dimethylbutadiene: a Claisen Rearrangement Intermediate"
M. F.Ansell and V. J. Leslie
Chem. Commun. 949 (1967)

"1,3,4-Oxadiazolium Salts"
G. V.Boyd
Chem.Commun. 954 (1967)

"Transannular Cyclopropyl Participation"
M. A.Eakin, J. Martin and W.Parker
Chem. Commun. 955 (1967)

"Evidence for Mercurinium Ion by Means of Nuclear Magnetic Resonance"
Y. Saito, and M. Matsuo
Chem. Commun. 961 (1967)

"The Sign of the Se-H Spin-Spin Coupling Constant in Benzyl Selenol"
W. McFarlane
Chem.Commun. 963 (1967)

"Organo-silicon and -tin Complexes of Ruthenium Carbonyl"
J. D. Cotton, S. A.R.Knox and F. G. A. Stone
Chem. Commun. 965 (1967)

"Synthesis of Abietane and Transformation of Enmein into Enantioabietane"
E. Fujita, T. Fujita and H.Katayama
Chem. Commun. 968 (1967)

"Rearrangement of an Unsaturated Epoxy-ester to a Cyclopropane Compound"
H. B. S.Conacher and F. D.Gunstone
Chem. Commun. 984 (1967)

"Structure of the Products of the Photochemical Rearrangement of the Adduct of Thebaine with Dimethyl Acetylenedicarboxylate"
K. Kanematsu and T. Sasaki
Chem.Commun. 988 (1967)

"Formation of Two Novel Heterocycles"
G. Tsatsas and E. Costakis
Chem.Commun. 991 (1967)

"The Structure of Jesaconitine"
L. H. Keith and S. W.Pelletier
Chem. Commun. 993 (1967)

"Redistribution of Dimethylberyllium with Beryllium Bromide in Diethyl Ether"
E. C. Ashby, R. Sanders, and J. Carter
Chem. Commun. 997 (1967)

"A New Example of Backbone Rearrangement in Steroids"
M. Fetizon and P. Foy
Chem. Commun. 1005 (1967)

"The Reaction of Methyl 2,3-Anhydro-β-D-ribo-pyranoside with Cyanide Ion: an Apparent cis-Opening of an Epoxide Ring"
N. R. Williams
Chem. Commun. 1012 (1967)

"Application of Benzene-induced Solvents Shifts in Proton Magnetic Resonance Spectra: the Structure of Dimethylmangostin and Mangostin"
F. Sheinmann
Chem. Commun. 1015 (1967)

"Chemical Shift Nonequivalence in a Sulphinamide and a Sulphenamide"
M. Raban
Chem. Commun. 1017 (1967)

"The Rearrangement of 20-Substituted Bisnorallocholanes and Derivatives"
(Miss) F. Kohen, R. A. Mallory and I. Scheer
Chem. Commun. 1019 (1967)

"Reactions of Chromindogenides with Dimethylsulphoxonium Methylide"
J. A.Donnelly, D. D. Keane, K. G. Marathe, D. C. Meaney and E. M. Philbin
Chem. Ind.(London) 1402 (1967)

"Photochemical Formation of Benzimidazoles from Aminated Quinonedibenzenesulphonimides"
I. Baxter and D. W. Cameron
Chem. Ind. (London) 1403 (1967)

"Synthesis of Benz[f]isoindoles"
J. E.Shields and J.Bornstein
Chem. Ind. (London) 1404 (1967)

"Reaction of Methyl 2,3-O-Isopropylidene-4-O-methanesulphonyl-α-L-rhamnoside with Sodium Azide and with Hydrazine"
J. Jary, P. Novak and Z. Ksandr
Chem. Ind. (London) 1490 (1967)

"A New Total Synthesis of the Macrolide Zearalenone"
N. N. Girotra and N. L. Wendler
Chem. Ind. 1493 (1967)

"A Phenomenological Treatment of the Absolute Signs of Spin-Spin Coupling Constants"
J. Schaefer, and R. Yaris
Chem. Phys. Letters 1, 173 (1967)

"Fatty Acids, Part 15. Nuclear Magnetic Resonance Spectra of the cis Octadecenoic Acids and of Some Acetylenic Acids"
F. D. Gunstone and I. A. Ismail
Chem. Phys. Lipids 1, 337 (1967)

"Triterpenes. XIII. Performic Acid Oxidation of Isopropenyl Group in 3,4-Secotriterpenes"
J. Klinot, E. Úlehlová and A. Vystrcil
Collection Czech. Chem.Commun. 32, 2890 (1967)

"Studium der Alterung des Naturparaffins Mittels der Magnetischen Kern-Resonanz-Methode"
M. Rakos
Collection Czech.Chem. Commun. 32, 2898 (1967)

"Polarisation dynamique : Observation de la transition de l'effet Overhauser à l'effet solide"
J. Leblond, J.-L. Motchane, P. Papon et J. Uebersfeld
Compt. Rend., Ser. B, 265, 423 (1967)

"Préparation de composés à fonction trivalente mixte"
C. Feugeas, D. Olschwang et M. Chatzopoulos
Compt. Rend. Ser. C, 265, 113 (1967)

"Action des amines sur le diméthoxy-4.6 chlorométhyl-3 phtalide"
C. Broquet et J.-P. Genet
Compt. Rend., Ser. C, 265, 117 (1967)

"Magnetic Resonance Studies on Copper*II) Complex Ions in Solution. III. NMR and EPR in Concentrated Ethylenediamine Solutions"
M. Alei, Jr., and W. Burton Lewis, A. B. Denison, and L. O. Morgan
J. Chem. Phys. 47, 1062 (1967)

"Nuclear Spin Relaxation in Methanol. The Effect of Proton Exchange"
M. Cocivera
J. Chem. Phys. 47, 1112 (1967)

"Fluorine Spin-Rotation Coupling and Spin-Lattice Relaxation in Fluorobenzene"
S. I. Chan
J. Chem. Phys. 47, 1191 (1967)

"Indirect Spin Saturation via Spin-Spin Interaction. I. AB+C System"
B. M. Fung
J. Chem. Phys. 47, 1409 (1967)

"Transfer of Fine Structure in Nuclear Magnetic Double Resonance"
R. Freeman and B. Gestblom
J. Chem. Phys. 47, 1472 (1967)

"Molecular Structure of Cyclopropane from Its Proton NMR in a Nematic Solvent"
L. C. Snyder and S. Meiboom
J. Chem. Phys. 47, 1480 (1967)

"Proton Magnetic Resonance Solvation Study of Aqueous Solutions of $AlCl_3$"
R. E. Schuster and A. Fratiello
J. Chem. Phys. 47, 1554 (1967)

"On the Correlation between ^{19}F—^{19}F geminal Coupling Constants and Chemical Shifts in Fluorovinyl Compounds"
A. J. Rest
J. Chem. Phys. 47, 1559 (1967)

"Reference Standard for Studies Involving Temperature Dependence of ^{19}F Chemical Shifts"
R. F. Spanier and E. R. Malinowski
J. Chem. Phys. 47, 1560 (1967)

"High-Resolution NMR Spectra of Polycyclic Hydrocarbons. II. Pentacyclic Compounds."
T. B. Cobb and J. D. Memory
J. Chem. Phys. 47, 2020 (1967)

"Effets de Structure sur les Spectres RMN de Styrenes Substitués. II. Séparation des effets"
J.-E. Dubois et J.-P. Doucet
J. Chim. Phys. 64, 1145 (1967)

"Reactions Between Organogallium Compounds and Nitriles"
J. R. Jennings and K. Wade
J. Chem. Soc., A, Inorg. Phys. Theor. 1222 (1967)

"Studies in Germyl Chemistry. Part II. Exchange Reactions of Silyl and Germyl Halides"
S. Cradock and E. A. V. Ebsworth
J. Chem. Soc., A, Inorg. Phys. Theor. 1226 (1967)

"Studies in Germyl Chemistry. Part III. Trigermylphosphine"
S. Cradock and E. A. V. Ebsworth, and G. Davidson and L. A. Woodward
J. Chem. Soc., A, Inorg. Phys. Theor. 1229 (1967)

"Some t-Butyl and t-Butoxy-derivatives of Zinc"
G. E. Coates and P. D. Roberts
J. Chem. Soc., A, Inorg. Phys. Theor. 1233 (1967)

"A Comparative Study of Some Molecular Addition Compounds of Group III_B Elements. Part I. The Metal-Oxygen Bond in Some Addition Compounds of Aluminium and Gallium Trihalides with Ethers"
R. L. Richards and A. Thompson
J. Chem. Soc., A, Inorg. Phys. Theor. 1244 (1967)

"A Comparative Study of Some Molecular Addition Compounds of Group III_B Elements. Part II. The Metal-Sulphur Bond in Some Addition Compounds of Aluminium and Gallium Trihalides with Organic Sulphides"
R. L. Richards and A. Thompson
J. Chem. Soc., A, Inorg. Phys. Theor. 1248 (1967)

"Metal Complexes of Unsaturated Tertiary Phosphines and Arsines, Part IV. Bromination of Chelate Complexes of Platinum(II) formed by Olefinic Tertiary Arsines"
M. A. Bennett, G. J. Erskine and R. S. Nyholm
J. Chem. Soc., A, Inorg. Phys. Theor. 1260 (1967)

"Heteronuclear Double Resonance: The Sign of the ^{29}Si-^{1}H Coupling Constant"
W. McFarlane
J. Chem. Soc., A, Inorg. Phys. Theor. 1275 (1967)

"Reactions Between Oximes and Organo-derivatives of Group III Elements. Part I. Acetoxime"
J. R. Jennings and K. Wade
J. Chem. Soc., A, Inorg. Phys. Theor. 1333 (1967)

"Azomethine Derivatives. Part II. Reactions Between Diphenylketimine and Trimethylaluminium, Triethylaluminium, and Triphenylaluminium"
K. Wade and B. K. Wyatt
J. Chem. Soc., A, Inorg. Phys. Theor. 1339 (1967)

"1,3-Dithia-2-stannacyclopentenes"
E. W. Abel and C. R. Jenkins
J. Chem. Soc., A, Inorg. Phys. Theor. 1344 (1967)

"Addition Reactions of Tris(triphenylphosphine)chlororhodium(I); Hydrido-, Alkyl, and Acyl Complexes; Carbon Monoxide Insertion and Decarbonylation Reactions"
M. C. Baird, J. T. Mague, J. A. Osborn and G. Wilkinson
J. Chem. Soc., A, Inorg. Phys. Theor. 1347 (1967)

"Cinnolines. Part X. The Site of Protonation of Cinnoline"
D. E. Ames, G. V. Boyd, R. F. Chapman, A. W. Ellis, A. C. Lovesey, and D. Waite
J. Chem. Soc., B, 748 (1967)

"Reactions of Lead Tetra-acetate. Part XI. The Oxidation of Styrene"
R. O. C. Norman and C. B. Thomas
J. Chem. Soc., B, Phys. Org. 771 (1967)

"Molecular Conformations. Part III. X-Ray Analysis of 17aβ-p-Bromobenzenesulphonyloxy-17α-methyl-19-nor-9β,10α-D-homoandrost-4-en-3-one"
R. T. Puckett and G. A. Sim, A. D. Cross and J. B. Siddall
J. Chem. Soc., B, Phys. Org. 783 (1967)

"High-resolution Fluorine Magnetic Resonance Spectra of Pentafluoroanisole"
I. J. Lawrenson, and R. G. Jones
J. Chem. Soc., B, Phys. Org. 797 (1967)

"Solvent Effects in Nuclear Magnetic Resonance Spectroscopy. Part XII. Correlations between Benzene-induced Solvent Shifts and Structure in Pyridines, Quinolines, Pyrroles, and Indoles"
J. Ronayne and D. H. Williams
J. Chem. Soc., B, Phys. Org. 805 (1967)

"Clemmensen Reduction. Part IV. 1,4-Diketones"
J. G. St. C. Buchanan and B. R. Davis
J. Chem. Soc., C, Org. 1340 (1967)

"Acid Cleavage of 6-Methoxy-2-(2,4,6-trimethoxybenzoyl)coumaran-3-one"
R. Bryant and D. L. Haslam
J. Chem. Soc., C, Org. 1345 (1967)

"The Acid Catalyzed Ring Opening of 1-Oxaspiro[2.6] Nonane. A 1,5 Hydrogen Shift"
L. H.Schwartz, M. Feil, A. J. Kascheres, K. Kaufmann, and A. M. Levin
Tetrahedron Letters 3785 (1967)

"Stereochemistry of Cationic Addition -π,π Transannular Cyclization of 1,5-Cyclooctadiene"
I. Tabushi, K. Fujita and R. Oda
Tetrahedron Letters 3815 (1967)

"The Syntheses of Justicidin B and Related Compounds"
K. Munakata, S. Marumo and K. Ohta, and Y.-L. Chen
Tetrahedron Letters 3821 (1967)

"Reaction of Benzyne With Carbon Disulfide"
I. Tabushi, K. Okazaki and R. Oda
Tetrahedron Letters 3827 (1967)

"Simultaneous Production of Isomeric Di- and Mono-Glucopyranosyl Hypoxanthines. (Synthesis in Nucleoside Antibiotics, IV)"
T. Hashizume and H. Yamazaki
Tetrahedron Letters 3839 (1967)

"Isomerie und Tautomerie bei N-Halogen-Guanidinen und -Amidinen"
A. Heesing and G. Maleck
Tetrahedron Letters 3851 (1967)

"Heterocycles from Isocyanides, II. A New Indole Synthesis"
B. Zeeh
Tetrahedron Letters 3881 (1967)

"Heterocyclic Steroids X. Synthesis of 12-Aza-11Keto and 12-Oxa-11-Keto Steroids"
U. K. Pandit and H. O. Huisman
Tetrahedron Letters 3901 (1967)

"Veralkamine, A Novel Type of Steroidal Alkaloid with A 17β-Methyl-18-Nor-17-Isocholestante Carbon Skeleton"
J. Tomko, A. Vassova, G.Adam, K.Schreiber, and E. Hohne
Tetrahedron Letters 3907 (1967)

"NMR Spectra ofSome Secondary Substituted Adamantanes Part I. 2-Mono-Substituted Adamantanes"
F. W. van Deursen and P. K.Korver
Tetrahedron Letters 3923 (1967)

"A Novel Fragmentation Reaction of α,β-Epoxyketones the Synthesis of Acetylenic Ketones"
M. Tanabe, D. F. Crowe, and R. L. Dehn
Tetrahedron Letters 3943 (1967)

"A Novel Product from Certain Lewis Acid-Catalyzed Camphene-Formaldehyde Reactions"
A. T. Blomquist and R. J.Himics
Tetrahedron Letters 3947 (1967)

"Reaction of N,N-Dichlorourethan With Ethers. A Novel Cleavage-Chlorination Reaction"
T. A. Foglia and D. Swern
Tetrahedron Letters 3963 (1967)

"A Facile Synthesis of an Aminal of Bicyclo[3.1.0] Hexan-6-one and of Endo-6-Piperidinobicyclo[3.1.0] Hexane"
J. Szmuszkovicz, E.Cerda, M. F.Grostic and J. F. Zieserl, Jr.
Tetrahedron Letters 3969 (1967)

"The Photolysis of 4,6,6-Trimethyl-5,6-Dihydro-2(1H)-Pyridone. A Novel Photochemical Cleavage Reaction"
E. Cavalieri and D. Gravel
Tetrahedron Letters 3973 (1967)

"Correlation of Methyl Signals in 3β-Hydroxyoleanenes"
S. Ito, M. Kodama and M. Sunagawa
Tetrahedron Letters 3989 (1967)

"Hydrolyse von Verbindungen, die die Trichlorphosphazo-Gruppe enthalten"
W. Haubold und M. Becke-Goehring
Z. Anorg. Allgem. Chem. 352, 113 (1967)

"Untersuchungen zur katalytischen Dehydratisierung an feinverteiltem α-Bor"
H.J. Becker und L. Marosi
Z. Anorg. Allgem Chem. 352, 206 (1967)

"Protonenspinrelaxation in kristallinem Benzol"
U. Haeberlen und G. Maier
Z. Naturforsch. 22a, 1236 (1967)

"Untersuchungen der kernmagnetischen Resonanz von Phosphorverbindungen, XV. ^{31}P-Kernresonanzspektren deuterierter Phosphorverbindungen"
E. Fluck und H. Binder
Z. Naturforsch. 22b, 805 (1967)

"^{1}H-KMR-Spektren substituierter, paramagnetischer Bis-cyclopentadienyl-metall-Komplexe"
H. P. Fritz, H.J. Keller und K. E.Schwarzhans
Z. Naturforsch. 22b, 891 (1967)

"Stochastische Theorie der magnetischen Relaxation. II"
R. Angstmann
Z. Phys. 205, 56 (1967)

"The Chlorination of 1-Methylnaphthalene by Molecular Chlorine"
G. Cum, P. B. D. de la Mare, and M. D. Johnson
J. Chem. Soc., C, Org. 1590 (1967)

"On Some Indenoisoxazole Derivatives"
G. Bianchi, R. Gandolfi, P. Grünanger, and A. Perotti
J. Chem. Soc., C, Org. 1598 (1967)

"Chemistry of Lichen Constituents. Part III. Haemathamnolic Acid: a New β-Orcinol Depside from Pertusaria rhodesiaca Vainio"
S. H. Harper and R. M. Letcher
J. Chem. Soc., C, 1603 (1967)

"Polyfluorocyclopentadienes. Part III. Diels-Alder Reactions of Perfluorocyclopentadiene"
R. E. Banks, A. C.Harris, R. N. Haszeldine and K. G. Orrell
J. Chem. Soc., C, 1608 (1967)

"Organic Photochemistry. Part V. The Illumination of Some Quinones in the Presence of Conjugated Dienes and other Olefinic Systems"
J. A. Barltrop and B. Hesp
J. Chem. Soc., C, Org. 1625 (1967)

"The Chemistry of 2-Azidotropone. Part I. Thermal and Photochemical Transformations"
J. D. Hobson and J. R. Malpass
J. Chem. Soc., C, Org. 1645 (1967)

"Synthesis of Nickel 1-Alkyltetradehydrocorrins"
D. A. Clarke, R. Grigg, R. L. N. Harris, A. W. Johnson, I. T.Kay and K. W. Shelton
J. Chem. Soc., C, Org. 1648 (1967)

"The Structures of Cytochalasins A and B"
D. C. Aldridge, J. J. Armstrong, R. N. Speake, and W. B. Turner
J. Chem. Soc., C, Org. 1667 (1967)

"Synthesis of 3-(2-Acetylaminoethyl)-6-hydroxy-5-methoxyindole (6-Hydroxymelatonin)"
D. E. Hall, and A. H. Jackson
J. Chem. Soc., C, Org. 1681 (1967)

"Nitrones. Part V. The Reaction of a Cyclic Nitrone with Diethyl Malonate"
L. S. Kaminsky and M. Lamchen
J. Chem. Soc., C, Org. 1683 (1967)

"Carotenoids and Related Compounds. Part XVII. Synthesis of Spirilloxanthin, 'OH-Spirilloxanthin,' and 3,4-Dehydrorhodopin"
D. F. Schneider and B. C. L. Weedon
J. Chem. Soc., C, 1686 (1967)

"The Ullmann Reaction. Part I. The Reaction of 2,3-Di-iodonitrobenzene with Copper Bronze"
K. Iqubal and R. C.Wilson
J. Chem. Soc., C, Org. 1690 (1967)

"Heterocyclic Rearrangements. Part III. A Novel Sulphur-containing Bicyclic System"
J. Ashby and U. Eisner
J. Chem.Soc.,C,Org. 1706 (1967)

"Naturally Occurring Quinones. Part IX. The Chemistry of Hydroxyperezinone"
D. A. Archer and R. H. Thomson
J. Chem. Soc., C, Org. 1710 (1967)

"The Synthesis of Some Substituted Pyoluteorins"
J. A. Elix and M. V.Sargent
J. Chem. Soc., C, 1718 (1967)

"Gallotannins. Part XIV. Structure of the Gallotannins"
E. Haslam
J. Chem. Soc., C, Org. 1734 (1967)

"1-Pnenethylisoquinoline Alkalids. Part I. Structure and Synthesis of (-)-Melanthioidine, a Bisphenyethylisoquinoline Alkaloid"
A. R. Battersby, R. B. Herbert, L. Mo, and F. Santavy
J. Chem. Soc., C, Org. 1739 (1967)

"A Simple Synthesis of Methyl 4-Deoxy-α-D-xylo-hexopyranoside ('Methyl 4-Deoxy-α-D-glucoside') 2,3,6-Triacetate"
S. D. Gero and R. D. Guthrie
J. Chem. Soc., C, 1761 (1967)

"Steroids. Part VIII. Cholesta-1,3,5-trien-7-one and its Dimer"
J. P. Connolly, A. R. Manning, and J. B. Thomson
J. Chem. Soc., C, Org. 1773 (1967)

"A New Triterpenoid Acid from Lenzites trabea"
W. Lawrie, J. McLean and J. Watson
J. Chem. Soc., C, 1776 (1967)

"The Synthesis of Tetrahydroisoquinolines from 1,4-Dihydro-3(2H)-isoquinolones"
J. Finkelstein and A. Brossi
J. Heterocycl. Chem. 4, 315 (1967)

"Synthesis of Vitamin B_6 Derivatives. III. 3-(4-Formyl-3-hydroxy-2-methyl-5-pyridyl)propionic Acid, An Analog of Pyridoxal Phosphate"
C. Iwata and D. E. Metzler
J. Heterocycl. Chem. 4, 319 (1967)

"Pyrazolo-N-hydroxyuracils from the Modified Lossen Rearrangement of vicinal Pyrazoledicarbohydroxamates"
L. Bauer and C. S.Mahajanshetti
J. Heterocycl. Chem. 4, 325 (1967)

"Reaction of the Thiolsulfonate Group with the Aromatic Nucleus: A New Ring Closure"
J. E. Dunbar and B. H. Tarnowski
J. Heterocycl. Chem. 4, 339 (1967)

"Quinazolines and 1,4-Benzodiazepines XXXVI. The Formation of 1,3-Dihydro and 1,5-Dihydro-1,4-benzodiazepines from Tosyl (2)- and Mesyl (2)- Substituted 1,3,4,5-Tetrahydro-5-phenyl-1,4-benzodiazepine Derivatives"
R. I. Fryer, D. Winter and L. H. Sternbach
J. Heterocycl. Chem. 4, 355 (1967)

"The Reaction of Methyl Propiolate with 2-Aminopyridines"
J. G.Wilson and W. Bottomley
J. Heterocycl. Chem. 4, 360 (1967)

"Chlorination of Isothiocyanates. V. 5-Imino-1,2,4-thiadiazolidin-3-ones"
G. Ottmann and H. Hooks
J. Heterocycl. Chem. 4, 365 (1967)

"Pyrolysis of Fluorodiazirines"
R. A. Mitsch, E. W. Neuvar and P. H. Ogden
J. Heterocycl. Chem. 4, 389 (1967)

"Synthesis of Substituted Pyridazino[4,5-c]pyridazines"
G. M. Singerman and R. N. Castle
J. Heterocycl. Chem. 4, 393 (1967)

"Synthesis of some Halogenated Quinolines"
M. Gordon, H. J. Hamilton, C. Adkins, J. Hay and D. E Pearson
J. Heterocycl. Chem. 4, 410 (1967)

"Conformational Analysis. The Trifluoromethyl Group"
E. W. Della
J. Am. Chem. Soc. 89, 5221 (1967)

"Racemization and Cleavage of Sulfoxides by Methyllithium"
J. Jacobus and K. Mislow
J. Am. Chem. Soc. 89, 5228 (1967)

"Mechanistic Aspects of the Anomalous Hydride Reduction of Cyclobutene Epoxides"
L. A. Paquette, A. A. Youssef, and M. L.Wise
J. Am. Chem. Soc. 89, 5246 (1967)

"Stereospecificity in Hydrogen Atom Transfer to the Vinyl Radicals Derived from the cis- and trans-t-Butyl α-Chloropercinnamates"
L. A.Singer and N. P.Kong
J. Am. Chem. Soc. 89, 5251 (1967)

"Stable Carbonium Ions. XXXI. p-Anisonium and Methylphenonium Ion Formation via Aryl Participation in Strong Acid Solution"
G. A. Olah, M. B.Comisarow, E. Namanworth, and B. Ramsey
J. Am. Chem. Soc. 89, 5259 (1967)

"Detoxication Mechanisms. II. The Iron-Catalyzed Dealkylation of Trimethylamine Oxide"
J. P. Ferris, R. D. Gerwe, and G. R. Gapski
J. Am. Chem. Soc. 89, 5270 (1967)

"Stereochemistry and Mechanism of a Tropone Photodimerization"
A. S.Kende, J.E.Lancaster
J. Am. Chem. Soc. 89, 5283 (1967)

"Allylic Bromination" by N-Bromoacetamide. A Reexamination"
S. Wolfe, D. V. C. Awang
J. Am. Chem. Soc. 89, 5287 (1967)

"1,3-Asymmetric Induction in a Transamination Reaction"
R. D. Guthrie, W. Meister, and D. J. Cram
J. Am. Chem. Soc. 89, 5288 (1967)

"The Juvenile Hormone. V. Synthesis of the Racemic Juvenile Hormone"
K. H. Dahm, B. M. Trost, and H.Röller
J. Am. Chem. Soc. 89, 5292 (1967)

"Correlations between Carbon-13 and Boron-11 Chemical Shifts. I. The Alkanes and Analogous Boron-Nitrogen Compounds"
B. F. Spielvogel, and J. M. Purser
J. Am. Chem. Soc. 89, 5294 (1967)

"On the Mechanism of Oxidation of Enolizable Nonmethyl Ketones by Base and Iodine. The Role of Atmospheric Oxygen"
L. A. Freiberg
J. Am. Chem. Soc. 5297 (1967)

"1,3-Dicarbanions of Phenylacetone and Some Other Multiple Anions"
C.-l. Mao, C. R. Hauser, and M. L. Miles
J. Am. Chem. Soc. 89, 5303 (1967)

"Synthesis of an 8,16-Methano-cis-[2.2]metacyclophane"
H. B. Renfroe, J. A. Gurney, L. A. R. Hall
J. Am. Chem. Soc. 89, 5304 (1967)

"A Stereospecific Base-Catalyzed Deuterium Exchange of Tricyclo[4.3.1.0]deca-2,4,7-triene"
P. Radilick and W. Rosen
J. Am. Chem. Soc. 89, 5308 (1967)

"Ionic Organoboranes. III. The 1-Methyl-2-tropenyliumyl-1,2-dicarbaclovododecaborane(12) Cation"
K. M. Harmon, A. B. Harmon, and B. C. Thompson
J. Am. Chem. Soc. 89, 5309 (1967)

"Carbon-13 Magnetic Resonance. VII. Steric Perturbation of the Carbon-13 Chemical Shift"
D. M. Grant and B. V. Cheney
J. Am. Chem. Soc. 89, 5315 (1967)

"Carbon-13 Magnetic Resonance. VIII. The Theory of Carbon-13 Chemical Shifts Applied to Saturated Hydrocarbons"
V. Cheney and D. M. Grant
J. Am. Chem. Soc. 89, 5319 (1967)

"Use of a Model for the Ring-Current Effect in Analysis of the Nuclear Magnetic Resonance Spectra of Di- and Triphenylcyclopropenium Ions"
D. G. Farnum and C. F. Wilcox
J. Am. Chem. Soc. 89, 5379 (1967)

"The Synthesis and Study of Pseudo-Aromatic Compounds. VII. The Analysis of the Nuclear Magnetic Resonance Spectra of 6-N,N-Dimethylaminofulvene, 1-Methyl-2-cyclopentadienylidene-1,2-dihydropyridine, and 1-Methyl-2-cyclopentadienylidene-2,3,4,5-tetrahydropyrrole"
J. H. Crabtree and D. J. Bertelli
J. Am. Chem. Soc. 89, 5384 (1967)

"Nonequivalence of the Nuclear Magnetic Resonance Spectra of Enantiomers in Optically Active Solvents. IV. Assignment of Absolute Configuration"
W. H. Pirkle and S. D. Beare
J. Am. Chem. Soc. 89, 5485 (1967)

"Nuclear Magnetic Resonance Emission and Enhanced Absorption in Rapid Organometallic Reactions"
H. R. Ward, and R. G. Lawler
J. Am. Chem. Soc. 89, 5518 (1967)

"Chemically Induced Dynamic Nuclear Polarization"
R. G. Lawler
J. Am. Chem. Soc. 89, 5519 (1967)

"An Electrophilic Displacement Reaction on Rhodium(I)"
R. Cramer
J. Am. Chem. Soc. 89, 5377 (1967)

"A Study of Nucleophilic Additions to Substituted Cyclopropenes"
T. C. Shields and P. D. Gardner
J. Am. Chem. Soc. 89, 5425 (1967)

"The Synthesis of 3-(2'-Deoxy-D-ribofuranosyl)adenine. Application of a New Protecting Group, Pivaloyloxymethyl (Pom)"
M. Rasmussen and N. J. Leonard
J.Am. Chem. Soc. 89, 5439 (1967)

"Crowded Anthracenes. II. Methylene-Methylarene Tautomerism and Long-Range Magnetic Shielding in 1,4,5,8-Tetraphenyl-9,10-dimethylanthracene"
S. Carlton Dickerman, and J. R. Haase
J. Am. Chem. Soc., 89, 5458 (1967)

"A General Synthesis of 4-Isoxazolecarboxylic Acids"
G. Stork, and J. E. McMurry
J. Am. Chem. Soc. 89, 5461 (1967)

"Metal π Complexes of the Sesquifulvalene and Calicene Systems"
M. Cais, and A.Eisenstadt
J. Am. Chem. Soc. 89, 5468 (1967)

"A R markable Case of Intramolecular Energy Transfer"
W. Herz, and M. G. Nair
J. Am. Chem. Soc. 89, 5474 (1967)

"TheReactivity of Organophosphorus Compounds. Part XXI. P=O Nucleophilicity in Phosphonates and Phosphoramidates"
J. I. G. Cadogan, R. K. Mackie, and (Miss) J. A. Maynard
J. Chem. Soc., C, Org. 1356 (1967)

"2-O-α-D-Galactopyranosylglycerol from Laurencia pinnatifida"
R. T.Aplin, L. J.Durham, Y. Kanazawa, and S.Safe
J. Chem. Soc., C, Org. 1346 (1967)

"Terpenoids. Part VI. The Complete Structure of Melianone"
D. Lavie, M. K. Jain, and I.Kirson
J.Chem. Soc.. C, Org. 1347 (1967)

"The Structure of Abbeokutone, a Diterpene from Didymosalpinx abbeokutae"
D. A. H.Taylor
J. Chem. Soc.. C, Org. 1360 (1967)

"Diels-Alder Reactions with Bi-indenyls. Part I."
W. Kemp and J.Spanswick
J. Chem.Soc., C, Org. 1380 (1967)

"Rearrangements of Oxo-dicyclopentadienes"
R. C. Cookson, J. Hudec, and R. O. Williams
J. Chem. Soc., C, Org. 1382 (1967)

"Interconversion of 5-Arylbicyclo[2,2,1]hept-2-en-7-ones and 6-Arylbicyclo[3,2,0]hept-3-en-2-ones by Acid and by Light"
L. S. Besford, R. C. Cookson, and J. Cooper
J. Chem. Soc., C, Org. 1385 (1967)

"Rearrangement of Polyaryl bicyclo[2,2,1]hept-2-en-7-ones and bicyclo-[3,2,0]hept-3-en-2-ones"
R. C. Cookson and D. C. Warrell
J. Chem. Soc., C, Org. 1391 (1967)

"Cytotoxic Compounds. Part IX. The Dimethanesulphonates of 3-Phenylthiopropane-1,2-diol and of 2-Phenylthiopropane-1,3-diol; their Reactions with Nucleophiles, and Rearrangements throught Sulphonium Ions"
M. V. A. Baig and L. N. Owen
J. Chem. Soc,, C, Org. 1400 (1967)

"Isolation of Mopanin from Colophospermum mopane and Interrelation of Flavonoid Components of Peltogyne spp."
S. E. Drewes and D. G. Roux
J. Chem. Soc., C, Org. 1407 (1967)

"The Reduction ofThiazolium Salts with Sodium Borohydride. Part II. The Mechanism and Stereochemistry of Reduction"
G. M. Clarke and P.Sykes
J. Chem. Soc., C, Org. 1411 (1967)

"Studies Related to the Chemistry of Melanins. Part IV. Oxidation of 5,6-Dimethoxyindoline"
S. N. Mishra and G. A.Swan
J. Chem. Soc., C, 1428 (1967)

"Studies Related to the Chemistry of Melanins. Part V. Investigations on the Specific Deuteriation of 5,6-Dihydroxyindoline and 5,6-Dihydroxyindole"
S. N. Mishra and G. A. Swan
J. Chem. Soc., C, 1431 (1967)

"Unsymmetrically Disubstituted Ferrocenes. Part I. Synthesis of 1,2-Disubstituted Ferrocenes by Metallation and Nucleophilic Substitution Reactions"
M. Hadlington, B. W.Rockett, and (in part) A. Nelhans
J. Chem. Soc., C, Org. 1436 (1967)

"Total Synthesis of (±)-Glaucine Methopicrate by Phenolic Oxidative Coupling"
T. Kametani and I. Noguchi
J. Chem. Soc., C, Org. 1440 (1967)

"The N-Methyl Derivatives of 1,3-Diamino-2-phenylnaphthalene"
G. R. Bedford and J. K. Landquist
J. Chem. Soc., C, Org. 1454 (1967)

"Diels-Alder Reactions with Bi-indenyls. Part II"
W. Kemp and J. Spanswick
J. Chem. Soc., C, Org. 1456 (1967)

"Studies in Photochemistry. Part IV. The Formation of 1- and 3-Cyclohexylbenz[h]isoquinoline in the Course of the Photocyclodehydrogenation of 4-Stilbazole to Benz[h]isoquinoline in Cyclohexane"
C. E. Loader and C. J. Timmons
J. Chem. Soc., C, Org. 1457 (1967)

"Studies on Epoxides. Part I. α-Substituted Epoxysteroids"
S. Greenfield, E. Glotter, D. Lavie and (in part) Y. Kashman
J. Chem. Soc., C, Org. 1460 (1967)

"Light-induced and Related Reactions of Quinones. Part IV. Reactions of Some p-Quinones with Aliphatic and Aromatic Aldehydes"
J. Malcolm Bruce, D. Creed, and J N. Ellis
J. Chem. Soc., C, Org. 1486 (1967)

"Aryl-substituted Derivatives of 4,4'-Bipyridylium Salts: their Spectroscopic Properties and Stereochemistry"
J. E. Downes
J. Chem. Soc., C, Org. 1491 (1967)

"Reactions of 5,6-Chrysenequinodimethane"
D. Cohen, I. T. Millar and K. E.Richards
J. Chem. Soc., C, Org. 1499 (1967)

"Syntheses of Javose (6-Deoxy-2-O-methyl-D-allose)"
J. S.Brimacombe and A.Husain
J. Chem. Soc., C, Org. 1503 (1967)

"Oxidative Replacement of the Hydrazino-group by Hydrogen and Deuterium in Azanaphthalenes"
A. Albert and G. Catterall
J. Chem. Soc., C, Org. 1533 (1967)

"Addition Reactions of Heterocyclic Compounds. Part XXVII. 2-Pyridones with Dimethyl Acetylenedicarboxylate"
R. M. Acheson and P. A. Tasker
J. Chem. Soc, C, Org. 1542 (1967)

"The Reaction of Tetraphenyldiphosphine with Aromatic Carboxylic Acids"
R. S. Davidson, R. A. Sheldton and S. Trippett
J. Chem. Soc., C, Org. 1547 (1967)

"Some Dimeric By-products of the Preparation of 2,4-Dimethoxybenzyl Cyanide from 2,4-Dimethoxy-β-nitrostyrene"
W. D. P. Burns, W. Cocker, T. B. H. McMurry and P. A. Staniland
J. Chem. Soc., C, Org. 1554 (1967)

"1,8-Naphthyridines. Part II. Preparation and Some Reactions of 2-Substituted Derivatives"
E. M. Hawes and D. G. Wibberley
J. Chem. Soc., C, Org. 1564 (1967)

"Keten. Part III. The Addition of Dimethylketen to Quinoline, Isoquinoline, and Phenanthridine"
R. N. Pratt and G. A. Taylor, (in part) S.A. Proctor
J. Chem. Soc., C, Org. 1569 (1967)

"Products from the Chlorination of Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, and Several Chloro-methylnaphthalenes with Sulphuryl Chloride"
P. B. D. de la Mare and H. Suzuki
J. Chem. Soc., C, Org. 1586 (1967)

"Organic Photochemistry. III. Photochemical Reaction of 5-Chlorotropolone and Its Methyl Ether
T. Mukai and T. Shishido
J. Org. Chem. 32, 2744 (1967)

"Synthesis of Terminal Perfluoromethylene Olefins"
M. H. Kaufman, J. D. Braun and J. G. Shdo
J. Org. Chem. 32, 2749 (1967)

"Purine Nucleosides. XV. The Synthesis of 8-Amino- and 8-Substituted Aminopurine Nucleosides"
R. A. Long, R. K. Robins and L. B. Townsend
J. Org. Chem. 32, 2751 (1967)

"The Platinum-Catalyzed Hydrogenation and Hydrogenolysis of Acelated Pyranosyl Halides, Tetra-O-acetyl-2-hydroxy-D-glucal and Tri-O-acetyl-D-glucal
G. R. Gray and R. Barker
J. Org. Chem. 32, 2764 (1967)

"Inside Yohimbanes. The Dodecahydrobenz[α]indolo[3,2-h]-quinolizine System
G. C. Morrison, W. A. Cetenko and J. Shavel, Jr.
J. Org. Chem. 32, 2768 (1967)

"Model Studies for Ring C. Formation in Pentacyclic Triterpene Synthesis"
P. Beak and B. M. Monroe
J. Org. Chem. 32, 2778 (1967)

"Dependence of the Rate, Reversibility, and Stereoselectivity of 17-Keto Steroid Alkynylation on the Alkyne and on the Alkali Metal"
T. C. Miller and R. G. Christiansen
J. Org. Chem. 32, 2781 (1967)

"The Preparation of α-Ketoaldehyde Derivatives from β-Keto Sulfoxides"
T. L. Moore
J. Org. Chem. 32, 2786 (1967)

"Nuclear Magnetic Resonance Spectra of Some Substituted Benzotriptycenes. The Effect of Steric Compression"
T. H. Regan and J. B. Miller
J. Org. Chem. 32, 2789 (1967)

"The Lithium-Ammonia Reduction of Benzofurans"
S. D. Darling and K. D. Wills
J. Org. Chem. 32, 2794 (1967)

"A General Synthetic System for 1,2,5-Thiadiazoles"
L. M. Weinstock, P. Davis, B. Handelsman and R. Tull
J. Org. Chem. 32, 2823 (1967)

"Ozonolysis of Polycyclic Aromatics. XIV. Ozonation of Pentaphene and Benzo[rst]pentaphene"
E. J. Moriconi and L. Salce
J. Org. Chem. 32, 2829 (1967)

"Methyl(2-thienyl)- and Methyl(2-furyl)cyclopolysiloxanes"
W. C. Hammann, C. F. Hobbs and D. J. Bauer
J. Org. Chem. 32, 2841 (1967)

"Reductions in the 7-Substituted Norbornadienyl System. A Synthesis of sny-7-Substituted Norbornenes"
B. Franzus, W. C. Baird, Jr., E. I. Snyder and J.H.Surridge
J. Org. Chem. 32, 2845 (1967)

"The Reduction-Methylation of Cyclohexenone Derivatives"
H. A. Smith, B. J. L. Huff, W. J. Powers, III and D. Caine
J. Org. Chem. 32, 2851 (1967)

"A Cyclic Sulfinate Ester. Preparation and Reactions of 1,2-Benzoxathian 2-Oxide"
E. N. Givens and L. A. Hamilton
J. Org. Chem. 32, 2857 (1967)

"Reduction of Aromatic Compounds with Alkali Metals in Amine Solvents and in Aprotic Liquids Containing Ammonia"
L. H. Slaugh and J. H. Raley
J. Org. Chem. 32, 2861 (1967)

"Peracetic Acid Oxidation of Hydrazones. II. Aliphatic Ketone and Aldehyde Alkylhydrazones"
B. T. Gillis and K. F. Schimmel
J. Org. Chem. 32, 2865 (,967)

"Solvent Effects and Other Factors in Carbenic and Cationic π Cyclizations. I. The Δ-Cyclohexenecarboxaldehyde p-Toluenesulfonylhydrazone System"
H. Babad, W. Felmon and J. B. Wood, III
J. Org. Chem. 32, 2871 (1967)

"Nucleophilic Opening of the Oxirane Rang of 1-Methyl-4-phenyl-3,4-epoxypiperidine"
R. E. Lyle and W. E. Krueger
J. Org. Chem. 32, 2873 (1967)

"Derivatives of Azidosulfonic Acid. Halides, Amides and Salts"
R. J. Shozda and J. A. Vernon
J. Org. Chem. 32, 2876 (1967)

"Novel Condensation Products of Diketene"
E. Marcus and J. K. Chan
J. Org. Chem. 32, 2881 (1967)

"Hydrogen-bonding Effects in Photo-fries and Photo-anilide Rearrangements
D. V. Rao and V. Lamberti
J. Org. Chem. 32, 2896 (1967)

"Heterogeneous Photosensitization"
P. A. Leermakers and F. C. James
J. Org. Chem. 32, 2898 (1967)

"Wagner-Meerwein Rearrangements. IV. Some Reassignments of Structure"
H. L. Herzog, O. Gnoj, L. Mandell, G. G. Nathansohn and A. Vigevani
J. Org. Chem. 32, 2906 (1967)

"The Rearrangement of 3-Carene Oxide
R. L. Settine and C. McDaniel
J. Org. Chem. 32, 2910 (1967)

"Decomposition of Nitrate Esters to Alcohols"
R. G. Pews
J. Org. Chem. 32, 2914 (1967)

"The Hydrolysis of α,α'-Dimethoxydihydromenthofuran"
J. A. Hirsch and R. H. Eastman
J. Org. Chem. 32, 2915 (1967)

"5-Acetoacetyl-2-furoates by Friedel-Crafts Acetylation of Methyl and Ethyl 2-Furoates"
R. Ercoll, E. Mantica, G. C. Santambrogio Chiozzotto and E. Santambrogio
J. Org. Chem. 32, 2917 (1967)

"Synthesis of Oxetanes by Photoaddition of Benzophenone to Furans"
C. Rivas and E. Payo
J. Org. Chem. 32, 2918 (1967)

"Synthesis and Characterization of 6- and 7-Methoxy-1-benzyl-2-methyl-1,2,3,4-tetrahydro-6- and 7-Isoquinolinols"
A. Brossi, A. I. Rachlin and S. Teitel
J. Heterocycl. Chem. 4, 417 (1967

"1,1'-(Thiocarbonyl)bisaziridines"
D. A. Tomalia
J. Heterocycl. Chem. 4, 419 (1967)

"5H,7H-Bisinden[2,3-b:3',2'-d]thiophene"
D. W. H. MacDowell and T. B. Patrick
J. Heterocycl Chem. 4, 425 (1967)

"Pyrolysis of Ketone N,N,N-Trimethylhydrazonium Fluoborates. III. Preparation of Fused-Ring Pyridines"
G. R. Newkome and D. L. Fishel
J. Heterocycl. Chem. 4, 427 (1967)

"α,β-Unsaturated-1,2,5-thiadiazoles"
D. M. Mulvey and L. M. Weinstock
J. Heterocycl. Chem. 4, 445 (1967)

"Recherches dans la Série des Azoles. Synthèse de Chloroimidazoles Non N-Substitués"
J. L. Imbach, R. Jacquier et A. Romane
J. Heterocycl. Chem. 4, 451 (1967)

"Synthesis of an Unsymmetrically Substituted 1,3,5-Trithiane"
E. Campaigne and M. Georgiadis
J. Heterocycl. Chem. 4, 458 (1967)

"Pyridyl Ketones by Addition of Pyridyllithium to Carboxylic Acids. A New Synthesis of α-(2-Piperidyl)-2-aryl-4-quinolinemethanols"
D. W. Boykin, A. R. Patel, R. E.Lutz, and A. Burger
J. Heterocycl. Chem. 4, 459 (1967)

"A Facile Cyclization of an Enamine Nitrile to Dihydropyridinium Salts"
A. I. Meyers, J. C. Sircar, and S. Singh
J. Heterocycl. Chem. 4, 461 (1967)

"The Preparation of 6-Fluoropurines by the Modified Schiemann Reaction"
J. A. Montgomery and K. Hewson
J. Heterocycl. Chem. 4, 463 (1967)

"KMR-Untersuchungen über die Bindung des Wassers in Festen Kaliumpolyboraten"
K. Wegener
J. Inorg. Nucl. Chem. 29, 1847 (1967)

"Redistribution Equilibria of Methylsilane Derivatives"
K. Moedritzer and J. R. Van Wazer
J. Inorg. Nucl. Chem. 29, 1851 (1967)

"Wide-line NMR Study of Silicon-Nitrogen Compounds"
H. Levy, II
J. Inorg. Nucl. Chem. 29, 1859 (1967)

"Reactions of Rhenium Carbonyl Derivatives with Antimony Pentachloride"
R. B. King
J. Inorg. Nucl. Chem. 29, 2119 (1967)

"Determination of Vicinal H—H Couplings of the Two Rotational Isomers of β-Bromopropionitrile from the Solvent Dependence of the NMR Spectrum"
K. K. Deb, and R. J. Abraham
J. Mol. Spectros. 23, 393 (1967)

"β,β-Dichlorovinyl Ketones. I. Effect of Structure on Synthesis and Configuration"
S. Searles, Jr., R. A. Sanchez, R. L. Soulen, and D. G. Kundiger
J. Org. Chem. 32, 2655 (1967)

"α-Halo Ketones. V. The Synthesis of Some Bicyclic Bridgehead Bromo Ketones"
E. W. Warnhoff, C. M. Wong, and W. T. Tai
J. Org. Chem. 32, 2664 (1967)

"Direct Oxidation of Alkenes to Ketones Using Peroxytrifluoroacetic Acid-Boron Fluoride"
H. Hart and L. R. Lerner
J. Org. Chem. 32, 2669 (1967)

"A Study of the Lithium in Ammonia Reduction of 3-Ethoxycyclohexenone"
D. S. Watt, J. M. McKenna and T. A. Spencer
J. Org. Chem. 32, 2674 (1967)

"Heterocyclic Syntheses Involving Acetylenedicarboxylate Adducts of Thiosalicyclic Acid Derivatives"
N. D. Heindel and V. B. Fish, M. F. Ryan and A. R. Lepley
J. Org. Chem. 32, 2678 (1967)

"Acylation and Other Reactions of 2- and 4-Pyridylacetonitriles"
C. D. Gutsche and H.-W. Voges
J. Org. Chem. 32, 2685 (1967)

"The Gattermann Reaction of 3,5-Dimethoxyphenylacetonitrile. A Synthesis of 6,8-Dioxyisoquinolines"
J. D. White and D. S. Straus
J. Org. Chem. 32, 2689 (1967)

"Further Studies on the Mechanism of Diphenylketene Cycloaddition"
W. T. Brady and H. R. O'Neal
J. Org. Chem. 32, 2704 (1967)

"Aziridines. XV. The Synthesis and Reactions of 1,3-Diazabicyclo[3.1.0]hex-3-enes"
H. W. Heine, R. H. Weese, R. A. Cooper and A. J. Durbetaki
J. Org. Chem. 32, 2708 (1967)

"Cyclization Reactions of 6-Heptene-2-yl Radicals, 1-Trichloromethyl-6-hepten-2-yl Radicals, and Related Compounds"
Neal O. Brace
J. Org. Chem. 32, 2711 (1967)

"The Chloramine-Induced Oxidative Dimerization of Phenols"
L. A. Paquette and W. C. Farley
J. Org. Chem. 32, 2718 (1967)

"Oxocane. Synthesis and Conformational Isomerization"
L. A. Paquette and Robert W. Begland
J. Org. Chem. 32, 2723 (1967)

"The Chlorination of Conjugated Dienamides. A New Application of the Principle of Least Motion"
L. A. Paquette and W. C. Farley
J. Org. Chem. 32, 2725 (1967)

"The Preparation and Reactions of 2-(Trichloromethyl)-benzothiazoline and Some Related Compounds
D. T. Manning and C. B. Strow, Jr.
J. Org. Chem. 32, 2731 (1967)

"The Polymerization of Vinylaminosilanes. The Unique Stability of Silicon-Nitrogen Bonds toward Alkyllithium Compounds
M. R. Stober, K. W. Michael and J. L. Speier
J. Org. Chem. 32, 2740 (1967)

"Hydroxymethylation and Aminomethylation of 2-Monohydroperfluoroisobutane"
S. T. Kocharyan, E. M. Rokhlin, Yu. A. Cheburkov and I. L. Knunyants
Bull. Acad. Sci. USSR, Div. Chem. Sci. (English Transl.) 1813 (1966)

"Cleavage of the Fe-C Bond During the Exchange of the Carbonyl Ligand of $C_3H_5Fe(CO)[P(OC_6H_5)_3]C_6H_5$ by Triphenyl Phosphite"
A. N. Nesmeyanov, Yu. A. Chapovskii, and Yu. A. Ustynyuk
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1814 (1966)

"Stable Iron Hydride $C_5H_5Fe[P(OC_6H5)_3]_2H$"
A. N. Nesmeyanov, Yu. A. Chapovskii and Yu. A. Ustynyuk
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1815 (1966)

"Unsaturated Acids and Macrocyclic Lactones Communication 19. Absolute Configurations of Methymycin, Neomethymycin, Picromycin, and Narbomycin"
L. D. Bergel'son and S. G. Batrakov
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1914 (1967)

"Reactions of Methylcyclohexanones with Concentrated Sulfuric Acid"
K. L. Feller, S. V.Svetozarskii, Yu. Yu. Samitov, E. N. Zil'berman, and G. A. Razuvaev
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1893 (1967)

"NMR Spectra ofSome MetalAcetylacetonates"
Y. Kawasaki, T. Tanaka and R. Okawara
Bull. Chem. Soc. Japan 40, 1562 (1967)

"Solvent Effect on the Proton Magnetic Resonance Spectra of Dimethyltin Dichloride, Trimethyltin Chloride and Trimethyllead Chloride"
G. Matsubayashi, Y.Kawasaki, T. Tanaka and R. Okawara
Bull. Chem. Soc. Japan 40, 1566 (1967)

"Fluorenylidene and 2,7-Dibromofluorenylidene"
S. Murahashi, I. Moritani and T. Nagai
Bull. Chem. Soc. Japan 40, 1655 (1967)

"The Cyclization ofEthyl Cyanoacetate and Ketones by Ammonium Acetate"
A. Sakurai and H. Midorikawa
Bull. Chem. Soc. Japan 40, 1680 (1967)

"Some 4(1H)-Pyridylidene Compounds. Synthesis and Structure"
Y. Omote, K.-T Kuo and N. Sugiyama
Bull. Chem. Soc. Japan 40, 1695 (1967)

"A Synthesis of 2-Formyl-5,5,9-trimethyl-trans-Δ^2-1-octalone"
N. Ototani, T. Kato and Y. Kitahara
Bull. Chem. Soc. Japan 40, 1730 (1967)

"Synthesis of 7-(5'-Benzyloxymethyltetrahydro-2'-furyl) adenine"
N. Nagasawa, I.Kumashiro and T. Takenishi
Bull. Chem. Soc. Japan 40, 1732 (1967)

"A Novel Nucleophilic Substitution of 1,2,2-Tricyanovinyl-benzene by the Grignard Reagent"
Y. Ohtsuka and M. Ohmori
Bull. Chem. Soc. Japan 40, 1734 (1967)

"Proton Magnetic Resonance Spectrum of the Malonatobisethylenediamine Cobalt(III) Complex"
H. Yoneda and Y. Morimoto
Bull. Chem. Soc. Japan 40, 1737 (1967)

"1,3-Dipolar Cycloaddition of Diphenylnitrone to Enamines"
Y. Nomura, F. Furusaki and Y. Takeughi
Bull. Chem.Soc. Japan 40, 1740 (1967)

"Cyclobutadiene-metal Complexes. X. Reactions of Tetramethylcyclobutadienenickel Chloride with Iron Carbonyls"
R. Bruce, K. Moseley, and P. Maitlis
Can. J. Chem. 45, 2011 (1967)

"Cyclobutadiene-metal Complexes. XI. Tetramethylcyclobutadienecobalt(I) Complexes"
R. Bruce and P. M. Maitlis
Can. J. Chem. 45, 2017 (1967)

"A Non-stereospecific Alkene Hydroylation. Stereochemistry of the Ring Opening of dl-cis-and dl-trans-N,N-dimethyl-3-phenylglycidamide by Acids"
S. O Chan and E. J. Wells
Can. J. Chem. 45, 2123 (1967)

"Cyclodehydration of Certain β-hydroxyketones to Substituted Aromatic Hydrocarbons"
P. Canonne, P.Holm and L.C. Leitch
Can. J. Chem. 45, 2151 (1967)

"The Proton Magnetic Resonance Spectrum of Triptycene. The Effect of Magnetic Anisotropy on the Proton Shifts"
K. G.Kidd, G. Kotowycz, and T. Schaefer
Can. J. Chem. 45, 2155 (1967)

"The Constitution of Isamic Acid"
P. de Mayo and J. J. Ryan
Can. J. Chem. 45, 2177 (1967)

"Novel Oxidations of Methyl Glycopyranosides by Periodic Acid in Dimethyl Sulfoxide"
R. J.Yu and C. T. Bishop
Can. J. Chem. 45, 2195 (1967)

"Pyrrole Chemistry. VII. Syntheses and Reactions of Some N-substituted Pyrroles"
H. J. Anderson and S. J. Griffiths
Can. J. Chem. 45, 2227 (1967)

"The Valence Tautomer of Methyl-7-oxa-bicyclo[2.2.1] hepta-2,5-diene-2,3-dicarboxylate and its Dimer"
P. Deslongchamps and J. Kallos
Can. J.Chem. 45, 2235 (1967)

"A Nuclear Magnetic Resonance Study of Exchange Reactions in the System Boron Trifluoride - methanol. A Modified Interpretation"
R. J.Gillespie and J. S. Hartman
Can. J. Chem. 45, 2243 (1967)

"Mechanism of the Ninhydrin Reaction. II. Preparation and Spectral Properties of Reaction Products from Primary Aromatic Amines and Ninhydrin Hydrate"
M. Friedman
Can. J. Chem. 45, 2271 (1967)

"Optical Properties of the Dimedonyl Derivative of α-phenylethylamine"
E. Santos, J. Padilla, and P. Crabbe
Can. J. Chem. 45, 2275 (1967)

"Pentafluoroacetone"
J. B. Hynes, R. C. Price, W. S. Brey, Jr., M. J. Perona, and G. O. Pritchard
Can. J. Chem. 45, 2278 (1967)

"The Addition of "Bromine Fluoride" to Norbornene"
F. H. Dean, D. R. Marshall, E. W.Warnhoff, and F. L. M. Pattison
Can. J. Chem. 45, 2279 (1967)

"Nitrogen-Containing Carbohydrate Derivatives. Part XV. The Reaction of Hydrazine with Azido Sugars"
R. D. Guthrie and D. Murphy
Carbohyd. Res. 4, 465 (1967)

"NMR Measurement of the Diffusion Coefficient of Pure Aluminum"
F. Y. Fradin and T. J. Rowland
Appl. Phys. Letters 11, 207 (1967)

"Proton Chemical Shifts and Electron Densities in Aromatic and Heteroaromatic Molecules. I. Procedure and Chemical Shift Corrections; Applications to Azines"
P. J.Black, R. D.Brown, and M. L. Heffernan
Australian J. Chem. 20, 1305 (1967)

"Proton Chemical Shifts and Electron Densities in Aromatic and Heteroaromatic Molecules. II. Derivatives of Pyrrole and Furan"
P. J. Black, R. D. Brown, and M. L. Heffernan
Australian J. Chem. 20, 1325 (1967)

"Photochemical Reactions of Azo Compounds. XI. Formation and Characterization of 2-Dimethylamino-benzo[c]cinnoline"
G. E. Lewis and J. A. Reiss
Australian J. Chem. 20, 1451 (1967)

"Cassytha Alkaloids. IV. The Alkaloids of Cassytha Racemosa Nees (Family Lauraceae)"
S. R. Johns, J. A. Lamberton, and A. A. Sioumis
Australian J. Chem. 20, 1457 (1967)

"Antirhine, A New Indole Alkaloid from Antirhea Putaminosa (F. Muell.) Bail. (Family Rubiaceae)"
S. R. Johns, J. A. Lamberton, and J. L. Occolowitz
Australian J. Chem. 20, 1463 (1967)

"The Chemical Constituents of Galbulimima Species. IX. The Structures of Himbadine and Alkaloid G.B.13"
L. N. Mander, R. H. Prager, M. Rasmussen, E. Ritchie, and W. C. Taylor
Australian J. Chem. 20, 1473 (1967)

"Reactions of 3,4-Dehydroproline and 4-Chloroprolines with Ninhydrin, Isatin, and Cyclic α-Diketones"
C. B. Hudson and A. V. Robertson
Australian J. Chem. 20, 1511 (1967)

"The Reactions of 3,4-Dehydroproline with Substituted Isatins"
C. B. Hudson and A. V. Robertson
Australian J. Chem. 20, 1521 (1967)

"Stereochemistry of N-Benzyloxycarbonyl-2,5-Dihydroxy-Δ^3-Pyrroline and Related Observations"
G. K. Cox, A. V.Robertson, and W. R. J. Simpson
Australian J. Chem. 20, 1539 (1967)

"The Synthesis of 1,4-Epimino[18]Annulene 7,10:13,16-Disulphide"
G. M. Badger, G.E. Lewis and U. P. Singh
Australian J. Chem. 20, 1635 (1967)

"Hydropyrimidines. V. Hexahydropyrimidines. The Reaction of Aldehydes and Ketones with 1,3-Diamino-propanes"
R. F. Evans
Australian J. Chem. 20, 1643 (1967)

"The Preparation of 2-Fluoro-5-Nitrobenzonitrile and the Proton Magnetic Resonance Spectra of Some Compounds Containing the N-(2-Cyano-4-Nitrophenyl) Group"
J. F. K. Wilshire
Australian J. Chem. 20, 1663 (1967)

"Photochemistry of α-Diketones. I. Some Photochemical Reactions of 1,1,4,4-Tetramethyl-2,3-Dioxotetralin"
G. E. Gream, J. C. Paice, and (in part) C. C. R. Ramsay
Australian J. Chem. 20, 1671 (1967)

"Marine Pigments. VII. 3-Acetyl-2,5,6,7-Tetrahydroxy-1,4-Naphthoquinone, A New Spinochrome from Salmacis Sphaeroides (Lovén)"
J. H. Gough and M. D.Sutherland
Australian J. Chem. 20, 1693 (1967)

"Reduction of Certain Oxindoles and Isatins With Lithium Aluminium Hydride"
C. B. Hudson and A. V. Robertson
Australian J. Chem. 20, 1699 (1967)

"The Chemical Constituents of Galbulimima Species. X. The Structure of Himgaline"
L. N. Mander, R. H. Prager, M. Rasmussen, E. Ritchie, and W. C. Taylor
Australian J. Chem. 20, 1705 (1967)

"A Re-examination of Evodia Alata F. Muell. The Structure and Synthesis of Evoprenine, a New Acridone Alkaloid"
J. A. Diment, E. Ritchie, and W. C. Taylor
Australian J. Chem. 20, 1719 (1967)

"1-Benzyl-1,2,3,4-Tetrahydroisoquinoline Alkaloids from Alseodaphne Archboldiana (Allen) Kostermans (Family Lauraceae)"
S. R. Johns, J. A. Lamberton and A. A. Sioumis
Australian J. Chem. 20, 1729 (1967)

"1,5-Dimethoxy-3-(Dimethylaminomethyl)Indole, The Major Alkaloid from Gymnacranthera Paniculata (A. DC.) Warb. Var. Zippeliana (MIQ.) J. Sinclair (Family Myristicaceae)"
S. R. Johns, J. A. Lamberton and J. L. Occolowitz
Australian J. Chem. 20, 1737 (1967)

"1,4-Benzodioxins. II. Investigation of Possible Aromaticity by Reactivity and Proton Magnetic Resonance Spectroscopy"
A. R. Katritzky, M. Kingsland, M. N. Rudd, M. J. Sewell, and R. D. Topsom
Australian J. Chem. 20, 1773 (1967)

"The Structure of the 'Endothiotriazolines' and Endoxytriazolines'"
G. W.Evans and B. Milligan
Australian J. Chem. 20, 1779 (1967)

"The Reaction of 1,4-Diphenylthiosemicarbazide and 1,5-Diphenylthiocarbazide with Aldehydes"
G. W. Evans and B. Milligan
Australian J. Chem. 20, 1783 (1967)

"Laurotetanine and N-Methyllaurotetanine from Palmeria Fengeriana Perk. (Family Monimiaceae)"
S. R.Johns, J. A. Lamberton, and A. A. Sioumis
Australian J. Chem. 20, 1787 (1967)

"Untersuchungen an Wasserstoffbrückenbindungen zwischen Pyrrol und verschiedenen Elektronendonatoren. Korrelation zwischen NMR-, IR-Spektren und pK_a-Werten"
F. Strohbusch und H.Zimmermann
Ber. Bunsenges. Physik. Chem. 71, 567 (1967)

"Oligonucleotide Studies. Part IV. Proton Magnetic Resonance Spectra of Three Dinucleotides, ApGp, CpGp, and UpGp, in D_2O"
Y. Inoue and S. Aoyagi
Biochem. Biophys. Res. Commun. 28, 973 (1967)

"The Metabolism of n-Decane by a Pseudomonas"
C. W.Bird and P. Molton
Biochem. J. 104, 987 (1967)

"New Evidence for the Structure of Myxinol"
I. G. Anderson, G. A.D. Haslewood, A. D.Cross and L. Tökés
Biochem. J. 104, 1061 (1967)

"Determination of the Configurations of the Stereo-isomers of 3-Benzoylacrylonitrile"
A. N. Nesmeyanov, M. I. Rybinskaya, L. V. Rybin, L. B. Senyavina, G. L. Slonimskii, and V. S. Palkov
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1699 (1966)

"Nuclear Magnetic Resonance Signal of Lithium in Dehydrated Synthetic Zeolite"
V. A. Bakaev and M. M. Dubinin
Bull. Acad. Sci., USSR, Div. Chem. Sci. (English Transl.) 1812 (1967)

"Recherches sur la stéréochimie des diènes fonctionnels. Transpositions dans la série des éthoxy-diènes-1.3"
G. J. Martin et J.-P. Gouesnard
Compt. Rend,Ser. C, 265, 121 (1967)

"Détermination des signes des couplages proton-proton dans les énynes: (cis) méthoxy-1 butène-1 ynes-3 et (cis) méthoxy-1 pentène-1 yne-3"
R.-M. Le Quan et M.-P. Simonnin
Compt. Rend., Ser. C, 265, 125 (1967)

"Synthèse de la tétra O-méthyldistémonanthine"
G. Népault et C. Mentzer
Compt. Rend., Ser. C, 265, 189 (1967)

"Sur la synthèse d'époxydes α-alléniques"
M. Bertrand et J. Grimaldi
Compt. Rend., Ser. C, 265, 196 (1967)

"Synthèse et réactivité de modèles simplifiés de diaza-15.16 stéroides"
J. Lematre et J. Soulier
Compt. Rend., Ser. C, 265, 199 (1967)

"Isomèrisation prototropique du (propyne-2 yl-1)-9 anthracène et de ses dérivés. Synthèse et étude spectrographique"
R. Skowronski
Compt. Rend., C, 265, 263 (1967)

"Susceptibilités magnétiques théoriques de quelques molécules organiques contenant des hétéroatomes"
N. Baeteman et J. Baudet
Compt. Rend., Ser. C, 265, 288 (1967)

"Dérivés disubstitutes 1.2 et dérivés hétéropontés du ferrocene"
C. Moise et J. Tirouflet
Compt. Rend. Ser. C 265, 457 (1967)

"Establishment of the Configuration of Derivatives of 7-oxabicyclo (2,2,1) Heptane by Nuclear Magnetic Resonance"
N. S. Zerfirov, V. F. Bystrov, A. U. Stepanyants, and P. P. Kadzyauskas
Dokl.—Chem. Sect. (English Transl.) 172, 8 (1967)

"Kinetics of the Dienone-phenol Rearrangement of Ionol Quinobromide by the NMR Method"
A. I. Brodskii, V. D. Pokhodenko, N. N. Kalibabchuk, and V. S. Kuts
Dokl.—Phys. Chem. Sect. (English Transl.) 172, 1 (1967)

"Ricerche sulle enamine. — Nota XX. Sintesi di 1-alchil-v-triazoli da arilazidi e chetimine"
G. Bianchetti, P. Dalla Croce, D. Pocar et A. Vigevani
Gazz. Chim. Ital. 97, 289 (1967)

"Ricerche sulle enamine. - Nota XXI. Reazioni tra arilazidi e chetimine dell'acetone, di chetoni aril-alifatici e di β-chetoesteri"
G. Bianchetti, D. Pocar, P. Dalla Croce e R. Stradi
Gazz. Chim. Ital. 97, 304 (1967)

"Sulla struttura dei 4-arilazo-5-isossazoloni. — Nota II. Spettri infrarossi e di risonanza nucleare magnetica"
G. Cum, G. Lo Vecchio, M. C. Aversa e M. Crisafulli
Gazz. Chim. Ital. 97, 346 (1967)

"Cationi etero-aromatici. — Nota VIII. Proprietà chimiche dei sali di tiapirilio"
I. Degani, R. Fochi, e C. Vincenzi
Gazz. Chim. Ital. 97, 397 (1967)

"Sulle leucoantocianidine del Peltogyne recifensis Ducke"
C. G. Casinovi, I. L.d'Albuquerque, C. Galeffi, A. M. Vaccaro Torracca e G. B. Marini-Bettolo
Gazz. Chim. Ital. 97, 1165 (1967)

"Iridoidi(III). Struttura e configurazione del Melittoside"
M. L. Scarpati et P. Esposito
Gazz. Chim. Ital. 97, 1209 (1967)

"Sintesi e caratterizzazione dell'acido eritro-2,3-dimetil-pentanoico racemo"
R. Rossi
Gazz. Chim. Ital. 97, 1239 (1967)

"Sintesi nelle serie dell'1,5-difenil-bispidin-9-one e 9-ole. — Nota XIII. 1,5-difenil-3,7-diazaadamantan-9-oni e 9-oli, 10-sostituiti"
R. L. Vittory, G. Settimj, F. Gatta, N. Sarti e S. Chivarelli
Gazz. Chim. Ital. 97, 1294 (1967)

"La bromurazione di alcuni derivati indolici"
A. Da Settimo, M. F. Saettone, E. Nannipieri e P. Barili
Gazz. Chim. Ital. 97, 1304 (1967)

"Nuovo metodo di sintesi dei 2-etossifurani"
R. Scarpati, M. L. Graziano e R. A. Nicolaus
Gazz. Chim. Ital. 97, 1317 (1967)

"Metaboliti della Oospora Virescens (Link) Wallr. Virescenolo A. Comunicazione breve"
N. C. Bellavita, P. Ceccherelli, M. Ribaldi, Z. Baskevitch e J. Polonsky
Gazz. Chim. Ital. 97, 1344 (1967)

"3-(2-Carboxybenzyl) isocoumarin, a Byproduct inthe Preparation of Homophthalimide"
K. Nagarajan and P. M. Pillai
Indian J. Chem. 5, 173 (1967)

"Long Range Coupling through the Aromatic Double Bond"
C. R. Narayanan and N. K. Venkatasubramanian
Indian J.Chem. 5, 218 (1967)

"Nuclear Resonance Studies of Vanadium(III)Complexes. II. Synthesis, Stereochemistry, and Electron Delocalization Properties of Tris β-Ketoamines"
F. Röhrscheid, R. E. Ernst and R. H.Holm
Inorg. Chem. 6, 1607 (1967)

"Chemistry of Broanes. XXIX. Thia- and Azaboranes"
W. R. Hertler, F. Klanberg, and E. L. Muetterties
Inorg. Chem. 6, 1696 (1967)

"The Preparation and Structure of Ammonia and Alkylamine Addition Compounds of Phosphine Diborane, $B_2H_6 \cdot PH_3 \cdot NR_3$"
J. W. Gilje, K. W. Morse, and R.W. Parry
Inorg. Chem. 6, 1761 (1967)

"Studies in the Synthesis and Chloramination of Some Hydrazinophosphines"
J. M. Kanamueller and H. H.Sisler
Inorg. Chem. 6, 1765 (1967)

"Ion Paring and Interionic Distances in Solution for Paramagnetic Complexes from Proton Magnetic Resonance Shifts"
G. N. LaMar, R. H. Fischer and W. DeW. Horrocks, Jr.
Inorg. Chem. 6, 1798 (1967)

"Synthesis, Nuclear Resonance, and Electronic Spectra of Tris(2-hydroxypropiophenimine)cobalt(III)"
A. Chakravorty and B. Behera
Inorg. Chem. 6, 1812 (1967)

"Stereochemistry and Lability of Dihalobis(β-diketonato)titanium(IV) Complexes. II. Benzoylacetonates and Dibenzoylmethanates"
N. Serpone and R. C.Fay
Inorg. Chem. 6, 1835 (1967)

"Nuclear Magnetic Resonance on Protons in Some Paramagnetic Salts"
V. A. Stolyarov
Soviet Phys. JETP Letters (English Transl.) 6, 13 (1967)

"Nonresonance Magnetic Absorption of Ultrasound by Nuclei in a Metal"
B. M. Khabibullin
Soviet Phys. - Solid State (English Transl.) 9, 800 (1967)

"Theory of Ferromagnetic Free Induction and Echo"
U. Kh. Kopvillem
Soviet Phys. - Solid State (English Transl.) 9, 813 (1967)

"Spin-Lattice Relaxation in Kramers Systems"
I. V. Aleksandrov and K. K. Pukhov
Soviet Phys. - Solid State (English Transl) 9, 906 (1967)

"NMR and Ferroelectric Properties of Sodium Hydroselenite Mixed Crystals"
G. V. Gavrilova-Podol'skaya, S. P. Gabuda, and A. G Lundin
Soviet Phys. - Solid State (English Transl.) 9, 911 (1967)

"Ultrasonic Excitation of Magnetic Dipole Transitions of F^{19} Nuclei in LiF Single Crystals"
V. A. Shutilov and G. L. Antokol'skii
Soviet Phys. - Solid State (English Transl.) 9, 958 (1967)

"Nuclear Spin Polarization by a Flux of Hot Electrons in a Quantizing Magnetic Field"
V. P. Kalashnikov
Soviet Phys. - Solid State (English Transl.) 9, 976 (1967)

"Amplitude of Knight Shift Oscillations"
D. A. Zhogolev and D. G.Dolgopolov
Soviet Phys. - Solid State (English Transl.) 9, 982 (1967)

"Electronic and NMR Spectra of Some Thienylphenylketones and -Thioketones"
L. Kaper, J. U. Veenland and Th. J. De Boer
Spectrochim. Acta 23A, 2605 (1967)

"Proton Magnetic Resonance Spectra of Di- and Trisubstituted Derivatives of Methylsilane"
E. A. V. Ebsworth and S. G. Frankiss
Trans. Faraday Soc. 63, 1574 (1967)

"Stereochemistry and Transannular Rearrangements of 7, 12-Dihydropleiadenes"
P. T.Lansburg
Trans. N. Y. Acad. Sci. Ser. II, 29, 357 (1967)

"Constituents of Japanese Peppermint Oil, I. Isolation and Identification of (-) P-Menthane-trans-2,5-Diol from "Ryokubi""
T. Hashizume and I. Sakata
Tetrahedron Letters 3355 (1967)

"Further Studies of Daphniphylline"
S. Yamamura, H. Irikawa and Y. Hirata
Tetrahedron Letters 3361 (1967)

"Biogenesis of Ophiobolins. The Origin of the Oxygen Atoms in the Ophiobolins"
S. Nozoe, M. Morisaki, K. Tsuda and S. Okuda
Tetrahedron Letters 3365 (1967)

"The Biosynthesis of Ophiobolins"
L. Canonica, A. Fiecchi, M. G. Kienle, B. M. Ranzi, A. Scala, T. Salvatori, and E. Pella
Tetrahedron Letters 3371 (1967)

"Reaction of Tropone with Dichloroketene"
J. Ciabattoni and H. W.Anderson
Tetrahedron Letters 3377 (1967)

"Bicyclononatriene Rearrangements"
A. S. Kende and T. L. Bogard
Tetrahedron Letters 3383 (1967)

"Photolysis of Podocarponitrile Oxide and Mesitonitrile Oxide"
G. Just and W. Zehetner
Tetrahedron Letters 3389 (1967)

"A para-Sommelet-Hauser Rearrangement"
S. H. Pine
Tetrahedron Letters 3393 (1967)

"A Novel Grignard Addition to a Coumarin"
R. K. Razdan, W. R. Thompson, H. G. Pars and F. E. Granchelli
Tetrahedron Letters 3405 (1967)

"La Cyclisation Thermique des Aldehydes $\epsilon\zeta$-Ethyleniques"
R. Bloch et J.-M. Conia
Tetrahedron Letters 3409 (1967)

"A New Reaction of Bis(o-Aminophenyl)Disulfide with Ketonic Compounds. Part I. Reaction with Cycloheptanone"
V. Carelli, P. Marchini, F. Micheletti Moracci and G. Liso
Tetrahedron Letters 3421 (1967)

"A New Thermal Rearrangement of Bicyclo[3.2.0]Heptadienone System"
T. Miyashi, M. Nitta and T. Mukai
Tetrahedron Letters 3433 (1967)

"A New Sulfur-Containing Azulene 3,5,8-Trimethylazuleno[6,5-b]Thiophene"
S. Hayashi, S. Kurokawa, M. Okano and T. Matsuura
Tetrahedron Letters 3443 (1967)

"Mexicanol"
J. D. Connolly, K. L. Handa, R. McCrindle, and K. H. Overton
Tetrahedron Letters 3449 (1967)

"Thionoxides of Dithiocarboxylic Esters"
B. Zwanenburg, L. Thys and J. Strating
Tetrahedron Letters 3453 (1967)

"Hydrogenation of Some Quinones to Enediones"
A. J. Birch and K. A. M. Walker
Tetrahedron Letters 3457 (1967)

"Chromones, Containing an Oxepin Ring, from Ptaeroxylon Obliquum"
F. M Dean, B. Parton, N. Somvichien, and D. A. H. Taylor
Tetrahedron Letters 3459 (1967)

"Dimeric Piperidine Alkaloids from Azima Tetracantha Lam.: Azimine, Azcarpine and Carpaine"
G. J H.Rall, T. M Smalberger and H. L. de Waal
Tetrahedron Letters 3465 (1967)

"Mexoticin, A New Coumarin from Murraya Exotica L.
D. P. Chakraborty, B. K. Chowdhury and B. C. Das
Tetrahedron Letters 3471 (1967)

"5β,7β-Cyclosteroids"
P. G. Gassman and W. E. Hymans
Chem. Commun. 795 (1967)

"The Role Of Dimethylformamide in the Interaction of Olefins with Palladium Chloride. [A New Method of Synthesis in Mild Conditions of π-Allylpalladium(II) Compounds]"
(the Late D. Morelli, R. Ugo, F. Conti, and M. Donati
Chem. Commun. 801 (1967)

"The Proton Magnetic Resonance Spectra of Aromatic Amines and their Charge-transfer Complexes with Iodine and Iodine Monochloride"
J. Yarwood
Chem.Commun. 809 (1967)

"Photoisomerisation Reactions of 5,6,7,8-Tetrafluoro-1,4-dihydro-1,4-ethenonaphthalene: Tetrafluorobenzyne in Mass Spectrometry"
J. P. N. Brewer and H. Heaney
Chem. Commun. 811 (1967)

"The Photo-addition of Indene and Acrylonitrile"
J. J. McCullough and C. W.Huang
Chem. Commun. 815 (1967)

"Preparation of 5-Hydroxy[ar-^{3}H]tryptophans"
G. W.Kirby and S. W. Shah, and M. Sandler
Chem. Commun. 819 (1967)

"Nuclear Magnetic Resonance of Phosphorus Compounds. Phospholenes: Opposite Signs of Two $^{2}J_{P-H}$ Coupling Constants in the Sam P-CH_2 Fragment"
D. Gagnaire, J. B. Robert, and J. Verrier
Chem. Commun. 819 (1967)

"The Gentamicin Antibiotics. Isolation and Characterisation of Methyl Garosaminide, a Novel Aminohexopyranoside"
D. J. Cooper and M. D. Yudis
Chem. Commun. 821 (1967)

"Photoisomerization of a Hydroxy-dienone to a Pyrone"
R. H. Young and H. Hart
Chem. Commun. 828 (1967)

"Autoxidation of 1-Alkyl-2-naphthols"
J. Carnduff and D. G. Leppard
Chem. Commun. 829 (1967)

"A Novel Synthesis of Phostones and Deoxophostones (1,2-Oxaphospholanes)"
M. Grayson and C. E. Farley
Chem. Commun. 830 (1967)

"A Nuclear Magnetic Resonance Study of the Solvation of Aluminium Perchlorate by Water and Acetonitrile; Separate Resonances from Differently Hydrated Aluminium Ions"
L. D. Supran and N. Sheppard
Chem. Commun. 832 (1967)

"Organometallic Diazoalkanes"
M. F. Lappert and J. Lorberth
Chem. Commun. 836 (1967)

"The Mycolipodienic Acids, Constituents of the Lipids of Tubercle Bacilli"
L. Coles and N. Polgar
Chem. Commun. 838 (1967)

"The Negative Sign of the $^{31}P-^{19}F$ Spin-Spin Coupling Constant in Di-isopropyl Fluorophosphate"
R. R. Dean, and W. McFarlane
Chem. Commun. 840 (1967)

"Direct Observation of the Molozonide—Ozonide Conversion"
L. J. Durham and F. L. Greenwood
Chem. Commun. 843 (1967)

"Nuclear Magnetic Resonance of Molecular Complexes of Cobalt(II) Mesoporphyrin IX Dimethyl Ester"
H. A. O.Hill, B. E. Mann, and R. J. P. Williams
Chem. Commun. 906 (1967)

"Thermal Rearrangements in the Tetra-arylcyclopropene Series"
M. A. Battiste, B. Halton, and R. H.Grubbs
Chem. Commun. 907 (1967)

"A Locust Phagorepellent from Two Melia Species"
D. Lavie, M. K.Jain, and (Mrs. S. R. Shpan-Gabrielith
Chem. Commun. 910 (1967)

"Nuclear Magnetic Resonance Measurement of Organic Charge-transfer Complexes over a Temperature Range"
R. Foster, C. A. Fyfe, and (in part) M. I.Foreman
Chem. Commun. 913 (1967)

"Structure of Isoprene-Phenylphosphonous Dihalide Cyclo-adducts"
L. D. Quin and T.P. Barket
Chem. Commun. 914 (1967)

"Dehydrogenation accompanying Certain Cyclo-addition Reactions of β-Nitrostyrene"
P. D. Callaghan and M. S. Gibson
Chem. Commun. 918 (1967)

"Alkyl Shifts in Diradicals: Thermal Isomerization of Isopropenylspiropentane"
J. J.Gajewski
Chem. Commun. 920 (1967)

"Dihydrobenzofuran Derivatives in which J_{trans}-2,3 > J_{cis}2,3"
L. H. Zalkow and M.Ghosal
Chem.Commun. 922 (1967)

"Photolysis of Cyclohexadiene Imides: N-Substituent Effects and Bicyclo[2,2,0]hexene Formation"
J. B. Bremner, and R. N.Warrener
Chem. Commun. 926 (1967)

"Homoaporphine Systems and RelatedDienones: Isolation, Structure, and Synthesis"
A. R.Battersby, E. McDonald, M. H.G.Munro, and R. Ramage
Chem. Commun. 934 (1967)

"Cycloaddition of Keten and Imines to Sulphur Dioxide"
A. Gomes and M. M. Joullie
Chem.Commun. 935 (1967)

"Pectenoxanthin, Cynthiaxanthin, and a New Acetylenic Carotenoid, Pectenolone"
S. A.Campbell, A. K. Mallams, E.S.Waight, B. C. L. Weedon, M. Barbier, E. Lederer, and A.Salaque
Chem. Commun. 941 (1967)

"The Structure and Absolute Stereochemistry of Caryophyllene 'Iodo-nitrosite': a Stable Nitroxide Radical"
D. M. Hawley, J.S.Roberts, G. Ferguson and A. L. Porte
Chem. Commun. 942 (1967)

"3-Oxo-1,4-diphenyl-3H-2-benzopyran and its Iron Carbonyl Complexes"
J. M. Holland and D. W. Jones
Chem. Commun. 946 (1967)

"Reaktionen des Ketens und des Sulfens mit 2-Dialkylaminomethylencyclohexanonen. 2-(γ-Dialkylamino-acryloyl)-cyclohexanone und Amino-δ-sultone"
A. Gandini, P.Schenone und G. Bignardi
Monatsh. Chem. 98, 1518 (1967)

"Die Struktur des dimeren Indolalkaloids Pycnanthinin"
A. A. Gorman und H. Schmid
Monatsh. Chem. 98, 1554 (1967)

"Synthese des Aristolochiasäure-IV-methylesters. (Pflanzliche Naturstoffe mit einer Nitrogruppe, 7. Mitt.)"
M. Pailer, H. Berner und S. Makleit
Monatsh. Chem. 98, 1603 (1967)

"Nuclear Magnetic Relaxation Times of ^{3}He in ^{3}He-^{4}He Solutions"
C. C. Sung
Phys. Letters 25A, 216 (1967)

"Nuclear Quadrupole Resonance in 5-Membered Heterocycles: Pyrazole, Imidazole, 1,2,4-Triazole"
E. Schempp and P. J. Bray
Phys. Letters 25A, 414 (1967)

"Nuclear Spin-Lattice Relaxation Time Measurements for Impurities in Ferromagnetic Alloys by Nuclear Orientation"
P. G. E. Reid, M. Sott and N. J. Stone
Phys. Letters 25A, 456 (1967)

"The g_I-Factors and the Magnetic Moments of Alkali Nuclei and the Shielding of Rb^+ by Water"
O. Lutz
Phys. Letters 25A, 440 (1967)

"Nuclear Magnetic Resonance and Magnetic Susceptibility of $SmAl_3$"
H. W. de Wijn, A. M. van Diepen, and K. H. J.Buschow
Phys. Rev. 161, 253 (1967)

"Nuclear Magnetic Resonance in Beryllium"
W. T.Anderson, Jr., M. Ruhlig and R. R.Hewitt
Phys. Rev. 161, 293 (1967)

"Pb^{207} Nuclear Magnetic Resonance in PbSe"
K. Lee, J. Liesegang, and P. B. P. Phipps
Phys. Rev. 161, 322 (1967)

"New Scheme for the Construction of Phase Shifts with Application of Nuclear Magnetic Resonance"
L. C. R. Alfred and D. O. Van Ostenburg
Phys. Rev. 161, 569 (1967)

"Nuclear-Magnetic-Resonance Relaxation by Spin-Rotational Interactions in the Solid"
R. Blinc and G. Lahajnar
Phys. Rev. Letters 19, 685 (1967)

ERRATA: "Spin-Lattice Relaxation of Nuclear Spin Echoes in Metals." [Phys. Rev. Letters 19, 146 (1967)]
R. E. Walstedt
Phys. Rev. Letters 19, 816 (1967)

"NMR Spectrum and Line Shape of Two Interacting Two-Spin Systems in Crystals"
O. P. Revokatov and U. Eichhoff
Phys. Stat. Sol. 22, K91 (1967)

"Cytokinins: Structure/Activity Relationships"
F. Skoog, H. Q. Hamzi, A. M. Szweykowska, N. J. Leonard, K. L. Carraway, T. Fujii, J. P. Helgeson and R. N. Loeppky
Phytochem. 6, 1169 (1967)

"Nuclear Magnetic Resonance Study of the Types of Polyvinyl Chloride Plasticization"
L. Ya. Chenborisova, V.S. Ionkin, A. I. Maklakov, and V. A. Voskresenskii
Polymer Sci, USSR (English Transl.) 8, 1998 (1966)

"Nuclear Magnetic Resonance Studies in Coordination Chemistry. Part II. Kineitc Studies of Reactions Occurring in the System $[(\pi\text{-}C_4H_7)PdCl]_2$-triphenylarsine"
K. Vrieze, P. Cossee, C. W.Hilbers and A. P. Praat
Rec. Trav. Chim. 86, 769 (1967)

"The Distribution of Charge in Ambident Anions"
G. J. Heiszwolf and H. Kloosterziel
Rec. Trav. Chim. 86, 807 (1967)

"Chemistry and Spectroscopy in Strongly Acidic Solutions. Part IX. Configurational Preference in Protonated Carboxylic Acids. Kinetics of Reversible Alkyl Oxocarbonium Ion Formation"
H. Hogeveen
Rec. Trav. Chim. 86, 809 (1967)

"Chemistry and Spectroscopy in Strongly Acidic Solutions. Part X. Formation, Structure and Decomposition of Hydroxy-alkoxy-carbonium Ions"
H. Hogeveen
Rec. Trav. Chim. 86, 816 (1967)

"Valence Isomerization of Hexamethyl-Dewar-benzene to Hexamethylbenzene Catalysed by Rhodium (I)-Olefin Complexes"
H. C.Volger and H. Hogeveen
Rec. Trav. Chim. 86, 830 (1967)

"Aromatic Sulfonation. Part XVIII. Ortho-substitution in the Sulfonation of Monoalkylbenzenes with Sulfuric Acid"
H. DeVries and H.Cerfontain
Rec. Trav. Chim. 86, 873 (1967)

"Proton Magnetic Resonance Spectra of Protonated Dialkyl Ketones. (Dialkylhydroxycarbonium Ions)"
D. M. Brouwer
Rec. Trav. Chim. 86, 879 (1967)

"Cyclopentadienyl(Triphenylphosphine)nickel(II) Halides"
M. van den Akker and F. Jellinek
Rec. Trav. Chim. 86, 897 (1967)

"Nuclear Magnetic Resonance Spectroscopy"
W. B. Moniz and C. F. Poranski, Jr.
Rept. NRL Progress 19 (1967)

"Applications of N.M.R. Spectroscopy in Polymer Science"
G. Allen
Rev. Pure Appl. Chem. 17, 67 (1967)

"Reakcje γ-Glikoli Acetylenowych. VI. Powstawanie 1,4,7,10-Czterofenylocyklododekaheksaenu-1,2,3,7,8,9 Z 2,5-Dwufenyloheksyno-3-Dioli-2,5"
W. Jasiobedzki
Roczniki Chem. 41, 1265 (1967)

"NMR Composition Analysis of Copolymers"
V. D. Mochel
Rubber Chem. Technol. 40, 1200 (1967)

"A Study of the Substituent Effect in Aromatic Compounds by Fluorine and Proton N.m.r. Spectroscopy"
Y. Takeuchi
Sci. Papers Coll. Gen. Educ. Univ. Tokyo 17, 53 (1967)

"Restricted Rotation in Molecules"
N. L. Owen
Sci. Prog. Oxf. 55, 453 (1967)

"Photochemistry of Some Dicyclopentadiene Derivatives"
R. R. Sauers and A. Shurpik
J. Org. Chem. 32, 3120 (1967)

"The Mass Spectra of Small-Ring Heterocycles. I. Some 1-Alkyl-2-phenyl-3-aroylazetidines"
J.-L. Imbach, E. Doomes, N. H. Cromwell, H. E. Baumgarten, and R. G. Parker
J. Org. Chem. 32, 3123 (1967)

"The Thio-Claisen Rearrangement. Further Studies of the Thermal Rearrangement of β-Methylallyl Phenyl Sulfide"
H. Kwart and M. H. Cohen
J. Org. Chem. 32, 3135 (1967)

"Thiapyrone Chemistry. I. The Thermal Rearrangement of 2-,6-Dialkylthio-3,5-diphenyl-4-thiothiapyrones"
H. J. Teague and W. P. Tucker
J. Org. Chem. 32, 3140 (1967)

"A New Synthesis of Steroidal 3,5-Dieno[3,4-b]dithianes"
G. Karmas
J. Org. Chem. 32, 3147 (1967)

"Terpenoids. LX. Revised Structures of the Cactus Triterpene Lactones Stellatogenin and Thurberogenin"
M. Marx, J. Leclercq, B. Tursch, and C. Djerassin
J. Org. Chem. 32, 3150 (1967)

"Electron-Transfer Polymers. XXXI. Preparation of Difunctional Benzoquinones and Related Derivatives and Polymers"
G. Wegner, N. Nakabayashi and H. G. Cassidy
J. Org. Chem. 32, 3155 (1967)

"The Reactions ofSodium Pentafluorophenolate with Substituted Pentafluorobenzenes"
R. J. De Pasquale and C. Tamborski
J. Org. Chem. 32, 3163 (1967)

"The Synthesis of Positional Isomers of Muramic Acid"
H. H. Baer and F. Kienzle
J. Org. Chem. 32, 3169 (1967)

"Rearrangements of 2-(Aminoalkylthio)-2-thiazolines and -5,6-dihydro-4H-1,3-thiazines"
R.C. Clapp, F. H. Bissett, and L. Long, Jr.
J. Org. Chem. 32, 3174 (1967)

"A Solvolytic Investigation of Cyclooctyl and trans-2-Hydroxycyclooctyl Bromides and p-Toluenesulfonates"
D. D. Roberts, and J. G.Traynham
J. Org. Chem. 32, 3177 (1967)

"Base-Catalyzed Reactions. XXXII. Sodium- and Potassium-Catalyzed Side-Chain Alkenylation of γ-Alkylpyridines with Butadiene"
H. Pines and J. Oszczapowicz
J. Org. Chem. 32, 3183 (1967)

"The Synthesis of a Series of 1,1a,3,3a,4,5,5,5a,5b,6-Decachlorooctahydro-4'-Substituted Spiro[1,3,4-metheno-2H-cyclobuta-[c,d]pentalene-2,2'-oxazolidin]-5'ones"
C. W.Roberts, G. D. Travis, and J. P. Heeschen
J. Org. Chem. 32, 3194 (1967)

"On the Structure of N-Acyl-α-amino Ketones Obtained from 2-Alkylidenepseudoxazolones"
Y. Iwakura, F. Toda, and Y. Torii
J. Org. Chem. 32, 3202 (1967)

"Rearrangement of 2,6-Dibromocyclohexanone Ketals"
M. Graff and W. H. Gilligan
J. Org. Chem. 32, 3203 (1967)

"The Reactions of Acidic Reagents with Diene-Quinone Adduct Epoxides"
H. S. Wilgus, III, E. N. Oftedahl, W. J. Musliner, and J. W. Gates, Jr.
J. Org. Chem. 32, 3208 (1967)

"Bis(pentafluorophenyl)acetylene and 2,3,4,5,6-Pentafluorodiphenylacetylene"
R. Filler and E. W. Heffern
J. Org. Chem. 32, 3249 (1967)

"Heterocyclic Quinones. 1-Azaanthraquinones and 4-Azaphenanthraquinones"
K. H.Dudley and R. L. McKee
J. Org. Chem. 32, 3210 (1967)

"The Selective Reduction of a Nitro and Pyridyl Group"
P. Aeberli and W. J. Houlihan
J. Org. Chem. 32, 3211 (1967)

"Heterocyclic Analogs of Fulvene and Fulvalene. II. 1,4-Diazafulvenes"
J. H. M. Hill
J. Org.Chem. 32, 3214 (1967)

"Elimination During the Reduction of Pyridinium Salts"
F. E. Ziegler and J.G. Sweeny
J. Org. Chem. 32, 3216 (1967)

"Phenolysis of gem-Dichlorocyclopropanes"
G. C.Robinson
J. Org. Chem. 32, 3218 (1967)

"Photochemistry of Cycloalkenes. IV. Comparison with Crotonic Acid"
P. J. Kropp and H. J. Krauss
J. Org. Chem. 32, 3222 (1967)

"An Anomalous Hydrocyanation"
E.Wenkert, R. L. Johnson, and L. L. Smith
J. Org. Chem. 32, 3224 (1967)

"Rearrangements Involving the Mixed Anhydride of o-Benzoylbenzoic and Methylcarbonic Acids"
M. S. Newman and L. K. Lala
J. Org. Chem. 32, 3225 (1967)

"Ring-Chain Tautomers of 6-Substituted 2-Acetylbenzoic Acids"
J. Finkelstein, T. Williams, V. Toome, and S. Traiman
J. Org.Chem. 32, 3229 (1967)

"Quaternary Benzylammonium Rearrangements with Organolithium Compounds. IV. Benzyltrimethylammonium p-(t-Butyl)-phenoxide with n-Butyllithium"
A. R. Lepley and T. A.Brodof
J. Org. Chem. 32, 3234 (1967)

"Duality of the Reaction of a β-Dicarbonyl System with Nitrous Acid"
G. R.Allen, Jr., G. O. Morton, H. M. Kissman, and M. J. Weiss
J. Org. Chem. 32, 3238 (1967)

"Synthesis and Proof of Structure of Benzodiiodoxole"
W. Wolf, E. Chalekson, and D. Kobata
J. Org. Chem. 32, 3239 (1967)

"Azetidines. I. TheWittig Rearrangement of a 1-Benzylazetidine"
A. G. Anderson, Jr. and M. T.Wills
J. Org. Chem. 32, 3241 (1967)

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