

MICROWAVE SPECTROSCOPY INFORMATION LETTER

No. XVIII

APRIL 1, 1975

Compiled by:

R. H. Schwendeman, R. A. Creswell, and P. M. Thrash  
Department of Chemistry  
Michigan State University  
East Lansing, MI 48824 USA

MICROWAVE SPECTROSCOPY NEWSLETTER XVIII

List of Contributors

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1.	B. Bak	University of Copenhagen	1
2.	J. G. Baker	University of Manchester	2
20.	A. Bauder	Swiss Federal Institute of Technology	15
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22.	D. O. Harris	University of California, Santa Barbara	16
38.	C. Hirose	Res. Lab. of Resources Utilization	27
23.	E. Hirota	Kyushu University	17
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24.	R. Honerjäger	Freie Universität, Berlin	18
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28.	R. Kewley	Queen's University	21
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25.	F. J. Lovas	National Bureau of Standards	19
38.	S. Maeda	Res. Lab. of Resources Utilization	27
8.	T. B. Malloy	Mississippi State University	6
42.	K.-M. Marstokk	University of Oslo	31
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40.	D. J. Millen	University College London	29
41.	I. M. Mills	University of Reading	30
15.	A. M. Mirri	Instituto Chimico "G. Ciamician"	12
42.	H. Møllendal	University of Oslo	31
1.	L. Nygaard	University of Copenhagen	1
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1.	G. O. Sørensen	University of Copenhagen	1
31.	S. L. Srivastava	University of Allahabad	23
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11.	B. P. Van Eijck	Rijksuniversiteit Utrecht	8
54.	R. Wertheimer	Université de Lille	39

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55.	D. H. Whiffen	University of Newcastle upon Tyne	40
56.	E. B. Wilson	Harvard University	41
57.	B. P. Winnewisser	Justus Liebig-Universität Giessen	45
57.	G. Winnewisser	Justus Liebig-Universität Giessen	45
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58.	R. C. Woods	University of Wisconsin	46
59.	W. Zeil	Universität Tübingen	<del>59</del> 46

1. Name to whom queries should be addressed: staff member indicated by +) below.

Mailing address: Chemical Laboratory V  
UNIVERSITY OF COPENHAGEN  
H. C. Ørsted Institutet  
5, Universitetsparken  
DK-2100 Copenhagen, DENMARK

Telephone number: 01 35 31 33

FORMULA	COMPOUND	INVESTIGATOR	STATE OF PROGRESS
CH <sub>3</sub> NO (HCONH <sub>2</sub> )	formamide, -CD, -NHD, -ND <sub>2</sub> , - <sup>15</sup> N, - <sup>13</sup> C, - <sup>18</sup> O	Max Stubgaard +)G.O.Sørensen	<sup>13</sup> C species assign. in gr. and exc. st., prep. of <sup>18</sup> O species in progress.
C <sub>2</sub> H <sub>3</sub> N <sub>3</sub>	1,2,3-triazole	+)G.O.Sørensen et al.	J.C.S. Chem. Comm. (1974) 605.
C <sub>2</sub> H <sub>4</sub> N <sub>2</sub> (NH <sub>2</sub> CH <sub>2</sub> CN)	aminoacetonitrile	+)B.Bak N.W.Larsen T.Pedersen	Spectra of pyrolysis products (at 850°C) recorded, no assignm.
C <sub>3</sub> H <sub>4</sub> N <sub>2</sub>	pyrazole	+)L.Nygaard et al.	J. Mol. Struct. 22 (1974) 401.
C <sub>5</sub> H <sub>5</sub> NO	pyridine N-oxide	O.Snerling et al. Å.Tang-Pedersen +)G.O.Sørensen	Prel. paper in press, J. Mol. Struct. D species assigned, prep. of <sup>18</sup> O species in progress.
C <sub>6</sub> H <sub>5</sub> BrO	4-Br-phenol	+)N.W.Larsen	Thesis, June 1974, will be published.
C <sub>6</sub> H <sub>5</sub> ClO	4-Cl-phenol	"	"
C <sub>6</sub> H <sub>5</sub> FO	4-F-phenol	"	"
C <sub>6</sub> H <sub>5</sub> FS	4-F-thiophenol-SD	+)N.W.Larsen T.Pedersen L.Schulz	Paper in progress.
C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>	nitrobenzene	J.H.Høgg +)G.O.Sørensen	Paper in progress.
C <sub>6</sub> H <sub>5</sub> N <sub>3</sub>	phenylazide	+)L.Nygaard	a-type lines assign.
C <sub>6</sub> H <sub>6</sub> O	phenol, -OD, - <sup>13</sup> C	+)N.W.Larsen	Thesis, June 1974, will be published.
C <sub>6</sub> H <sub>6</sub> S	thiophenol, -SD	+)N.W.Larsen T.Pedersen L.Schulz	Paper in progress.
C <sub>6</sub> H <sub>6</sub> Se	selenophenol	+)N.W.Larsen L.Schulz	Work continuing.
C <sub>6</sub> H <sub>7</sub> P	phenylphosphine -PH <sub>2</sub> , -PHD, -PD <sub>2</sub>	+)N.W.Larsen T.Steinarrsson	Structure of PH <sub>2</sub> group and barrier determined.
C <sub>7</sub> H <sub>6</sub> O <sub>2</sub>	tropolone	+)T.Pedersen	a-type lines assigned in ground state.

2. Name to whom queries should be addressed Dr. J. G. Baker

Mailing address Schuster Laboratory, University of Manchester  
Manchester M139PL, United Kingdom

Telephone number 061-273-3333

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{FH}_3\text{Si} (\text{SiH}_3\text{F})$	silyl fluoride	G. Georghiou	$\text{H}_3, \text{D}_3$ excited states assigned
$\text{BrF}_5$	bromine pentafluoride	S. R. Jones	excited states - paper in preparation
$\text{CH}_2\text{O}$	formaldehyde	C. Feuillade	line-broadening measurements in $\text{H}_2, \text{He}$

3. Name to whom queries should be addressed E. L. Beeson, Jr.

Mailing address University of New Orleans  
Department of Physics  
New Orleans, LA 70122

Telephone number 288-3161, ext. 344

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CCl}_2\text{F}_2$	Dichlorodifluoromethane	C. F. Su	Analyzing nuclear quadrupole splitting
$\text{C}_6\text{H}_2\text{F}_4$	1,2,3,4-tetrafluorobenzene	S. N. Mathur	Paper in press, Excited vibrational states

4. Name to whom queries should be addressed James E. Boggs

Mailing address Department of Chemistry  
The University of Texas at Austin  
Austin, Texas 78712  
 Telephone number (512)-471-7525

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_5ClO$ ( $\underline{CH_2CH_2}CHCOCl$ )	cyclopropanecarboxylic acid chloride	K. P. R. Nair	cis conformer in press
$C_3H_8S$ ( $((CH_3)_2CHSH)$ )	isopropyl mercaptan	J. H. Griffiths	in press
$C_3H_9N$ ( $((CH_3)_2CHNH_2)$ )	isopropyl amine	S. Mehrotra L. L. Griffin	normal species assigned
$C_4H_5N$ ( $\underline{CH_2CH_2}CHCN$ )	cyclopropyl cyanide	R. E. Penn	all heavy isotope species assigned
$CH_3FO_3S$ ( $FSO_2OCH_3$ )	methyl fluorosulfonate	K. P. R. Nair	assigned

5. Name to whom queries should be addressed R. Bohn

Mailing address Department of Chemistry U-60  
University of Connecticut  
Storrs, Ct. 06268  
 Telephone number (203) 486-3044

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_3Cl_3O_2$ ( $CCl_3CO_2CH_3$ )	Methyl Trichloroacetate	N. True	Low Resolution Microwave Spectrum (LRMW) 1 rotamer
$C_3H_5ClO_2$ ( $ClCO_2CH_2CH_3$ )	Ethyl Chloroformate	N. True	LRMW-3 rotamers MS in preparation
$C_4H_3F_3O_2$ ( $CF_3CO_2CH=CH_2$ )	Vinyl Trifluoroacetate	N. True	LRMW-2 rotamers
$C_4H_5F_3O$ ( $CF_3CH_2OCH=CH_2$ )	2,2,2-Trifluoroethyl Vinyl Ether	N. True	LRMW-1 rotamer J. Chem. Phys., in press



$C_4H_5F_3O_2(CH_3CO_2CH_2CF_3)$	2,2,2-Trifluoroethyl Acetate	N. True	LRMW-2 rotamers
$C_4H_5F_3O_2(CF_3CO_2CH_2CH_3)$	Ethyl Trifluoroacetate	N. True	LRMW-3 rotamers MS in preparation
$C_4H_5NO_2(NCCO_2CH_2CH_3)$	Ethyl Cyanoformate	N. True	LRMW-3 rotamers MS in preparation High resolution- 2 rotamers assigned
$C_4H_7ClO_2(ClCO_2CH_2CH_2CH_3)$	n-Propyl Chloroformate	N. True	LRMW-2 rotamers
$C_4H_7ClO_2(ClCO_2CH(CH_3)_2)$	i-Propyl Chloroformate	N. True	LRMW-1 rotamer
$C_5H_3F_3O_2(CF_3CO_2CH_2C\equiv CH)$	Propargyl Trifluoroacetate	N. True	LRMW-2 rotamers
$C_5H_7F_3O_2(CF_3CO_2CH_2CH_2CH_3)$	n-Propyl Trifluoroacetate	N. True	LRMW-1 rotamer
$C_5H_7F_3O_2(CF_3CO_2CH(CH_3)_2)$	i-Propyl Trifluoroacetate	N. True	LRMW-1 rotamer
$C_6H_9F_3O_2(CF_3CO_2C(CH_3)_3)$	t-Butyl Trifluoroacetate	N. True	LRMW-1 rotamer
$C_7H_{11}F_3O_2(CF_3CO_2CH_2C(CH_3)_3)$	neo-Pentyl Trifluoroacetate	N. True	LRMW-1 rotamer

6. Name to whom queries should be addressed PROFESSOR R D BROWN

Mailing address DEPARTMENT OF CHEMISTRY  
MONASH UNIVERSITY  
CLAYTON, VIC, 3168, AUSTRALIA

Telephone number Melbourne 541 3550

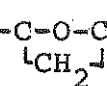
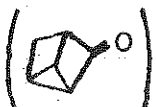


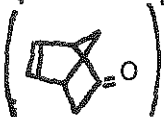
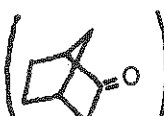
<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_2H_3NO_3$	peroxyacetylnitrate (PAN)	M. Haynes D. Waite	work continuing
$C_6H_6$	dimethylenecyclobutene	A. Ottrey	isotopic work continuing
$C_6H_4O_2$	o-benzoquinone	A. Porter	manuscript submitted

HNC	hydrogen isocyanide	H. Gunn	work in progress
$C_3H_4N_2$	imidazole	I. Elsum	manuscript submitted
$C_2H_3N_3$	1, 2, 3-triazole	W. Garland	paper in preparation
$C_2H_3N_3$	1, 2, 4-triazole	A. Mishra	manuscript submitted.

7. Name to whom queries should be addressed Dewitt Coffey, Jr.

Mailing address Department of Chemistry  
San Diego State University  
San Diego, California, 92187, USA

Telephone number 714-286-6215

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_6O_2$ (CH <sub>3</sub> -C-O-C=O) 	4-methyl-2-oxetanone		Excited states of ring puckering and dipole moment. Manuscript prepared
$C_6H_6O$ 	tricyclo[2.2.0.0 <sup>2,6</sup> ]hexan-3-one		Ground state and dipole moment. Manuscript submitted.
$C_7H_6O$ 	tetracyclo[3.3.0.0 <sup>2,7</sup> .0 <sup>4,6</sup> ]heptan-3-one		Ground state and dipole moment.
$C_7H_8O$ 	tricyclo[2.2.1.0 <sup>2,6</sup> ]heptan-3-one		Ground state rotational constants.
$C_7H_8O$ 	bicyclo[2.2.1]hept-5-ene-2-one		Excited states of lowest vibration mode, deuterated species, and dipole moment.
$C_7H_{10}O$ 	bicyclo[2.2.1]heptan-2-one		Excited states of lowest vibration mode, deuterated species, and dipole moment.

$\text{CH}_8\text{Si}_2(\text{CH}_3\text{SiH}_2\text{SiH}_3)$  methylidisilane

Ground state and dipole moment.

$\text{C}_3\text{H}_{12}\text{Si}_2((\text{CH}_3)_3\text{SiSiH}_3)$  trimethylidisilane

B rotational constant.

8. Name to whom queries should be addressed R. L. Cook, or T. B. Malloy, Jr. or G. E. Jones








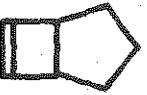

Mailing address Department of Physics

Mississippi State University

Mississippi State, MS 39762

Telephone number

601-325-2806

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{ClF}_3$	Chlorine Trifluoride		Centrifugal distortion Analysis in progress
$\text{CClFO}$	 Carbonyl chlorofluoride		Centrifugal distortion Analysis near completion
$\text{C}_4\text{H}_6\text{O}$	$\text{CH}_3\text{CH}=\text{CHC}=\text{O}-\text{H}$ Crotonaldehyde		Spectrum assigned Work in progress
$\text{C}_4\text{H}_8\text{OS}$	 Tetramethylene sulfoxide		Assignment in progress
$\text{C}_5\text{H}_3\text{ClO}_2$	 2-Furoyl Chloride		Assignment in progress
$\text{C}_5\text{H}_9\text{N}$	 1,2,3,6 Tetrahydropyridine		Work nearly completed Two conformers assigned Stark effect in progress
$\text{C}_6\text{H}_8\text{O}$	 7-oxabicyclo[4.1.0]hept-3-ene		Assignment in progress
$\text{C}_7\text{H}_7\text{N}$	 4-vinylpyridine		Spectrum assigned
$\text{C}_7\text{H}_{10}$	 1,3 cyclohexadiene		Spectrum assigned Stark effect nearly complete
$\text{C}_7\text{H}_{10}$	 bicyclo[4.2.0]hept-6-ene		Spectrum assigned in several vibrational states, Stark effect measurements complete One $^{13}\text{C}$ species assigned Work in progress
$\text{C}_7\text{H}_{11}\text{N}$	 cyclohexylcyanide		Spectrum of equatorial conformer assigned Work continuing

9. Name to whom queries should be addressed Dr. A. Peter Cox

Mailing address Department of Physical Chemistry

Bristol University,

Bristol BS8 1TS, U.K.

Telephone number Bristol 24161

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CH}_3\text{NO}$	Nitrosomethane	P.H. Turner	Structure and centrifugal distortion complete
$\text{C}_2\text{H}_4\text{O}(\text{CH}_3\text{CHO})$	acetaldehyde	P.H. Turner M.P. Landy	Isotopic studies of centrifugal distortion and dipole near-complete
$\text{CF}_3\text{NO}_2$	trifluoronitromethane	P.R.R. Langridge-Smith	Structure and internal rotation near-complete
$\text{C}_4\text{H}_9\text{NO}_2$	t-butyl nitromethane	P.R.R. Langridge-Smith	Analysis in progress
$\text{C}_2\text{H}_6\text{F}_3\text{NSi}[\text{SiF}_3\text{N}(\text{CH}_3)_2]$	trifluorosilyldimethylamine	P.R.R. Langridge-Smith	Analysis in progress
$\text{BF}_5\text{Si}[\text{SiF}_3\text{BF}_2]$	difluoro(trifluorosilyl)borane	T.R. Gayton	Isotopic work in progress
$\text{BrF}_3\text{Si}[\text{SiF}_3\text{Br}]$	trifluorosilylbromide	T.R. Gayton	Manuscript in preparation
$\text{C}_7\text{H}_5\text{F}_3[\text{C}_6\text{H}_5\text{CF}_3]$	benzotrifluoride	T. Ogata	Manuscript in preparation (see Tokyo Institute of Technology)
$\text{C}_5\text{H}_4\text{S}_2$	1 thio-pyran-4-thione	M.J. Corkill I.C. Ewart	Identified
$\text{C}_8\text{H}_6$	phenylacetylene	I.C. Ewart W.M. Stigliani	Structure and dipole published
$\text{C}_2\text{H}_2\text{F}_2$	1:1 difluoroethylene	I.C. Ewart	Vibrational studies extended

12. Name to whom queries should be addressed S. Doraiswamy/S. D. Sharma

Mailing address Chemical Physics Group  
Tata Institute of Fundamental Research  
Homi Bhabha Road, Bombay 400005, INDIA

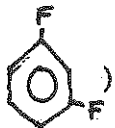
Telephone number 219111 Ext. 354

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_5H_4NCl$	3-chloropyridine	S. D. Sharma S. Doraiswamy	In press
$C_5H_4NF$	3-fluoropyridine	S. Doraiswamy S. D. Sharma	Manuscript in preparation
$C_6H_2F_4$	1, 2, 3, 5 tetrafluoro benzene	S. D. Sharma S. Doraiswamy	Analysis nearing completion
$C_5H_3NF_2$	2-6 difluoropyridine	S. Doraiswamy S. D. Sharma	Further analysis in progress
$C_5H_4NCl$	4-chloropyridine	S. D. Sharma S. Doraiswamy	Spectrum observed
$C_6HF_5O$	pentafluorophenol	S. D. Sharma S. Doraiswamy	Spectrum observed
$C_6HF_5S$	pentafluorothiophenol	S. D. Sharma S. Doraiswamy	Spectrum observed

## 13. Name to whom queries should be addressed

Mailing address Institut für Physikalische Chemie, Abt. Chemische Physik  
Universität Kiel, D 23 Kiel, Olshausenstraße 40/60

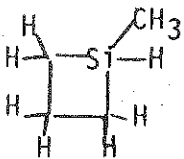
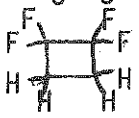
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<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
HC1O (HOC1)	Hypochlorous Acid	M. Suzuki	Zeeman-studies, paper submitted
C <sub>2</sub> H <sub>6</sub> N <sub>2</sub> O ((CH <sub>3</sub> ) <sub>2</sub> NNO)	Dimethylnitrosamine	R. Nicolaisen F. Rohwer	Structure Determination. Measurements in progress
CH <sub>3</sub> C1O (CH <sub>3</sub> OC1)	Methyl hypochlorite	M. Suzuki	Dipolemoment, Zeeman-studies. Centr. Dist. Measurements in progress.
CC1FO (COFC1)	Fluorocarbonylchloride	A. Guarnieri	Zeeman-studies, Measurements in progress
CH <sub>3</sub> C1S (CH <sub>3</sub> SC1)	Methanesulphenylchloride	F. Winther A. Guarnieri	Rotation-Torsion-Vibration interaction, Measurements in progress
CH <sub>3</sub> BF <sub>2</sub>	Methylberondifluoride	L. Engelbrecht	Zeeman studies, Measurements in progress
CH <sub>3</sub> NO <sub>2</sub>	Nitromethane	L. Engelbrecht	" "
CH <sub>3</sub> <sup>15</sup> NO <sub>2</sub>	" "	L. Engelbrecht	" "
CD <sub>3</sub> NO <sub>2</sub>	" "	L. Engelbrecht	" "
C <sub>2</sub> H <sub>6</sub> O((CH <sub>3</sub> ) <sub>2</sub> O)	Dimethylether	H. Lutz	Rotation-Torsion interaction. Measurements in progress
C <sub>2</sub> D <sub>6</sub> O((CH <sub>3</sub> ) <sub>2</sub> O)	d <sub>2</sub> -Dimethylether	H. Lutz	Rotation-Torsion interaction, Measurements in progress
C <sub>6</sub> H <sub>4</sub> F <sub>2</sub> (  )	Difluorbenzene (meta)	J. Wiese	Zeeman studies Measurements in progress
C <sub>3</sub> H <sub>5</sub> N (CH <sub>3</sub> CH <sub>2</sub> CN)	Propionitrile	H. M. Heise	Rotation-Torsion Vibration interaction Measurements in progress

14. Name to whom queries should be addressed Dr. James R. Durig

Mailing address Department of Chemistry  
University of South Carolina  
Columbia, South Carolina 29208





Telephone number 803-777-6612

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CH}_3\overset{\text{O}}{\parallel}\text{PF}_2$	Methylphosphonyldifluoride	Kalasinsky	Assigned
$\text{SiH}_3\text{PH}_2\text{BH}_3$	Silylphosphine-borane	Kalasinsky	In progress
$\text{Cl}-\overset{\text{O}}{\parallel}\text{C}-\text{OCH}_3$	Methylchloroformate	Griffin	Isotopic species in progress
	Methylsilacyclobutane	Flanagan and Kalasinsky	In progress
$\text{CH}_3\text{CH}_2\text{GeH}_3$	Ethylgermane	Lopata	Assigned
$(\text{CH}_3)_2\text{SiHCN}$	Dimethylcyanosilane	Cooper and Li	Draft
$\text{CH}_3\text{GeCl}_3$	Trichloromethylgermane	Cooper and Li	Accepted, J. Mol. Spectrosc.
$\text{CH}_3\text{CH}_2\text{PH}_2$	Ethylphosphine	Cox	Assigned
$(\text{SiH}_3)_2\text{S}$	Disilylsulfide	Flanagan and Kalasinsky	In progress
$\text{SiH}_3\text{SCH}_3$	Methylsilylsulfide	Cooper and Li	In progress
$\text{PH}_3\text{BF}_3$	Phosphine-trifluoroborane	Kalasinsky	Submitted for publication
	1,1,2,2-Tetrafluorocyclobutane	Hudgens	Submitted for publication
$(\text{CH}_3)_2\text{SiHI}$	Dimethyliodosilane	Li	In progress

15. Name to whom queries should be addressed: Paolo Favero

Mailing address: Istituto Chimico "G. Ciamician"  
Via Selmi, 2  
Bologna - Italy

Telephone number: 235586

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
ONCL	Nitrosyl chloride	Cazzoli, Cervellati, Mirri	"b" type transitions and excited state (in press)
	5-methyl pyrimidine	Caminati, Cazzoli, Mirri	V <sub>6</sub> barrier (in press)
C <sub>3</sub> H <sub>4</sub> S	Propargyl mercaptan	Mirri, Scappini, Mäder	Stark effect (in press)
C <sub>2</sub> H <sub>3</sub> SD 3	Propargyl mercaptan (deuterated)	Scappini, Cervellati, Mirri	Torsional splittings of the ground and first excited torsional states. Work in progress.
	Cyclopentadiene	Damiani, Ferretti	All deuterated species Manuscript in preparation.
SbCl <sub>3</sub>	Antimony trichloride	Cazzoli, Caminati	All isotopic species. Work in progress.
	4-chloro pyrimidine	Caminati, Forti	N <sup>14</sup> and Cl <sup>35</sup> QHFS. Work in progress.
C <sub>6</sub> H <sub>5</sub> NHCH <sub>3</sub>	N-methyl aniline	Cervellati, Forti, Mirri	Work just started.
NO <sub>2</sub> Cl	Nitryl-chloride	Filgueira, Forti, Corbelli	Force field. (In press)
	Phenyl silane	Cazzoli, Caminati	Work in progress.



16. Name to whom queries should be addressed Robert G. Ford

Mailing address Department of Chemistry  
Memphis State University

Memphis, Tn 38152  
Telephone number (901) 454-2623

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
C <sub>5</sub> H <sub>8</sub>	1,2-pentadiene	R. Ford	cis and gauche forms assigned
C <sub>2</sub> H <sub>3</sub> ClO	chloroacetaldehyde	R. Ford	2 forms assigned

17. Name to whom queries should be addressed Prof. D. K. Ghosh

Mailing address Microwave Spectroscopy Laboratory  
Saha Institute of Nuclear Physics  
92, Acharya Prafulla Chandra Road, Calcutta - 9

Telephone number \_\_\_\_\_

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
1) C <sub>5</sub> H <sub>4</sub> Cl N	3- Chloropyridine	A. Chatterjee and D. K. Ghosh	PRESENT STAGE OF PROGRESS Rotational constant and quadrupole coupling constants for Cl <sup>35</sup> and Cl <sup>37</sup> species evaluated. Paper accepted for publication in Indian Journal of Physics.
2) C <sub>6</sub> H <sub>3</sub> F <sub>3</sub>	1,2,4 Trifluorobenzene	R. Nandy and A. Chatterjee	Q-branch lines assigned. R-branch in progress.
3) C <sub>6</sub> D <sub>5</sub> Cl	Penta-deutero chlorobenzene	A. Chatterjee, R. Nandy and D. K. Ghosh	Assignments complete. Manuscript in preparation.

18. Name to whom queries should be addressed L. Peter Gold

Mailing address Department of Chemistry, 152 Davey Laboratory  
The Pennsylvania State University, University Park, Pa. 16802

Telephone number (814) 865-7694

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
LiNa	sodium lithium		early

19. Name to whom queries should be addressed Jack D. Graybeal

Mailing address Virginia Polytechnic Institute and State University  
Department of Chemistry  
Blacksburg, Virginia 24061

Telephone number 703-951-6926

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_2H_2BrN(CH_2BrCN$ and $CD_2BrCN)$	Bromoacetonitrile	M.L. Gum, G. Ault	Manuscript Written
$F_4OS$ ( $OSF_4$ )	Sulfur oxytetrafluoride	C.F. Shoemaker M.L. Gum	Spectrum Assigned, Manuscript in Preparation
$CrF_2O_2$	Chromyl fluoride	C.F. Shoemaker J.D. Graybeal	Partial assignment made
$C_2H_2IN$ ( $CH_2ICN$ )	Iodoacetonitrile	G.M. Ault	Spectrum Assigned, Manuscript in Preparation

20.

SWISS FEDERAL INSTITUTE OF TECHNOLOGY

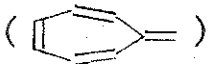
Laboratory for Physical Chemistry

A. Bauder / Hs.H. Günthard

Universitätstrasse 22

CH-8006 Zurich / Switzerland


Phone 01 32 62 11 Ext. 2971/2973





$\text{CH}_2\text{N}_2\text{O}_2$	$(\text{CH}_2(\text{NO}_2)_2)$	Dinitromethane	P. Nösberger	spectrum measured
$\text{CH}_3\text{NO}_2$		Nitromethane	E. Walder	part. deut. species assigned
$\text{C}_2\text{H}_2\text{O}_2$	$(\text{CHO}-\text{CHO})$	Glyoxal	M. Gut	internal rotation
$\text{C}_2\text{H}_2\text{O}_3$	$(\text{CHO}-\text{O}-\text{CHO})$	Formic anhydride	S. Vaccani	assigned
$\text{C}_2\text{H}_4\text{O}$	$(\text{CH}_3\text{CHO})$	Acetaldehyde	A. Bauder	paper in preparation
$\text{C}_2\text{H}_4\text{O}_3$	$(\text{CH}_3\text{COOOH})$	Peroxyacetic acid	J. Cugley	spectrum measured
$\text{C}_2\text{H}_6\text{O}_2$	$(\text{CH}_2\text{OH}-\text{CH}_2\text{OH})$	Ethylene glycol	E. Walder	internal rotation
$\text{C}_3\text{H}_4\text{O}_3$	$(\text{CH}_3\text{COCOOH})$	Pyruvic acid	Ch. Dyllick	isotopic species excited states
$\text{C}_3\text{H}_7\text{N}$	$(\text{CH}_3\text{CH}=\text{NCH}_3)$	N-Methylethylidenimine	W. Bossert	deut. species
$\text{C}_8\text{H}_8$		Heptafulvene	A. Bauder	search for spectrum

21. Name to whom queries should be addressed Marlin D. Harmony

Mailing address Department of Chemistry  
The University of Kansas  
Lawrence, Kansas 66045

Telephone number 913 - 864-3980

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{N}_2\text{D}_4$	Perdeuterohydrazine	Baron, Harmony	Principal spectral features assigned and analyzed.
$\text{C}_6\text{H}_{10}$ 	endo 2-methyl bicyclo[2.1.0]-pentane	Harmony	Spectrum, structure, dipole moment completed.

$C_6H_{10}$		exo 2-methyl bicyclo[2.1.0]- pentane	Yu	Spectrum, struc- ture, dipole moment completed
$C_3H_7N$		Cyclopropylamine	Bostrom	Ring structure i press.
$C_6H_8$		Bicyclo[2.1.1]hex-2-ene	Yu	Normal species completed; $C^{13}$ work underway.
$C_5H_8$		3,3-Dimethyl cyclopropene	Harmony	Spectrum assigne

22. Name to whom queries should be addressed David O. Harris

Mailing address Department of Chemistry

University of California

Santa Barbara, California 93106

Telephone number (805) 961-2534

FORMULA

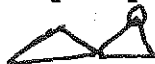
NAME OF  
COMPOUND

NAME OF  
INVESTIGATOR

PRESENT STAGE  
OF PROGRESS

$C_4H_6O$

oxaspiropentane



W.D. Slafer

manuscript-  
complete r<sub>s</sub>  
structure  
except for Oxy

$NO_2$

T. Tanaka

manuscript-  
excited  $^2B_2$   
microwave  
transitions  
by MODR.

23. Name to whom queries should be addressed Eizi Hirota

Mailing address Department of Chemistry, Faculty of Science,  
Kyushu University

Hakozaki, Fukuoka, Japan

Telephone number 092-641-1101, ext.4230

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
C <sub>5</sub> H <sub>8</sub> [CH <sub>2</sub> =CHCH <sub>2</sub> CH=CH <sub>2</sub> ]	1,4-Pentadiene	T. Shigemune E. Hirota	One rotamer assigned.
CH <sub>3</sub> F	Methyl fluoride	E. Hirota	Work in progress. (J = 2 ← 1)
C <sub>6</sub> H <sub>10</sub> S $\begin{array}{c} \text{HC} \begin{array}{l} \diagup \text{CH}_2 \text{CH}_2 \diagdown \\ \diagdown \text{S} \diagup \\ \diagup \text{CH}_2 \text{CH}_2 \diagdown \end{array} \text{CH} \end{array}$	7-Thiabicyclo[2.2.1]heptane	K. Irie E. Hirota	Work in progress.
CH <sub>3</sub> Cl, CD <sub>3</sub> Cl	Methyl chloride	M. Imachi	Manuscript in preparation.
ClHO <sub>4</sub> (HOClO <sub>3</sub> )	Perchloric acid	K. Fujimoto	Assigned.
CH <sub>2</sub> F <sub>2</sub>	Methylene fluoride	E. Hirota	Work in progress.
ClO	Chlorine monoxide	T. Amano	Manuscript in preparation.
C <sub>3</sub> H <sub>8</sub> O, C <sub>3</sub> H <sub>7</sub> OD [(CH <sub>3</sub> ) <sub>2</sub> CHOH, (CH <sub>3</sub> ) <sub>2</sub> CHOD]	Isopropanol	E. Hirota	Work in progress.
C <sub>6</sub> H <sub>12</sub> Si $\begin{array}{c} \text{HSi} \begin{array}{l} \diagup \text{CH}_2 \text{CH}_2 \diagdown \\ \diagdown \text{CH}_3 \diagup \\ \diagup \text{CH}_2 \text{CH}_2 \diagdown \end{array} \text{CH} \end{array}$	1-Silabicyclo[2.2.1]heptane	K. Tanaka T. Ikeura	Work almost completed.
F <sub>2</sub> S (SF <sub>2</sub> )	Sulfur difluoride	T. Chikaraishi	Work completed.
F <sub>4</sub> S (SF <sub>4</sub> )	Sulfur tetrafluoride	H. Inoue	Excited vibrational states; assigned.
C <sub>3</sub> H <sub>4</sub> O	Acrolein	T. Honda E. Hirota (in collaboration with Dr. M. Winnewisser)	Manuscript in preparation.
C <sub>3</sub> H <sub>4</sub> F <sub>2</sub>	3,3-Difluoropropene	I. Botskor	Manuscript in preparation.
CH <sub>4</sub> (CH <sub>2</sub> D <sub>2</sub> )	Methane	E. Hirota	Work in progress.

COS	Carbonyl sulfide	K. Tanaka	Manuscript in preparation. (relaxation studies)
H <sub>3</sub> N	Ammonia	K. Tanaka S. Akiyama T. Ikeura	Work in progress (relaxation studies)
CD <sub>3</sub> Cl	Methyl chloride	C. Yamada	Work in progress (laser spectroscopy)
CD <sub>3</sub> I	Methyl iodide	K. Kawaguchi	Work in progress (laser spectroscopy)

24. Name to whom queries should be addressed Prof. Dr. R. Honerjäger

Mailing address Freie Universität Berlin, Institut für Molekülphysik  
D-1000 Berlin 33, Boltzmann-Straße 20

Telephone number \_\_\_\_\_

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>	
AlF	Aluminium monofluoride	R. Honerjäger und R. Tischer	work completed and published in <u>Z.Naturforsch.</u> <u>29a, 342 (1974)</u>	
CsF	Cesium fluoride		}	<u>29a, 819 (1974)</u>
ClCs (CsCl)	Cesium chloride			
BrCs (CsBr)	Cesium bromide			
CsI	Cesium iodide		}	<u>29a, 1695 (1974)</u>
OSi (SiO)	Silicon oxide			
PbTe	Lead telluride		}	<u>29a, 1919 (1974)</u>
CuF	Copper monofluoride			
FGa (GaF)	Gallium monofluoride			
GeS	Germanium sulfide		}	work in progress:
SnS	Tin sulfide	}		magnetic constants
PbS	Lead sulfide			

BaO	Barium Oxide	E. Tiemann M. Bojaschewski Ch. Sauter-Servaes T. Törring	Z.Naturforsch. <u>29a</u> 1692 (1974)
BaS	Barium Sulfide	Ch. Ryzlewicz T. Törring E. Tiemann	to be published
BrIn (InBr)	Indium Bromide	U. Köhler E. Tiemann J. Hoeft	to be published
BrRb (RbBr)	Rubidium Bromide	B. Hölzer E. Tiemann J. Hoeft	to be published
BrCl	Bromine Chloride	M. Wagner E. Tiemann	work in progress
BrI (IBr)	Iodine Bromide	T. Möller E. Tiemann	to be published
(SO) <sub>2</sub>	Sulfur Oxide Dimer	E. Tiemann	coriolis coupling of vibrational states
ITl (TlI)	Thallium Iodide	H. Arnst E. Tiemann J. Hoeft T. Törring	mm-wave spectrum nearly complete
BrTl (TlBr)	Thallium Bromide		
GeS	Germanium Sulfide		
GeSe	Germanium Selenide	W.U. Stieda E. Tiemann	Potential function and adiabatic correction of Born-Oppenheimer approximation
PbS	Lead Sulfide	J. Hoeft	
PbTe	Lead Telluride	T. Törring	

25. Name to whom queries should be addressed Donald R. Johnson

Mailing address Molecular Spectroscopy Section 232.02

National Bureau of Standards

Washington, D. C. 20234

Telephone number (301) 921-2021

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
A B C	All Triatomic Molecules	Lovas	Tabulation of Microwave Data 50% complete.

$C_2H_5N(CH_3CH = NH)$	Ethylideneimine	Lovas, Johnson, Clark	trans and cis forms assigned manuscript in preparation.
$c_2H_6O(CH_3O CH_3)$	Dimethyl Ether	Driezler, Lovas, Johnson	Extended measurements, distortion analysis, critical review in preparation.
$C_2H_4O(CH_3CHO)$	Acetaldehyde	Bauder, Lovas Johnson	Extended measurements, distortion analysis, critical review in preparation.

26. Name to whom queries should be addressed Fred Karlsson

Mailing address Department of Physical Chemistry, Arrhenius Laboratory

University of Stockholm

S-104 05 Stockholm, Sweden

Telephone number 08/15 01 60

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_3Cl$	cis-1-Chlorobuten-3-yne	Fred Karlsson Mats Granberg Ragnar Vestin	Manuscript in preparation
$C_4H_3Cl$	4-Chlorobuten-3-yne	Fred Karlsson Mats Granberg Ragnar Vestin	Published
$C_4H_5Cl$	2-Chloro-1,3-butadien	Fred Karlsson Mats Granberg	Spectrum observed
$C_4H_5Cl$	4-Chloro-1,2-butadien	Fred Karlsson Mats Granberg	Spectrum assigned
$C_4H_5Cl$	trans-4-Chloro-1,3-butadien	Fred Karlsson Mats Granberg	Spectrum observed
$C_4H_5Cl$	cis-4-Chloro-1,3-butadien	Fred Karlsson Mats Granberg	Spectrum observed



27. Name to whom queries should be addressed Hasse Karlsson

Mailing address Department of Medical Physics

University of Göteborg

Fack, S-400 33 Göteborg 33, Sweden

Telephone number (Sweden) 031-410800

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_4F_2O$	1,3-difluoro-acetone	H.Karlsson	Manuscript in preparation
$C_3H_5ClO$	propionyl chloride	H.Karlsson	cis conformer assigned

28. Name to whom queries should be addressed Roger Kewley

Mailing address Department of Chemistry, Queen's University,  
Kingston, Ontario, Canada, K7L 3N6.

Telephone number (613)-547-5918

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_5H_{11}N$	Piperidine (axial NH)	R.S. Lowe	Manuscript in preparation on centrifugal distortion studies
$C_4H_8O_2$	1,3-dioxane	R.S. Lowe	
$C_5H_{10}O$	Tetrahydropyran	R.S. Lowe	
$C_4H_7NO$	2-methoxypropionitrile	R.S. Lowe	Initial assignment for trans conformer
$C_5H_{10}N_2$	Tert-butyl cyanamide	R. Kewley	Partial assignment for NH and ND species
$C_5H_8O$	1-methoxybutadiene	R. Kewley	Preliminary assignment for two conformers
$C_6H_{12}O$	Oxepane	R. Kewley	Complex spectrum, not yet assigned

29. Name to whom queries should be addressed Takeshi Kojima

Mailing address Toyama University, Department of Physics

Toyama 930

Japan

Telephone number \_\_\_\_\_

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CH}_5\text{N}(\text{CH}_3\text{NHD})$	Methylamine	K. Takagi T. Kojima	Manuscript in Preparation
$\text{N}_2\text{H}_4(\text{NH}_2\text{NH}_2)$ $\text{N}_2\text{H}_3\text{D}(\text{NH}_2\text{NHD})$ $\text{N}_2\text{H}_2\text{D}_2(\text{NH}_2\text{ND}_2, \text{NHDNHD})$ $\text{N}_2\text{HD}_3(\text{NHDND}_2)$ $\text{N}_2\text{D}_4(\text{ND}_2\text{ND}_2)$	} Hydrazine	S. Tsunekawa	Q-branch Series Assigned

30. Name to whom queries should be addressed Lawrence C. Krisher

Mailing address Institute for Molecular Physics

University of Maryland

College Park, Maryland

20742

Telephone number 301 - 454-3439

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CH}_5\text{FGe}(\text{CH}_3\text{GeH}_2\text{F})$	Methylfluoro-germane	L. C. Krisher	In progress.
$\text{CH}_3\text{F}_3\text{Ge}(\text{CH}_3\text{GeF}_3)$	Methyltrifluoro-germane	J. A. Morrison L. C. Krisher	No spectrum; synthesis problem.

31. Name to whom queries should be addressed KRISHNAJI / S.L. SRIVASTAVA

Mailing address Department of Physics, University of Allahabad  
Allahabad-211002, INDIA.

Telephone number \_\_\_\_\_

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_6N_2$	N-methyl Pyrazole	N.K. Narain S.L. Srivastava	Tentative assignment completed; Barrier determined.
$C_6H_4FBr$	m-Fluorobromo benzene	N.K. Narain S.L. Srivastava	work in progress
$C_6H_4FCl$	m-Fluorochloro benzene	N.K. Narain S.L. Srivastava	work in progress
$C_6H_4FBr$	o-Fluorobromo benzene	S.L. Srivastava	work in progress

32. Name to whom queries should be addressed H. W. KROTO

Mailing address School of Molecular Sciences, University of Sussex,  
Brighton U.K. BN1 9QJ.

Telephone Number Brighton 66755

<u>Formula</u>	<u>Name of Compound</u>	<u>Name of Investigator</u>	<u>Present stage of progress</u>
$CH_3NSi$ $SiH_3CN$	Silylcyanide	A. J. Careless	in press
$C_3H_9NSSi$ $(CH_3)_3SiNCS$	Trimethylsilyl isothiocyanate	A. J. Careless A. P. Cox	work temp. suspended
$C_2H_4S$ $CH_3CHS$	Thioacetaldehyde	B. M. Landsberg	ms. in prep.
$C_3H_6S$ $(CH_3)_2CS$	Thioacetone	B. M. Landsberg	ms. in prep.
$C_2H_2S$ $H_2CCS$	Thioketene	K. Georgiou	work almost complete
$C_2H_4Se$ $CH_3CHSe$	Selenoacetaldehyde	M. Hut chinson	barrier and struct. determined

$C_2H_5NO$	$CH_3CH_2NO$	Nitrosoethane	D. Milverton	two conformers obs.
$BClF_2$	$F_2BCl$	Difluoroboron chloride	M. Maier	structure + quadrupole
$C_5HN$	$H(C\equiv C)_2CN$	Cyanodiacetylene	A. Alexander D. Walton	g. s. assigned
$C_7H_4$	$CH_3(C\equiv C)_3H$	Methyl triacetylene	" "	" "
$C_6H_3N$	$CH_3(C\equiv C)_2CN$	Methyl cyano diacetylene	" "	" "
$C_5H_{10}Si$	$(CH_3)_3SiC\equiv CH$	Trimethyl silyl acetylene	" "	" "
$C_6H_9NSi$	$(CH_3)_3SiC\equiv CCN$	Trimethyl silyl cyano acetylene	" "	" "
$C_8H_9NSi$	$(CH_3)_3Si(C\equiv C)_2CN$	Trimethyl silyl cyanodiacetylene	" "	" "
$C_5H_4$	$CH_3(C\equiv C)_2H$	Methyl diacetylene	M. Maier	Vib. satellite study

33. Name to whom queries should be addressed Dr. Robert L. Kuczkowski

Mailing address Department of Chemistry

The University of Michigan

Ann Arbor, Michigan 48104

Telephone number 1-313-764-7540

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_5H_5As$	arsabenzene	R. Lattimer	In press
$C_2H_3FO_3$ (FH $\overbrace{COOCH_2O}$ )	1-Fluoroethylene ozonide	R. Lattimer U. Mazur	Assigned. More isotopes in progress
$C_5H_4$	1,4 pentadiyne	R. Lattimer U. Mazur	Assigned. More isotopes in progress
$C_2H_4O_3$ (H <sub>2</sub> $\overbrace{COOCH_2O}$ )	Ethylene ozonide	K. Gallaher	Further studies on deuterated species-mech.

$C_3H_{11}BFN$	$(CH_3)_3NBH_2F$	P. Cassoux	Assigned
$C_3H_{12}BN$	$(CH_3)_3NBH_3$	P. Cassoux	Jan. 1975, <u>Inorg. Chem.</u>
$HF_2NOS$	imidosulfuryl fluoride	P. Cassoux	2 isotopes assigned
$HN = S(O)F_2$			

34. Name to whom queries should be addressed Dr. S. G. Kukolich

Mailing address Department of Chemistry - University of Arizona  
Tucson, AZ 85721

Telephone number 602-884-2969

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$N_2O$	Nitrous Oxide	Casleton - Kukolich	manuscript complete
$CH_2O (H_2CO)$	Formaldehyde	Foreman-Chien-Kukolich	rotational relaxation measurements complete
$COS (OCS)$	Carbonyl Sulfide	Kukolich-Chien-Foreman	rotational relaxation measurements in progress

35. Name to whom queries should be addressed Victor W. Laurie

Mailing address Department of Chemistry  
Princeton University  
Princeton, New Jersey 08540

Telephone number (609) 452-3949

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_4F_2$	1,1-difluorocyclopropane	A. T. Perretta	in press
$C_4H_5N$	cyclopropyl cyanide	R. Pearson and A. Choplin	manuscript prepared

$C_5H_4N_2$	1,1-dicyanocyclopropane	R. Pearson and A. Choplin	in press
$C_3H_4$	cyclopropene	W. Stigliani	in press
$C_3H_2F_4$	1,1,2,2-tetrafluorocyclopropane	W. Stigliani	manuscript in preparation
$C_{10}H_{10}$	bullvalene	W. Stigliani	excited states analyzed
$C_2H_7N$	ethylamine	Y. S. Li	manuscript in preparation
$C_3H_2F_2$	3,3-difluorocyclopropene	K. Ramaprasad	two isotopic species assigned

36. Name to whom queries should be addressed Prof. Donald H. Levy

Mailing address The James Franck Institute  
The University of Chicago  
5640 South Ellis Avenue, Chicago, Illinois 60637  
 Telephone number (312) 753-8206

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$BO_2$	Boron Dioxide	M. S. Kim, R. E. Smalley, D. H. Levy.	Microwave optical double resonance transitions between Zeeman sublevels and the ground electronic state have been observed and measured.

37. Name to whom queries should be addressed Dr. Stig O. Ljunggren

Mailing address Division of Physical Chemistry  
The Royal Institute of Technology  
S-100 44 Stockholm 70 Sweden


Telephone number 08-23 65 20





<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_3BrS$	3-Bromothiophene	J. Mjöberg	In progress
$C_4H_3BrS$	2-Bromothiophene	J. Mjöberg	Manuscript submitted
$C_4H_3NO_2S$	2-Nitrothiophene	S. Ljunggren	Spectrum assigned
$C_4H_4O_2$	Furfurylic alcohol	S. Ljunggren	Spectrum observed
$C_5H_8S$	Cyclopentenesulfide	S. Ljunggren	Spectrum assigned
$C_6H_8O$	3-Bicyclo[3.1.0]hexanone	J. Mjöberg with A C Legon (London)	In progress
$C_6H_6O_2S$	Tietane-1,1-dioxide	S. Ljunggren	In progress
$C_7H_7N$	4-Vinyl pyridine	W. Ralowski	Spectrum assigned
$C_8H_7Cl$	p-Chlorostyrene	W. Ralowski	Manuscript in preparation
$C_8H_7F$	p-Fluorostyrene	W. Ralowski	In print

38. Name to whom queries should be addressed Professor Shiro Maeda/ Dr. Chiaki Hirose

Mailing address Research Laboratory of Resources Utilization  
O-okayama, Meguro-ku, Tokyo 152, JAPAN

Telephone number Japan 03-726-1111 ext.2316,2303

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_7H_5F_3$ (CF <sub>3</sub>  )	Benzotrifluoride	T. Ogata	barrier determined in manuscript

$C_6H_5NO$ (CHO-  )	2-pyridinecarbaldehyde	Y. Kawashima	paper submitted to Bull. Chem. Soc. Japan
$CF_3H, CF_3D$	Fluoroform	Y. Kawashima	vib-rot interaction manuscript in prepn
$C_7H_6O$ (CHO  )	Benzaldehyde	Y. Kawashima	dipole moment Bull. Chem. Soc. Japan 47, 2879 (1974)
$C_2H_4O$ ( $H_2C-CH_2$ ) 	Ethylene oxide	N. Yoshimizu	vib'l states, to be submitted
$C_2H_4S$ ( $H_2C-CH_2$ ) 	Ethylene sulfide	C. Hirose	vib'l states, manuscript in prepn
$C_4H_6O$ ( $(CH_2=CH)_2O$ )	Divinyl ether	C. Hirose	vib'l states work in progress

39. Name to whom queries should be addressed Chi Matsumura

Mailing address National Chemical Laboratory for Industry  
Honmachi-1, Shibuya-ku, Tokyo


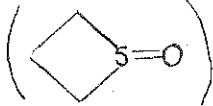
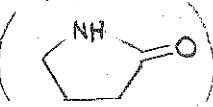
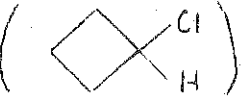

151 Japan

Telephone number 03 377-5211 Ex. 340

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$CHClO$ ( $HCOCl$ )	Formyl chloride	H. Takeo	$r_s$ structure completed. Manuscript in preparation.
$CHClF_2$	Chlorodifluoromethane	M. Ayabe Y. Fujimori H. Takeo	$r_s$ structures. Refinement of coupling constants. Work almost completed.
$CHCl_2F$	Dichlorofluoromethane		
$CH_2ClF$	Chlorofluoromethane		
$CH_2Cl_2$	Dichloromethane		
$CClF_3$	Chlorotrifluoromethane		
$CCl_3F$	Trichlorofluoromethane		
$CCl_2F_2$	Dichlorodifluoromethane		
$CH_4Cl_2Si$ ( $CH_3SiHCl_2$ )	Dichloromethylsilane	K. Endo	Spectrum assigned.



40. Name of Institution: University College London  
 Name of Department of Institute: Department of Chemistry  
 Name to whom queries should be addressed: D. J. Millen/A. C. Legon

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STATE OF PROGRESS</u>
$C_2 H_4 FN$ ( $CH_3 CN \dots HF$ )	hydrogen-bonded complex of methyl cyanide and hydrogen fluoride	J. W. Bevan S. C. Rogers	Preliminary publication (J.C.S. Chem.Comm., 1975, 130). Isotopic work in progress.
$H_2 FO$ ( $H_2 O \dots HF$ )	hydrogen-bonded complex of water and hydrogen fluoride	J. W. Bevan S. C. Rogers	Preliminary publication submitted. Further work in progress.
$C_6 H_8 O$ 	bicyclo-[3.1.0]hexanone	J. W. Bevan	Isotopic work near completion. Joint publication planned with group at Royal Institute of Technology, Stockholm.
$C_4 H_9 SiN$ [( $CH_3$ ) <sub>3</sub> SiCN/NC]	trimethyl silyl cyanide/ isocyanide	S. C. Rogers	Cyanide/isocyanide isomerisation under investigation.
$C_3 H_6 SO$ 	trimethylene sulphoxide	J. W. Bevan	Preliminary publication (J.C.S. Chem.Comm., 1974, 659). Work completed. Further manuscript in preparation.
$C_4 H_7 NO$ 	pyrrolidone	J. W. Bevan	Isotopic work in progress.
$C_4 H_7 Cl$ 	cyclobutyl chloride	A. Samsam-Baktiari	Work on $r_s$ -structure begun.
$C_5 H_6 O$ 	cyclopent-2-enone	R. F. Walker	Dipole moment components measured.

41. Name to whom queries should be addressed Ian M Mills  
 Mailing address Department of Chemistry, University of Reading,  
Berkshire, England.  
 Telephone number Reading 85123 extn. 7944

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
CH <sub>3</sub> Cl	Methyl Chloride CHD <sub>2</sub> <sup>35</sup> Cl CHD <sub>2</sub> <sup>37</sup> Cl	P. D. Mallinson	Work near completion.
C <sub>2</sub> H <sub>3</sub> N(CH <sub>3</sub> CN)	Methyl Cyanide CHD <sub>2</sub> CN	P. D. Mallinson	Many ground and excited vibrational state lines assigned.
CH <sub>3</sub> NO <sub>2</sub>	Nitromethane	P.D.Mallinson J. A. Duckett	Full assignment of ground vibrational state in progress.
C <sub>3</sub> HN(HCCCN)	Cyanoacetylene	P.D. Mallinson	Assignment of excited vibrational states in progress.
AsBr <sub>3</sub>	Arsenic tribromide	A.G.Robiette	Measurements complete to be written up.
CH <sub>3</sub> NOSi(SiH <sub>3</sub> NCO)	Silyl isocyanate	J.A.Duckett A.G.Robiette	Excited vibrational states up to v <sub>10</sub> =5 assigned.
CH <sub>3</sub> NSSi(SiH <sub>3</sub> NCS)	Silyl isothiocyanate	K.-F.Doessel J.A.Duckett A.G.Robiette	Excited vibrational states up to v <sub>10</sub> =3
CH <sub>3</sub> NS <sub>e</sub> Si(SiH <sub>3</sub> NCS <sub>e</sub> )	Silyl isoselenocyanate	A.G. Robiette	<sup>78</sup> Se and <sup>80</sup> Se ground state and v <sub>10</sub> =1 assigned.
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Si(SiH <sub>3</sub> CCF <sub>3</sub> )	Silyl trifluoromethyl acetylene	A. G. Robiette	Ground state and <sup>29</sup> Si species assigned.
C <sub>5</sub> H <sub>10</sub> O	3,3-dimethyl oxetane	J. A. Duckett	Ground and several excited vibrational states assigned.
C <sub>4</sub> H <sub>6</sub> O	Cyclobutanone	D. L. Gray P. D. Mallinson	Centrifugal distortion analysis in progress.

42. Name to whom queries should be addressed K.-M.Marstokk/H.Møllendal

Mailing address Department of Chemistry

The University of Oslo

Blindern, Oslo 3, (Norway)

Telephone number 02/466800 ext. 8674

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_5H_6Be(C_5H_5BeH)$	Cyclopentadienylberyllium hydride	A.Bjørseth/ H.Møllendal	In press
$C_2H_2O_3(CHOCO_2H)$	Glyoxylic acid	I.Christiansen	Paper submitted
$C_3H_9NO(CH_3CHNH_2CH_2OH)$	2-amino-1-propanol	B.H.Ellingsen	Spectrum observed
$C_4H_6O(CH_3OCH_2C\equiv CH)$	3-methoxy propyne	H.Møllendal	Many lines measured

43. Name to whom queries should be addressed T. Oka

Mailing address Division of Physics

National Research Council of Canada

Ottawa, Ontario, K1A 0R6

Telephone number 613-- 992-2621

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$SiH_4$	Silane	W. Kreiner	Seven microwave lines found in the ground state
$GeH_4$	Germane	U. Andresen	Microwave lines in the ground state

44. Name to whom queries should be addressed Robert E. Penn  
 Mailing address Chemistry Department  
University of Missouri  
St. Louis, Missouri 63121  
 Telephone number 314-453-5311

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_8S$	cyclopropyl methyl sulfide	Penn and Grossman	conformation, $V_3$ $\mu$ , manuscript submitted, <u>J. Mol. Spectry.</u>
$C_3H_9NO$	2-Methylaminoethanol	Penn and Buxton	In Press, <u>J. Mol. Spectry.</u>
$C_4H_{11}NO$	2-Dimethylaminoethanol	Penn and Birkenmeier	H-Bonded conformation, $\mu$ , $d_1$ species manuscript submitted, <u>J. Mol. Spectry.</u>
$C_4H_5N$	cyclopropyl cyanide	Begun at the Univ. of Texas at Austin with J.E. Boggs	Enriched $d_1$ , and nat'l abundance C-13's completed. N-15 and C1-13 enrichment underway

45. Name to whom queries should be addressed C. Richard Quade  
 Mailing address Department of Physics  
Texas Tech University  
Lubbock, Texas 79409  
 Telephone number 806-799-4194

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
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No new molecules.

46. Name to whom queries should be addressed Dr. J. A. Roberts

Mailing address Department of Physics

North Texas State University

Denton, Texas 76203


Telephone number 817-788-2160

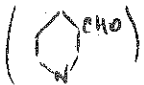
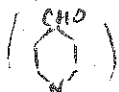
<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
H <sub>2</sub> CO	Formaldehyde	A. Venkatachar	Microwave linewidth parameters for 7 transitions for self and H <sub>2</sub> and He broadening determined.
HCOOH	Formic Acid	A. Venkatachar	Microwave linewidth parameters for 10 transitions for self and H <sub>2</sub> and He broadening determined.

47. Name to whom queries should be addressed Georges ROUSSY

Mailing address Laboratoire de Chimie Théorique, Université de NANCY I  
Case Officielle 140, 54037 NANCY Cedex

Telephone number (28) 27.00.24 poste 20,51

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
C <sub>7</sub> H <sub>5</sub> NO(C <sub>6</sub> H <sub>5</sub> NCO)	Phénylisocyanate	A. BOUCHY	Manuscript in preparation
C <sub>7</sub> H <sub>5</sub> NS (C <sub>6</sub> H <sub>5</sub> NCS)	Phénylisothiocyanate	A. BOUCHY	Spectrum assigned
C <sub>7</sub> H <sub>8</sub> (  )	Toluène	J.J.MASINI	Some <sup>13</sup> C species assigned analytical uses
C <sub>6</sub> H <sub>5</sub> Cl	Chlorobenzène	F. MICHEL	r <sub>s</sub> structure complete Manuscript submitted Excited vibr. states in progress

$C_3H_7N(CH_2=CHCH_2NH_2)$ Allylamine		G. ROUSSY	Temporarily abandoned
$C_6H_5NO$ 	3-Pyridine Aldéhyde	F. MICHEL	Work beginning
$C_6H_5NO$ 	4-Pyridine Aldéhyde	F. MICHEL	Work beginning

48. Name to whom queries should be addressed H. D. Rudolph

Mailing address     Institute of Physical Chemistry  
                           University of Ulm  
                           D-7900 Ulm (Donau), W.-Germany

Telephone number    0731/1762302 or 1762303

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$CF_3Br$ ( $F_3CBr$ )	trifluoromethyl-bromide	H. Jones F. Kohler	IR-MW double resonance signals observed analysis well advanced
$CF_3I$ ( $F_3CI$ )	trifluoromethyl-iodide	H. Jones F. Kohler	IR-MW double resonance $V_1 = 1$ excited state observed as absorptions and emissions. Paper submitted
$C_2HF$ ( $HCCF$ )	Fluoroacetylene	H. Jones	analysis of vibrational states of 6 isotopic species well advanced
$C_2H_3N$ ( $CH_3NC$ )	methylisocyanide	M. Römheld	IR-RF and IR-MW two-photon and double resonance investigations continuing
$C_2H_6S$ ( $(CD_3)_2S$ )	$d_6$ -dimethylsulfide	J. Demaison D. Schwach B.T. Tan	excited states work in progress

$C_2H_7SiCl$ ( $C_2H_5SiH_2Cl$ )	ethylchlorosilane	V. Typke	excited states
$C_4H_2N_2$ ( $H_2CC(CN)_2$ )	vinylidene-dicyanide	J. Demaison B.T. Tan	g.s., vib. states assigned isotopic species in progress
$C_4H_6O$ ( $(CH_3)_2C_2O$ )	dimethylketene	J. Demaison D. Schwoch B.T. Tan	excited states paper in preparation
$C_5H_8$ ( $(CH_3)_2C_3H_2$ )	Dimethylallene	J. Demaison D. Schwoch B.T. Tan	analysis of Coriolis interaction
$C_7H_7F$ ( $CH_2F C_6H_5$ )	$\alpha$ -fluorotoluene	J. Demaison D. Schwoch	spectrum observed
$C_7H_7F$ ( $CD_3C_6H_4F$ )	$\alpha$ d <sub>3</sub> -ortho-fluoro-toluene	D. Schwoch	g.s. assigned

49. Name to whom queries should be addressed K. V. L. N. Sastry

Mailing address Department of Physics, University of New Brunswick

Fredericton, N. B.

Canada

Telephone number 453-4733

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_6O_2$ $C_3H_5DO_2$	Glycidol (OH and OD)	Brooks & Sastry	Manuscript submitted
$C_4HO_2$	cis 1-4 butenediol	Brooks & Sastry	in progress
$SO_2F_2$	sulfuryl fluoride	Eshaque	18 O species and excited states manu- script in prep.

50. Name to whom queries should be addressed R. H. Schwendeman

Mailing address Department of Chemistry

Michigan State University

East Lansing, MI 48824 USA

Telephone number 517-355-9725

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_4O_2(CH_2OCHCHO)$	Glycidaldehyde	R. A. Creswell P. Manor R. Assink	Manuscript in preparation
$C_4H_8O(CH_3CH_2CH_2CHO)$	Butyraldehyde	P. Lee	Two rotamers assigned.
$CH_6BF_2P(CH_3PF_2BH_3)$	Methyldifluorophosphine-BH <sub>3</sub>	R. Creswell R. ElZaro	Manuscript submitted.
$C_3H_7NO(HCON(CH_3)_2)$	Dimethylformamide	S. Brown A. Brittain R. ElZaro	Parent, d <sub>7</sub> , and CD <sub>3</sub> (cis and trans) species assigned.
$C_2H_5NO(HCONHCH_3)$	N-methylformamide	R. Creswell E. ElZaro	Species with CH <sub>3</sub> cis to O assigned.
$C_5H_{10}((CH_3)_2CHCHCH_2)$	3-Methyl-1 butene	M. Pagitsas R. Creswell	gauche and trans rotamers assigned
$C_6H_{10}(CH_2CH_2CHC(CH_3)CH_2)$	Isopropenylcyclopropane	P. Thrash R. Creswell	One species assigned.

UNIVERSITY COLLEGE, BANGOR, NORTH WALES

51. Name to whom queries should be addressed John Sheridan

Mailing Address

School of Physical and Molecular Sciences,

University College of North Wales, Bangor, Gwynedd LL57 2UW.

U.K.

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAMES OF INVESTIGATORS</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_4H_5NO$	3-methyl isoxazole	C. Walls	} Assignments of A- and E-states in progress
$C_5H_7N$	2-methyl pyrrole	C. Walls	
$C_3H_5N_3$	1-methyl-1,2,3 triazole	C. Walls	



$C_4H_4O_2$	propargyl formate	N.L. Owen D.G. Lister	Submitted to J.C.S. (Faraday)
$C_4H_8O$	1-methyl cyclopropanol	C. Walls	Work resumed
$C_4H_8O$	cyclobutanol	J.N. Macdonald	Equatorial trans OH and OD complete; V=1 2 of ring flexing mode
$C_3H_6O_2$	propionic acid	O.L. Stiefvater	Work on gauche-form continuing
$C_4H_8O$	isobutyraldehyde	O.L. Stiefvater	Continuing on less stable rotamers and structures
$C_4H_7FO$	isobutyryl fluoride		
$C_4H_8O_2$	isobutyric acid		
$C_3H_3NS$	isothiazole	O.L. Stiefvater I. Butterworth	r <sub>s</sub> -structure well advanced
$C_5H_3F_2N$	2,6-difluoropyridine	O.L. Stiefvater S. Lui	Structure, dipole and HFS in progress
$C_2H_2N_2S$	1,2,3-thiadiazole	O.L. Stiefvater G.J. Woodward	Assigned. Dipole and HFS in progress
$C_4H_5N_3$	2-aminopyrimidine	D.G. Lister Miss S. Lowe	Parent assigned; NHD, ND <sub>2</sub> in progress
$C_4H_7NO$	acetone cyanohydrin	D.G. Lister (with D. Damiani, Bologna)	Some $\mu_c$ lines assigned
$C_6H_6FN$	o-fluoroaniline	D.G. Lister D. Christen (with D. Damiani, Bologna)	NHD, ND <sub>2</sub> in progress
$C_2H_4OS$	methyl thiolformate	N.L. Owen D.G. Lister	M.S. in preparation (with M.C.L. Gerry, U.B.C.)

52. Name to whom queries should be addressed MICHIO TAKAMI

Mailing address Microwave Physics Laboratory, Institute of Physical and Chemical  
Research, Wako, Saitama 351, Japan

Telephone number 0484-62-1111

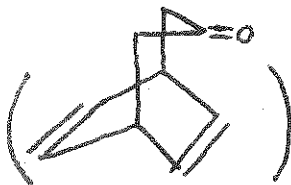
<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_3H_2O$ (CHCCHO)	propynal	M. Takami	Eleven lines ( $v_2=1$ ) were observed by infrared-microwave double resonance

53. Name to whom queries should be addressed Dr J K Tyler

Mailing address Chemistry Department, University of Glasgow,  
GLASGOW G12 8QQ, SCOTLAND.

Telephone number 041-339 8855

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$CN_2O$ (NO.CN)	Nitrosyl Cyanide	R Dickinson	NQHS complete. High frequency $\mu_a$ lines measured. $\mu_b$ line measurements in progress.
$C_4H_3NO_2$	Maleimide	R Dickinson L Barraclough	N-H and N-D species assigned.
$C_9H_{10}O$	Bicyclo[3.2.2]-nona-6,8-diene-3-one	J K Tyler	Work continues



$CD_2N_2$ ( $ND_2CN$ )	Dideutero-cyanamide	J K Tyler	Further work on rotation-inversion problem.
$C_5H_4O_2$	Pyran-4-one	J K Tyler	Further work on $^{13}C$ -species.

54. Name to whom queries should be addressed Pr. R. WERTHEIMER

Mailing address Laboratoire de Spectroscopie Hertzienne  
U.E.R. de Physique Fondamentale Université de Lille I  
B.P. 36 59650 VILLENEUVE D'ASCQ - France  
 Telephone number (20) 56.92.00 Poste 21.84

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_2H_3N$ ( $CH_3NC$ )	Methyl isocyanide	M. GODON - A. BAUER	Excited States
$COS$ ( $OCS$ )	Carbonyl sulfide	M. BOGEY	$\nu_3$ State
$N_2O$ ( $N_2O$ )	Nitrous oxide	M. BOGEY	$\nu_3$ State
$HO$ ( $OH$ )	Hydroxyl radical	J.L. DESTOMBES C. MARLIERE	Spectrum assigned
$HNO_3$	Nitric acid	R. BUSTREEL F. ROHART	Work in progress
$CH_3NO_2$	Nitromethane	F. ROHART	Spectrum assigned
$SO_2Cl^{35}Cl^{37}$	Sulfinyl Chlorid	A. DUBRULLE	Spectrum assigned
$CH_3Br$	Methyl Bromide	F. HERLEMONT J. LEMAIRE	Spectrum assigned
$O_3$	Ozone	J.C. DEPANNE-MACKER	Excited states
$CH_2O_2$ ( $HCOOH$ )	Formic acid	E. WILLEMOT	Excited states
$CH_2O$ ( $H_2CO$ )	Formaldehyde	D. DANGOISSE	Excited states
$C_3H_6O_3$ ( $(H_2CO)_3$ )	Trioxane	J.M. COLMONT	Excited states

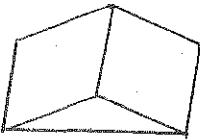
55. Name to whom queries should be addressed PROFESSOR D.H. WHIFFEN  
 Mailing address DEPARTMENT OF PHYSICAL CHEMISTRY  
UNIVERSITY OF NEWCASTLE UPON TYNE  
NEWCASTLE UPON TYNE NE1 7RU. UNITED KINGDOM  
 Telephone number NEWCASTLE (0632 - 28511) Extension 3055

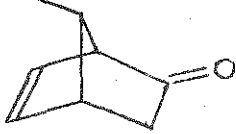
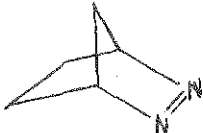
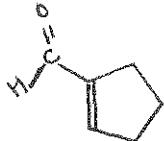
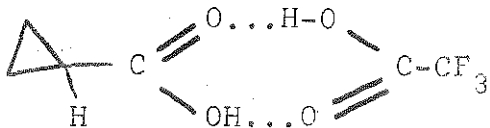
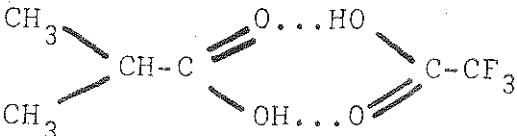
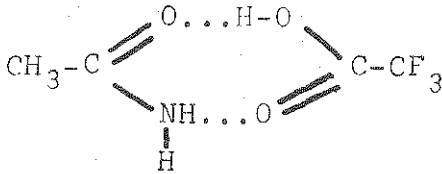
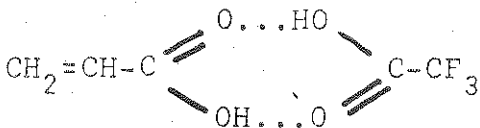
<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
C Br <sub>2</sub> O	Carbonyl bromide	I. Thompson	Second order quadrupol coupling analysis in progress
C Cl <sub>2</sub> O	Carbonyl chloride	D.F. Rimmer J.H. Carpenter	Centrifugal distortion analysis in progress
C Cl <sub>2</sub> S	Thiocarbonyl chloride	D.F. Rimmer J.H. Carpenter	Work completed Manuscript submitted
F <sub>3</sub> PO	Phosphoryl fluoride	J.G. Smith	V <sub>5</sub> = 1 excited state assigned. V <sub>6</sub> = 1 assignment in progress
F <sub>3</sub> PS	Thiophosphoryl fluoride	J.G. Smith I. Thompson	Ground state 33S and 34S measured. Excited vibrational states assigned for 32S.

56. Name to whom queries should be addressed E. Bright Wilson

Mailing address Department of Chemistry, Harvard University,  
12 Oxford Street, Cambridge, Massachusetts 02138 USA

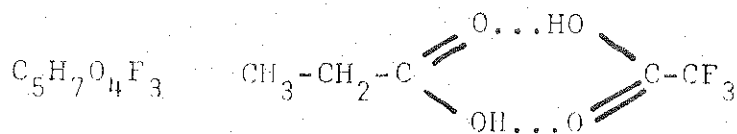
Telephone number 617-495-4085

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$C_2H_6S_2$	1,2-Ethanedithiol	S. Borchert	Work suspended
$C_4H_7Cl$ ( $CH_2C(CH_3)CH_2Cl$ )	isobutenyl chloride	D. Finnigan	Completed
$C_4H_7N$ ( $CH_3CH_2CH_2NC$ )	n-propyl isocyanide	M. Fuller	2 forms assigned
$C_3H_7ClO$ ( $ClCH_2CH_2CH_2OH$ )	chloropropanol	M. Fuller	2 forms assigned
$C_2H_2F_2O_3$	1,1-difluoroethylene ozonide	C. Gillies R. Suenram	Spectrum assigned; mechanistic studies in progress.
$C_3H_4O_2$	malondialdehyde	W. F. Rowe	Paper in preparation
$C_2H_5NO$	acetamide	W. F. Rowe	A torsional species assigned, dipole moment and quadrupole coupling constants obtained.
$C_6H_8$	 tricyclo[2.2.0.0 <sup>2,6</sup> ]-hexane	R. Suenram	Complete $r_s$ structure determined. Manuscript accepted by JACS
$C_3H_3F_3$	<u>cis</u> -trifluorocyclopropane	C. Gillies	Normal, $d_1$ , $d_2$ , $d_3$ , <u>carbon-13</u> species assigned
$C_2H_2F_2O$	<u>cis</u> -1,2-difluoroethylene oxide	C. Gillies	Normal, $d_1$ and $d_2$ species assigned.

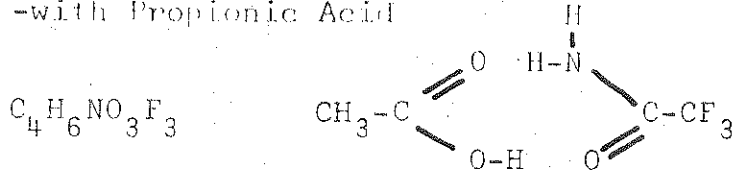
$C_8H_{10}O$	7-endomethylbicyclo- [2,2,1]-hept-2-ene-5-one	Tania Oster C. Gillies	Conformation determined by low resolution microwave spectroscopy.
			
$C_5H_8N_2$	2,3-diazabicyclo[2.2.1]- hept-2-ene	Richard Suenram	Normal species and 3- $^{13}C$ species assigned
			
$C_6H_8O$	cyclopentene-1-al	Richard Suenram	Normal species assigned. Conformational analysis in progress.
			
$C_4H_6O_2$	1,3-butanedione	R. W. Duerst	Spectrum assigned
$C_3H_4F_2O$	1,3-difluoroacetone	R. Suenram C. Gillies D. Finnigan	Manuscript in preparation.
$C_3H_4ClN$ ( $ClCH_2CH_2CN$ )	3-chloropropionitrile	I. Warren	Completed.
$C_6H_7O_4F_3$		E. M. Bellott, Jr.	Low resolution microwave spectra observed for these gas-phase Hydrogen Bonded bimolecules (all involving trifluoroacetic acid).
	Trifluoroacetic acid -with cyclopropane carboxylic acid		
$C_6H_9O_4F_3$		"	
	-with Isobutyric Acid		
$C_4H_6NO_3F_3$		"	
	-with Acetamide		
$C_5H_5O_4F_3$		"	"

-with Acrylic Acid

-43-



-with Propionic Acid



Acetic Acid with trifluoroacetamide

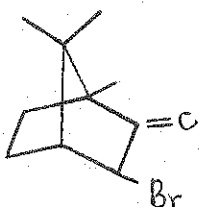
Low resolution microwave spectrum NOT observed.

FORMULA

NAME OF COMPOUND (ALL ON THIS PAGE INVESTIGATED BY E. M. BELLOTT, JR.)

PRESENT STAGE OF PROGRESS

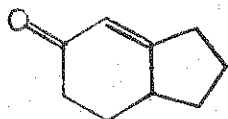
$C_{10}H_{15}BrO$



$\alpha$ -bromocamphor

Low resolution microwave spectrum observed.

$C_9H_{12}O$



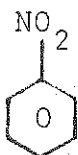
1-Ketobicyclo[4.3.0<sup>3,7</sup>]-2-nonene

$C_6H_5F$



Fluorobenzene

$C_6H_5NO_2$



Nitrobenzene

$C_7H_5N$



Benzonitrile

$C_7H_4BrF_3$



p-bromobenzotrifluoride

FORMULA

NAME OF COMPOUND  
(THIS PAGE INVESTIGATED  
BY E. M. BELLOTT, JR.)

PRESENT STAGE OF  
PROGRESS

$C_7H_7NO_2$



p-nitrotoluene

Low resolution  
microwave spectrum  
observed.

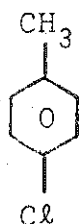
$C_7H_7Br$



p-bromotoluene

"

$C_7H_7Cl$



p-chlorotoluene

"

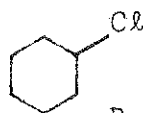
$C_6H_4ClNO_2$



p-chloronitrobenzene

"

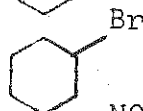
$C_6H_{11}Cl$



Chlorocyclohexane

"

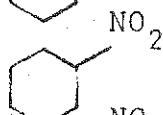
$C_6H_{11}Br$



Bromocyclohexane

"

$C_6H_{11}NO_2$



Nitrocyclohexane

"

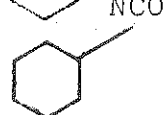
$C_7H_{11}N$



Cyclohexyl Isocyanide

"

$C_7H_{11}NO$



Cyclohexyl Isocyanate

"



57. Name to whom queries should be addressed Manfred Winnewisser

Mailing address Physikalisch-Chemisches Institut

Justus Liebig-Universität Giessen

D- 63 Giessen, Goethestrasse 55

Telephone number (0641) 702-5782

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
$\text{CHNO}$ ( $\text{HCNO}$ , $\text{DCNO}$ )	Fulminic Acid	M. Winnewisser E.P. Winnewisser K. Yamada	Excited States paper in press
$\text{C}_2\text{D}_2\text{O}$ ( $\text{D}_2\text{CCO}$ )	Dideuteroketene	L. Nemes	Manuscript in preparation
$\text{C}_2\text{HDO}$ ( $\text{HDCCO}$ )	Monodeuteroketene	M. Winnewisser	
$\text{C}_3\text{H}_4\text{O}$ ( $\text{CH}_2\text{CHCHO}$ )	Acrolein	M. Winnewisser G. Winnewisser	Manuscript in preparation
$\text{C}_3\text{H}_3\text{N}$ ( $\text{CH}_2\text{CHNC}$ )	Vinylisocyanide	K. Yamada and M. Winnewisser	Manuscript in preparation
$\text{CH}_3^{15}\text{NO}$ ( $\text{CHO}^{15}\text{NH}_2$ ) $^{15}\text{N}$ -Formamide	$^{15}\text{N}$ -Formamide	G. Winnewisser W. H. Hocking	Manuscript in preparation
$\text{C}_2\text{H}_3\text{NO}$ ( $\text{CH}_3\text{CNO}$ )	Methylfulmide	E. Pearson and M. Winnewisser	MMW work on excited vibrational states in progress
$\text{HCOSH}$ ( $\text{CH}_2\text{OS}$ )	Monothioformic acid	W.H. Hocking and G. Winnewisser	MW and MMW work in progress

58. Name to whom queries should be addressed R. Claude Woods

Mailing address Department of Chemistry  
University of Wisconsin, 1101 University Avenue  
Madison, Wisconsin 53706

Telephone number (608) 262-2892

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
{ CO O <sub>2</sub>	carbon monoxide oxygen	T. A. Dixon	Vibrational excitation studies in a glow discharge.
CO <sup>+</sup>	carbon monoxide ion	T. A. Dixon	Zeeman modulation signal in room temperature discharge cell now observed, Zeeman effect measurement in progress.
C <sub>4</sub> H <sub>10</sub> O	t-butyl alcohol	E. A. Valenzuela	Manuscript in preparation
C <sub>6</sub> H <sub>12</sub> O	tetramethylethyleneoxide	R. J. Saykally	In progress

59. Name to whom queries should be addressed Prof. Dr. W. Zeil

Mailing address Institut für Physikalische Chemie der Universität Tübingen  
74 Tübingen, Auf der Morgenstelle

Telephone number 07122/296904

<u>FORMULA</u>	<u>NAME OF COMPOUND</u>	<u>NAME OF INVESTIGATOR</u>	<u>PRESENT STAGE OF PROGRESS</u>
CH <sub>3</sub> SiH <sub>2</sub> Cl	Methylchlorsilane	Braun, Knehr, Hass, Wörner, Schneider, Rückert, Zeil	12 isotopic species investigated, r <sub>Z</sub> structure determined. Work nearly completed.

$\text{CH}_2\text{ClC}=\text{C}-\text{Cl}$	1,3 dichloropropene(1)	Günther, Zeil	Quadrupole coupling constants determined for 3 isotopic species and some excited states.
$\text{CSFCl}$	Thiocarbonylchlorofluoride	Hamm, Günther, Zeil	Dipole moment, $r$ , and $r_z$ structure determined. $\text{C}^{34}\text{SF}^{37}\text{Cl}$ under investigation
$(\text{CH}_3)_2\text{SiHCl}$	Dimethylchlorsilane	Gegenbauer, Haas, Zeil	Determination of the centrifugal distortion constant of $(\text{CH}_3)_2\text{SiDCl}$
$\text{CH}_3\text{SiHCl}_2$	Methyldichlorsilane	Kraft, Haas, Zeil	Many lines of Q-branches assigned
$(\text{CH}_3)_3\text{SiN}_3$	Trimethylazidosilane	Kawaletz, Braun, Zeil	Some lines observed
$\text{CH}_3\text{CH}_2\text{Cl}$	Äthylchloride	Binder, Braun, Zeil	Centrifugal distortion constant of $\text{CH}_3\text{CD}_2\text{Cl}$ and $\text{CH}_3\text{CH}_2\text{Cl}$ determined. $r_z$ structure determined.
$\text{SeCF}_2$	Selenocarbonylfluoride	Christen	lines observed

FORMULA INDEX

- A B C - All triatomic molecules - 25  
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 BH<sub>8</sub>PSi - Silylphosphine-borane - 14  
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 BaO - Barium oxide - 24  
 BaS - Barium Sulfide - 24  
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 CCl<sub>2</sub>O - Carbonyl chloride - 55  
 CCl<sub>2</sub>S - Thiocarbonyl chloride - 55  
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 CF<sub>2</sub>Se - Seleno carbonyl fluoride - 59  
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 $\text{CH}_3\text{F}_2\text{OP}$  - Methylphosphonyldifluoride - 14  
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 $\text{CH}_6\text{SSi}$  - Methylsilylsulfide - 14  
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 $\text{COS}$  - Carbonyl sulfide - 23,34,54  
 $\text{C}_2\text{HF}$  ( $\text{HCCF}$ ) - Fluoroacetylene - 48  
 $\text{C}_2\text{HF}_3\text{O}$  ( $\text{CHF}_2\text{COF}$ ) - Difluoroacetyl fluoride - 11  
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 Bromoacetonitrile - 19  
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 $\text{C}_2\text{H}_2\text{F}_2$  - 1,1-difluoroethylene - 9  
 $\text{C}_2\text{H}_2\text{F}_2\text{O}$  - cis-1,2-difluoroethylene oxide - 56  
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 $\text{C}_2\text{H}_2\text{IN}$  ( $\text{CH}_2\text{ICN}$ ) - Iodoacetonitrile - 19  
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 $\text{C}_2\text{H}_2\text{S}$   $\text{H}_2\text{CCS}$  - Thioketene - 32  
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 $\text{C}_2\text{H}_3\text{ClO}_2$  - Methylchloroformate - 14  
 $\text{C}_2\text{H}_3\text{FO}_3$  ( $\overline{\text{FHCooCH}_2\text{O}}$ ) - 1-Fluoroethylene ozonide - 33  
 $\text{C}_2\text{H}_3\text{N}(\text{CH}_3\text{CN})$  ( $\text{CHD}_2\text{CN}$ ) - Methyl Cyanide - 41  
 $\text{C}_2\text{H}_3\text{N}$  - ( $\text{CH}_3\text{NC}$ ) - Methylisocyanide - 48,54  
 $\text{C}_2\text{H}_3\text{NO}$  ( $\text{CH}_3\text{CNO}$ ) - Methylfulmide - 57  
 $\text{C}_2\text{H}_3\text{NO}_3$  - Peroxyacetylnitrate (PAN) - 6

- $C_2H_3N_3$  - 1,2,3-Triazole - 6,1  
 $C_2H_3N_3$  - 1,2,4-Triazole - 6  
 $C_2H_4FN$  ( $CH_3CN...HF$ ) - Methylcyanide-HF - 40  
 $C_2H_4N_2$  ( $NH_2CH_2CN$ ) - Aminoacetonitrile - 1  
 $C_2H_4O$  ( $CH_3CHO$ ) - Acetaldehyde - 20,25,9  
 $C_2H_4O$  ( $H_2C=CH_2$ ) - Ethylene oxide - 38  
 $C_2H_4OS$  - Methyl thiolformate - 51  
 $C_2H_4O_3$  ( $H_2C(OOCH_2O)$ ) - Ethylene ozonide - 33  
 $C_2H_4O_3$  ( $CH_3COOOH$ ) - Peroxyacetic acid - 20  
 $C_2H_4S$  ( $H_2C=CH_2$ ) - Ethylene sulfide - 38  
 $C_2H_4S$  ( $CH_3CHS$ ) - Thioacetaldehyde - 32  
 $C_2H_4Se$  ( $CH_3CHSe$ ) - Selenoacetaldehyde - 32  
 $C_2H_5Cl$  - Ethylchloride - 59  
 $C_2H_5N$  ( $CH_3CH=NH$ ) - Ethylideneimine - 25  
 $C_2H_5NO$  - Acetamide - 56  
 $C_2H_5NO$  ( $CH_3CH_2NO$ ) - Nitrosoethane - 32  
 $C_2H_5NO$  ( $HCONHCH_3$ ) - N-methylformamide - 50  
 $C_2H_6F_3NSi$  [ $SiF_3N(CH_3)_2$ ] - Trifluorosilyl-dimethylamine - 9  
 $C_2H_6N_2O$  ( $(CH_3)_2NNO$ ) - Dimethylnitrosamine - 13  
 $C_2H_6O$  ( $(CH_3)_2O$ ) - Dimethylether - 13,25  
 $C_2H_6O_2$  ( $CH_2OH-CH_2OH$ ) - Ethylene glycol - 20  
 $C_2H_6S$  ( $(CD_3)_2S$ ) -  $d_6$ -dimethylsulfide - 48  
 $C_2H_6S_2$  - 1,2-Ethanedithiol - 56  
 $C_2H_7ClSi$  ( $C_2H_5SiH_2Cl$ ) - Ethylchlorosilane - 48  
 $C_2H_7ClSi$  - Dimethylchlorosilane - 59  
 $C_2H_7ISi$  - Dimethyliodosilane - 14  
 $C_2H_7N$  - Ethylamine - 35  
 $C_2H_7P$  - Ethylphosphine - 14  
 $C_2H_8Ge$  - Ethylgermane - 14  
 $C_3HN$  (HCCCN) - Cyanoacetylene - 41  
 $C_3H_2Cl_2$  - 1,3 dichloropropene(1) - 59  
 $C_3H_2F_2$  - 3,3-difluorocyclopropene - 35  
 $C_3H_2F_4$  - 1,1,2,2-tetrafluorocyclopropane - 35  
 $C_3H_2O$  (CHCCHO) - Propynal - 52  
 $C_3H_3Cl_3O_2$  ( $CCl_3CO_2CH_3$ ) - Methyl Trichloroacetate - 5  
 $C_3H_3F_3$  - cis-trifluorocyclopropane - 56  
 $C_3H_3F_3Si$  ( $SiH_3CCF_3$ ) - Silyl trifluoromethyl acetylene - 41  
 $C_3H_3N$  ( $CH_2CHNC$ ) - Vinylisocyanide - 57  
 $C_3H_3NS$  - Isothiazole - 51  
 $C_3H_4$  - Cyclopropene - 35  
 $C_3H_4ClN$  ( $ClCH_2CH_2CN$ ) - 3-chloropropionitrile - 56  
 $C_3H_4F_2$  - 1,1-difluorocyclopropane - 35  
 $C_3H_4F_2$  - 3,3-Difluoropropene - 23  
 $C_3H_4F_2O$  - 1,3-difluoroacetone - 27,56  
 $C_3H_4N_2$  - Imidazole - 6  
 $C_3H_4N_2$  - Pyrazole - 1  
 $C_3H_4O$  - Acrolein - 23,57  
 $C_3H_4O_2$  ( $CH_2OCHCHO$ ) - Glycidaldehyde - 50  
 $C_3H_4O_2$  - Malondialdehyde - 56  
 $C_3H_4O_3$  ( $CH_3COCOOH$ ) - Pyruvic acid - 20

- $C_3H_4S$  - Propargyl mercaptan - 15  
 $C_3H_5ClO$  - Propionyl chloride - 27  
 $C_3H_5ClO_2$  ( $ClCO_2CH_2CH_3$ ) - Ethyl chloroformate - 5  
 $C_3H_5N$  ( $CH_3CH_2CN$ ) - Propionitrile - 13  
 $C_3H_5N_3$  - 1-methyl-1,2,3 triazole - 51  
 $C_3H_6OS$  - Trimethylene sulphoxide - 40  
 $C_3H_6O_2$  - Glycidol - 49  
 $C_3H_6O_2$  - Propionic acid - 51  
 $C_3H_6O_3$  ( $H_2CO$ )<sub>3</sub> - Trioxane - 54  
 $C_3H_6S$  ( $CH_3$ )<sub>2</sub>CS - Thioacetone - 32  
 $C_3H_7ClO$  ( $ClCH_2CH_2CH_2OH$ ) - Chloropropanol - 56  
 $C_3H_7N$  ( $CH_2=CHCH_2NH_2$ ) - Allylamine - 47  
 $C_3H_7N$  - Cyclopropylamine - 21  
 $C_3H_7N$  ( $CH_3CH=NCH_3$ ) - N-Methylethylidenimine - 20  
 $C_3H_7NO$  ( $HCON(CH_3)_2$ ) - Dimethylformamide - 50  
 $C_3H_7NSi$  - Dimethylcyanosilane - 14  
 $C_3H_8O$  ( $CH_3$ )<sub>2</sub>CHOH - Isopropanol - 23  
 $C_3H_8S$  ( $(CH_3)_2CHSH$ ) - Isopropyl mercaptan - 4  
 $C_3H_9N$  ( $(CH_3)_2CHNH_2$ ) - Isopropyl amine - 4  
 $C_3H_9NO$  ( $CH_3CHNH_2CH_2OH$ ) - 2-amino-1-propanol - 42  
 $C_3H_9NO$  - 3-aminopropanol - 10  
 $C_3H_9NO$  - 2-Methylaminoethanol - 44  
 $C_3H_9NSSi$  ( $CH_3$ )<sub>3</sub>SiNCS - Trimethylsilyl isothiocyanate - 32  
 $C_3H_9N_3Si$  - Trimethylazidosilane - 59  
 $C_3H_{11}BFN$  ( $CH_3$ )<sub>3</sub>NBH<sub>2</sub>F - 33  
 $C_3H_{12}BN$  - ( $CH_3$ )<sub>3</sub>NBH<sub>3</sub> - 33  
 $C_3H_{12}Si_2$  ( $(CH_3)_3SiSiH_3$ ) - Trimethyldisilane - 7  
 $C_4H_2N_2$  ( $H_2CC(CN)_2$ ) - Vinylidenedicyanide - 48  
 $C_4H_3BrS$  - 2-Bromothiophene - 37  
 $C_4H_3BrS$  - 3-Bromothiophene - 37  
 $C_4H_3Cl$  - cis-1-Chlorobuten-3-yne - 26  
 $C_4H_3Cl$  - 4-Chlorobuten-3-yne - 26  
 $C_4H_3ClN_2$  - 4-chloro pyrimidine - 15  
 $C_4H_3F_3O_2$  ( $CF_3CO_2CH=CH_2$ ) - Vinyl Trifluoroacetate - 5  
 $C_4H_3NO_2$  - Maleimide - 53  
 $C_4H_3NO_2S$  - 2-Nitrothiophene - 37  
 $C_4H_4F_4$  - 1,1,2,2-Tetrafluorocyclobutane - 14  
 $C_4H_4O_2$  - Furfurylic alcohol - 37  
 $C_4H_4O_2$  - Propargyl formate - 51  
 $C_4H_5Cl$  - 2-Chloro-1,3-butadien - 26  
 $C_4H_5Cl$  - 4-Chloro-1,2-butadien - 26  
 $C_4H_5Cl$  - cis-4-Chloro-1,3-butadien - 26  
 $C_4H_5Cl$  - trans-4-Chloro-1,3-butadien - 26  
 $C_4H_5ClO$  ( $\overline{CH_2CH_2}CHCOCl$ ) - cyclopropane-carboxylic acid chloride - 4  
 $C_4H_5F_3O$  ( $CF_3CH_2OCH=CH_2$ ) - 2,2,2-Trifluoroethyl vinyl ether - 5  
 $C_4H_5F_3O_2$  ( $CF_3CO_2CH_2CH_3$ ) - Ethyl Trifluoroacetate - 5  
 $C_4H_5F_3O_2$  ( $CH_3CO_2CH_2CF_3$ ) - 2,2,2-Trifluoroethyl acetate - 5  
 $C_4H_5N$  ( $\overline{CH_2CH_2}CHCN$ ) - Cyclopropyl cyanide - 4,44,35  
 $C_4H_5NO$  - 3-methyl isoxazole - 51  
 $C_4H_5NO_2$  ( $NCCO_2CH_2CH_3$ ) - Ethyl cyanoformate - 5

- $C_4H_5N_3$  - 2-aminopyrimidine - 51  
 $C_4H_6F_3NO_3$  - Trifluoro acetic acid - Acetamide - 56  
 $C_4H_6F_3NO_3$  - Acetic Acid - trifluoroacetamide - 56  
 $C_4H_6N_2$  - N-methyl pyrazole - 31  
 $C_4H_6O$  - Butadiene monoxide - 10  
 $C_4H_6O$   $CH_3CH=CH\overset{O}{C}-H$  - Crotonaldehyde - 8  
 $C_4H_6O$  - Cyclobutanone - 41  
 $C_4H_6O$   $(CH_3)_2C_2O$  - Dimethylketene - 48  
 $C_4H_6O$   $((CH_2=CH)_2O)$  - Divinyl ether - 38  
 $C_4H_6O(CH_3OCH_2C\equiv CH)$  - 3-methoxy propyne - 42  
 $C_4H_6O$  - Oxaspiropentane - 22  
 $C_4H_6O_2$  - 1,3-Butanedione - 56  
 $C_4H_6O_2$   $(CH_3-C-O-C=O)$  - 4-methyl-2-oxetanone - 7  
 $C_4H_7Cl$  - Cyclobutyl chloride - 40  
 $C_4H_7Cl$   $(CH_2C(CH_3)CH_2Cl)$  - Isobutenyl chloride - 56  
 $C_4H_7ClO_2$   $(ClCO_2CH(CH_3)_2)$  - i-Propyl chloroformate - 5  
 $C_4H_7ClO_2$   $(ClCO_2CH_2CH_2CH_3)$  - n-Propyl chloroformate - 5  
 $C_4H_7FO$  - Isobutyryl fluoride - 51  
 $C_4H_7N$   $(CH_3CH_2CH_2NC)$  - n-propyl isocyanide - 56  
 $C_4H_7NO$  - Acetone cyanohydrin - 51  
 $C_4H_7NO$  - 2-methoxypropionitrile - 28  
 $C_4H_7NO$  - Pyrrolidone - 40  
 $C_4H_8$  - Cyclobutanol - 51  
 $C_4H_8O$   $(CH_3CH_2CH_2CHO)$  - Butyraldehyde - 50  
 $C_4H_8O$  - Isobutyraldehyde - 51  
 $C_4H_8O$  - 1-methyl cyclopropanol - 51  
 $C_4H_8OS$  - Tetramethylene sulfoxide - 8  
 $C_4H_8O_2$  - cis 1-4 butenediol - 49  
 $C_4H_8O_2$  - 1,3-dioxane - 28  
 $C_4H_8O_2$  - Isobutyric acid - 51  
 $C_4H_8S$  - Cyclopropyl methyl sulfide - 44  
 $C_4H_9NO_2$  - t-butyl nitromethane - 9  
 $C_4H_9NSi$   $[(CH_3)_3SiCN/NC]$  - Trimethyl silyl cyanide-isocyanide - 40  
 $C_4H_{10}O$  - t-butyl alcohol - 58  
 $C_4H_{10}Si$  - Methylsilacyclobutane - 14  
 $C_4H_{11}NO$  - 2-Dimethylaminoethanol - 44  
 $C_5HNH(C\equiv C)_2CN$  - Cyanodiacetylene - 32  
 $C_5H_3ClO_2$  - 2-Furoyl chloride - 8  
 $C_5H_3F_2N$  - 2,6-difluoropyridine - 51,12  
 $C_5H_3F_3O_2$   $(CF_3CO_2CH_2C\equiv CH)$  - Propargyl Trifluoroacetate - 5  
 $C_5H_4$   $CH_3(C\equiv C)_2H$  - Methyl diacetylene - 32  
 $C_5H_4$  - 1,4 pentadiyne - 33  
 $C_5H_4ClN$  - 3-Chloropyridine - 17,12  
 $C_5H_4ClN$  - 4-chloropyridine - 12  
 $C_5H_4FN$  - 3-fluoropyridine - 12  
 $C_5H_4N_2$  - 1,1-dicyanocyclopropane - 35  
 $C_5H_4O_2$  - Pyran-4-one - 53  
 $C_5H_4S_2$  - 1 thio-pyran-4-thione - 9  
 $C_5H_5As$  - Arsabenzene - 33  
 $C_5H_5F_3O_4$  - Trifluoro acetic acid - Acrylic acid - 56



- $C_5H_5NO$  - Pyridine N-oxide - 1  
 $C_5H_6$  - Cyclopentadiene - 15  
 $C_5H_6Be(C_5H_5BeH)$  - Cyclopentadienylberyllium  
 hydride - 42  
 $C_5H_6N_2$  - 5-methyl pyrimidine - 15  
 $C_5H_6O$  - Cyclopent-2-enone - 40  
 $C_5H_7F_3O_2(CF_3CO_2CH(CH_3)_2)$  - i-Propyl  
 Trifluoroacetate - 5  
 $C_5H_7F_3O_2(CF_3CO_2CH_2CH_2CH_3)$  - n-Propyl  
 trifluoroacetate - 5  
 $C_5H_7F_3O_4$  - Trifluoro acetic acid -  
 propionic acid - 56  
 $C_5H_7N$  - 2-methyl pyrrole - 51  
 $C_5H_8(CH_3)_2C_3H_2$  - Dimethylallene - 48  
 $C_5H_8$  - 3,3-Dimethyl cyclopropene - 21  
 $C_5H_8$  - 1,2-pentadiene - 16  
 $C_5H_8[CH_2=CHCH_2CH=CH_2]$  - 1,4-Pentadiene - 23  
 $C_5H_8N_2$  - 2,3-diazabicyclo[2.2.1]-hept-2-ene  
 - 56  
 $C_5H_8O$  - 1-methoxybutadiene - 28  
 $C_5H_8S$  - Cyclopentenesulfide - 37  
 $C_5H_9N$  - 1,2,3,6 Tetrahydropyridine - 8  
 $C_5H_{10}((CH_3)_2CHCH_2)$  - 3-methyl-1-  
 butene - 50  
 $C_5H_{10}N_2$  - Tert-butyl cyanamide - 28  
 $C_5H_{10}O$  - 3,3-dimethyl oxetane - 41  
 $C_5H_{10}O$  - Tetrahydropyran - 28  
 $C_5H_{10}Si(CH_3)_3SiC\equiv CH$  - Trimethyl silyl  
 acetylene - 32  
 $C_5H_{11}N$  - Piperidine (axial NH) - 28  
 $C_6HF_5O$  - Pentafluorophenol - 12  
 $C_6HF_5S$  - Pentafluorothiophenol - 12  
 $C_6H_2F_4$  - 1,2,3,4 Tetrafluoro benzene - 3  
 $C_6H_2F_4$  - 1,2,3,5 Tetrafluoro benzene - 12  
 $C_6H_3F_3$  - 1,2,4 Trifluorobenzene - 17  
 $C_6H_3NCH_3(C\equiv C)_2CN$  - Methyl cyano  
 diacetylene - 32  
 $C_6H_4BrF$  - m-Fluorobromo benzene - 31  
 $C_6H_4BrF$  - o-Fluorobromo benzene - 31  
 $C_6H_4ClF$  - m-Fluorochloro benzene - 31  
 $C_6H_4ClNO_2$  - p-chloronitrobenzene - 56  
 $C_6H_4F_2$  - Difluorobenzene (meta) - 13  
 $C_6H_4O_2$  - o-benzoquinone - 6  
 $C_6H_5BrO$  - 4-Br-phenol - 1  
 $C_6H_5Cl$  - Chlorobenzene - 47,17  
 $C_6H_5ClO$  - 4-Cl-phenol - 1  
 $C_6H_5F$  - Fluorobenzene - 56  
 $C_6H_5FO$  - 4-F-phenol - 1  
 $C_6H_5FS$  - 4-F-thiophenol-SD - 1  
 $C_6H_5NO$  - 3-pyridine aldehyde - 47  
 $C_6H_5NO$  - 4-Pyridine aldehyde - 47  
 $C_6H_5NO$  - 2-pyridinecarbaldehyde - 38  
 $C_6H_5NO_2$  - Nitrobenzene - 56,1  
 $C_6H_5N_3$  - Phenylazide - 1  
 $C_6H_6$  - Dimethylenecyclobutene - 6  
 $C_6H_6FN$  - o-fluoroaniline - 51  
 $C_6H_6O$  - Phenol - 1  
 $C_6H_6O$  - Tricyclo[2.2.0.0<sup>2,6</sup>] hexane-3-one - 7

- $C_6H_6O_2S$  - Thietane-1,1-dioxide - 37  
 $C_6H_6S$  - Thiophenol - 1  
 $C_6H_6Se$  - Selenophenol - 1  
 $C_6H_7F_3O_4$  - Trifluoroacetic acid -  
                   cyclopropane carboxylic acid - 56  
 $C_6H_7P$  - Phenylphosphine - 1  
 $C_6H_8$  - Bicyclo[2.1.1]hex-2-ene - 21  
 $C_6H_8$  - Tricyclo[2.2.0.0<sup>2,6</sup>]-hexane - 56  
 $C_6H_8O$  - Bicyclo[3.1.0]hexanone - 37,40  
 $C_6H_8O$  - Cyclopentene-1-al - 56  
 $C_6H_8O$  - 7-oxabicyclo[4.1.0] hept-e-ene - 8  
 $C_6H_8Si$  ( $C_6H_5SiH_3$ ) - Phenyl silane - 15  
 $C_6H_9F_3O_2$  ( $CF_3CO_2C(CH_3)_3$ ) - t-Butyl trifluoro-  
                   acetate - 5  
 $C_6H_9F_3O_4$  - Trifluoro acetic acid - isobutyric  
                   acid - 56  
 $C_6H_9NSi$  ( $CH_3$ )<sub>3</sub>SiC≡CCN - Trimethyl silyl cyano  
                   acetylene - 32  
 $C_6H_{10}$  - Endo 2-methyl bicyclo [2.1.0]-  
                   pentane - 21  
 $C_6H_{10}$  - Exo 2-methyl bicyclo[2.1.0]-pentane -  
                   21  
 $C_6H_{10}$  ( $\underline{CH_2CH_2CHC(CH_3)(CH_2)}$ ) - Isopropenyl-  
                   cyclopropane - 50  
 $C_6H_{10}S$  - 7-Thiabicyclo[2.2.1] heptane - 23  
 $C_6H_{11}Br$ -Bromocyclohexane - 56  
 $C_6H_{11}Cl$ -Chlorocyclohexane - 56  
 $C_6H_{11}NO_2$  Nitrocyclohexane - 56  
 $C_6H_{12}O$  - Oxepane - 28  
 $C_6H_{12}O$  - Tetramethylethyleneoxide - 58  
 $C_6H_{12}Si$  - 1-Silabicyclo[2.2.1] heptane - 23  
 $C_7H_4$  -  $CH_3(C\equiv C)_3H$  - Methyl triacetylene - 32  
 $C_7H_4BrF_3$  - p-Bromobenzotrifluoride - 56  
 $C_7H_5F_3$  - Benzotrifluoride - 38, 9  
 $C_7H_5N$  - Benzonitrile - 56  
 $C_7H_5NO$  ( $C_6H_5NCO$ ) - Phenylisocyanate - 47  
 $C_7H_5NS$  ( $C_6H_5NCS$ ) - Phenylisothiocyanate - 47  
 $C_7H_6O$  - Tetracyclo[3.3.0.0<sup>2,7</sup>.0<sup>4,6</sup>] -  
                   heptan-3-one - 7  
 $C_7H_6O$  - Benzaldehyde - 38  
 $C_7H_6O_2$  - Tropolone - 10,1  
 $C_7H_7Br$  - p-Bromotoluene - 56  
 $C_7H_7Cl$ -p-Chlorotoluene - 56  
 $C_7H_7F$  -  $\alpha$ -Fluorotoluene ( $CH_2F C_6H_5$ ) - 48  
 $C_7H_7F$  - Orthofluorotoluene ( $CH_3C_6H_4F$ ) - 48  
 $C_7H_7N$  - 4-Vinyl pyridine - 37, 8  
 $C_7H_7NO_2$  - p-Nitrotoluene - 56  
 $C_7H_8$  - Toluene - 47  
 $C_7H_8O$  - Bicyclo[2.2.1] hept-5-ene-2-one - 7  
 $C_7H_8O$  Tricyclo[2.2.1.0<sup>2,6</sup>] heptan-3-one - 7  
 $C_7H_9N$  - N-methyl aniline - 15  
 $C_7H_{10}$  - Bicyclo[4.2.0] hept-6-ene - 8  
 $C_7H_{10}$  - 1,3 Cyclohexadiene - 8  
 $C_7H_{10}O$  - Bicyclo[2.2.1] heptan-2-one - 7  
 $C_7H_{11}F_3O_2$  ( $CF_3CO_2CH_2C(CH_3)_3$ ) - Neo-Pentyl  
                   Trifluoroacetate - 5  
 $C_7H_{11}N$  - Cyclohexylcyanide - 8

- $C_7H_{11}NO$  - Cyclohexyl Isocyanate - 56  
 $C_7H_{11}N$  - Cyclohexyl Isocyanide - 56  
 $C_8H_6$  - Phenylacetylene - 9  
 $C_8H_7Cl$  - p-Chlorostyrene - 37  
 $C_8H_7F$  - p-Fluorostyrene - 37  
 $C_8H_8$  - Heptafulvene - 20  
 $C_8H_9NSi((CH_3)_3Si(C\equiv C)_2CN)$  - Trimethyl  
     silyl cyanodiacetylene - 32  
 $C_8H_{10}O$  - 7-Endomethylbicyclo-[2.2.1]-  
     hept-2-ene-5-one - 56  
 $C_9H_{10}O$  - Bicyclo[3.2.2]-nona-6,8-diene-3-  
     one - 53  
 $C_9H_{12}O$  - 1-Ketobicyclo[4.3.0<sup>3,7</sup>]-2-nonene - 56  
 $C_{10}H_{10}$  - Bullvalene - 35  
 $C_{10}H_{15}BrO$  -  $\alpha$ -Bromocamphor - 56  
 $ClCs$  (CsCl) - Cesium chloride - 24  
 $ClF_3$  - Chlorine Trifluoride - 8  
 $ClHO$  (HOCl) - Hypochlorous Acid - 13  
 $ClHO_4$  (HOC1O<sub>3</sub>) - Perchloric acid - 23  
 $ClNO$  (NOCl) - Nitrosyl chloride - 15  
 $ClNO_2$  (NO<sub>2</sub>Cl) - Nitryl-chloride - 15  
 $ClO$  - Chlorine monoxide - 23  
 $Cl_2O_2S(SO_2Cl_2)$  - Sulfuryl chloride - 54  
 $Cl_3Sb$  (SbCl<sub>3</sub>) - Antimony trichloride - 15  
 $CrF_2O_2$  - Chromyl fluoride - 19  
 $CsF$  - Cesium fluoride - 24  
 $CsI$  - Cesium iodide - 24  
 $CuF$  - Copper monofluoride - 24  
 $FGa$  (GaF) - Gallium monofluoride - 24  
 $FH_3O$  (H<sub>2</sub>O...HF) - Hydrogen-bonded complex  
     of water and hydrogen  
     fluoride - 40  
 $FH_3Si$  (SiH<sub>3</sub>F) - Silyl fluoride - 2  
 $F_2HNOS$  - Imidosulfuryl fluoride - 33  
 $F_2O_2S(SO_2F_2)$  - Sulfuryl fluoride - 49  
 $F_2S$  (SF<sub>2</sub>) - Sulfur difluoride - 23  
 $F_3OP$  - Phosphoryl fluoride - 55  
 $F_3PS$  - Thiophosphoryl fluoride - 55  
 $F_4OS$  (OSF<sub>4</sub>) - Sulfur oxytetrafluoride - 19  
 $F_4S$  (SF<sub>4</sub>) - Sulfur tetrafluoride - 23  
 $GeH_4$  - Germane - 43  
 $GeS$  - Germanium sulfide - 24  
 $GeSe$  - Germanium Selenide - 24  
 $HNO_3$  - Nitric acid - 54  
 $HO$  (OH) - Hydroxyl radical - 54  
 $H_3N$  - Ammonia - 23  
 $H_3N_3O_6$  (HNO<sub>2</sub>-N<sub>2</sub>O<sub>3</sub>-H<sub>2</sub>O) - Nitrous acid -  
     dinitrogen trioxide - water - 10  
 $H_4N_2$  (NH<sub>2</sub>NH<sub>2</sub>) - Hydrazine - 29,21  
 $H_4Si$  (SiH<sub>4</sub>) - Silane - 43  
 $H_6SSi_2$  - Disilylsulfide - 14  
 $ITl$  (TlI) - Thallium Iodide - 24  
 $LiNa$  - Sodium lithium - 18  
 $NO_2$  - Nitrogen dioxide - 22  
 $N_2O$  - Nitrous Oxide - 34,54  
 $O_2S_2$  (SO)<sub>2</sub> - Sulfur oxide dimer - 24  
 $O_3$  - Ozone - 54  
 $OSi$  (SiO) - Silicon oxide - 24

PbS - Lead sulfide - 24

PbTe - Lead Telluride - 24

SSn(SnS) - Tin sulfide - 24