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U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

NITROGEN OXYCHLORIDES:
A Bibliography on Data for
Physical and Chemical Properties
of ClNO, ClNO₂, and ClNO₃

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A Bibliography on Data for Physical and Chemical Properties of ClNO, ClNO₂, and ClNO₃

Special Publication 478

Francis Westley

Institute for Materials Research
National Bureau of Standards
Washington, D.C. 20234

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NITROGEN OXYCHLORIDES

[A Bibliography on Data for Physical and Chemical Properties of ClNO , ClNO_2 , and ClNO_3]

FRANCIS WESTLEY

A data oriented list of references is provided for published papers and reports containing measured or calculated data for the physical and chemical properties of nitrosyl chloride, nitryl chloride, and chlorine nitrate with particular emphasis on the chemistry and chemical kinetics of these compounds. More than 387 papers are listed. The period covered extends from 1874 through 1977.

Keywords: Bibliography; chemical kinetics; chemistry; chlorine nitrate; molecular properties; nitrosyl chloride; nitryl chloride; physical properties; spectral properties; thermodynamic properties.

INTRODUCTION

This bibliography lists papers and reports containing data for the chemical, molecular, physical, spectral, and thermodynamic properties of nitrosyl chloride, ClNO ; nitryl chloride, ClNO_2 ; and chlorine nitrate, ClNO_3 , with particular emphasis on the chemical kinetics of these compounds. Among these, nitryl chloride has been recently found to exist in two isomeric forms by Molina who in 1977 identified by UV spectrometry the existence of nitryl chloride, ClNO_2 , and--at lower temperature--of its isomer, ClO-NO_2 . The latter one was named by Molina: "chlorine nitrite" (by analogy with chlorine nitrate, whose structural formula is: ClO-NO_2) and which as also been referred to as: nitryl oxychloride).

The articles have been selected from the files of the Chemical Kinetics Information Center and the Chemical Abstracts (1874-1977).

The references are arranged in chronological rather than alphabetical order, as described in detail in the "guidelines for the user", following the introduction.

The particular properties for which data are published are indicated by flags. The abbreviations for data flagging are based on the Fourth Interim IUPAC List (CDATA Bulletin 1c, 20 (1976)). The list of IUPAC flags is completed by a short number of abbreviations for descriptive terms (e.g.: calculation, decomposition, etc.). These descriptive abbreviations apply mostly to Chemical Kinetics.

ClNO , ClNO_2 , and ClNO_3 are potentially important in pollution and atmospheric chemistry. In particular, the chlorine nitrate formation in atmosphere seems to produce a decrease in the projected ozone reduction. For that reason, the physical and chemical properties of ClNO_3 have been the object of a number of recent studies.

It is believed that this bibliography provides extensive coverage of the available data for the physical and chemical properties of ClNO , ClNO_2 , and ClNO_3 . The more than 387 references indexed here span all physical and chemical properties of ClNO , ClNO_2 , and ClNO_3 . No claim is made that this bibliography is all-inclusive. Our past experience in the preparation of bibliographies has taught us that it is virtually impossible to identify and obtain every paper or to flag correctly every paper that has been retrieved. The author will welcome suggestions for additions and corrections or errors and thanks the contributors in advance.

This bibliography is not the result of the effort of a single person, but of the whole staff of Chemical Kinetics Information Center. My thanks to all of them.

In particular, I wish to thank Dr. David Garvin, Section Chief and Dr. Robert Hampson, Jr., Director of the Center, for their more than helpful suggestions and constant guidance; Dr. William H. Evans for his thorough editing and proofreading of the manuscript; Mr. James Koch, Supervisor, for tracking down and obtaining papers and reports, otherwise very difficult to obtain; Mrs. Geraldine Zumwalt and Miss Sheri Schroyer, for typing a difficult manuscript with particular care.

GUIDELINES FOR THE USER

Arrangement of the Report

This bibliography is in four parts:

Part I. Nitrosyl Chloride - ClNO

Part II. Nitryl Chloride - ClNO₂

Part III. Chlorine Nitrate - ClNO₃

Part IV. The combined bibliographies for Parts I to III arranged chronologically by years and - within each year - alphabetically by authors. The complete reference for each article mentioned is given here; occasionally explanatory notes are appended. These establish the "bibliographic chain" for closely related papers by the same authors.

Each of the Parts I to III is subdivided into five parts:

- Chemistry and Chemical Kinetics
- Molecular Properties
- Physical Properties
- Spectral Properties
- Thermodynamic Properties

Each entry in parts I to III consists of an identification of the paper or report and a set of abbreviations that specify the types of data reported therein. These two features are explained below.

Reference Codes

Each paper or report included in Parts I to III is indicated by a reference code formed by a string of characters showing:

1.) Year (last two digits)

2.) Author or first two authors, using the first three letters of each last name (patronymic). When two names are present they are separated by a slash.

3.) If necessary a digit is added to distinguish among papers that would have the same codes according to rules (1) and (2).

Examples:

40 ASM
41 ATW/RGL
53 ASH/CHA1
53 ASH/CHA2

The total length of the string, including the digit, may be no longer than 11 characters. A code without digit has, implicitly, the digit 1 associated with it.

The code is essentially that used by Auer and Kienitz, "Landolt-Bornstein Zahlenwerte und Funktionen", Sechste Auflage II Band, 4. Teil "Kalorische Zustandsgrossen", pp. 569-687, (1961), for their tables of thermochemical data.

Properties Codes

Following the year and author code, at five spaces distance, are the abbreviations for data flagging. These flags are taken from the Fourth Interim IUPAC List* and their use is an experiment--testing the usefulness and completeness of the technique on a body of related data--and an attempt to achieve a substantial compression of information.

Although the IUPAC List includes 113 flags, this bibliography uses only 33 of them as listed below. The 80 flags not included indicate properties which have not yet been investigated for ClNO, ClNO₂, and ClNO₃. The flags for spectra are indicated by three capital initials, all other only by two initials.

Under the subheading "molecular properties" the year and author codes are followed by flags indicating only molecular properties. The same rule applies for the remaining four subheadings. The IUPAC List of Flags is supplemented by 11 codes for descriptive terms [e.g.: Clc - calculation; For from: - formation from; Rev - Review; etc.]. These descriptive codes include three letters the first being a capital. Only two descriptive codes have 7

characters. These are:

For from: Formation from
Rxn with: Reaction with (other compounds)

The code "Rlp" means Related Paper and indicates that a paper does not report rate data, or quantum yields, or mechanisms, but may describe the synthesis of compound.

The flags for data appear first in alphabetical order, followed by the descriptive terms.

Examples:

ClNO

Chemistry and Chemical Kinetics

61 ASH/BUR RR, Dec, Mec, Rxn with: Cl, NO, NO₂

which indicates that the paper by Ashmore and Burnett (1961) reports reaction rate data on the ClNO decomposition, a mechanism of the reaction and some information on the reaction of ClNO with Chlorine atoms, NO and NO₂.

ClNO

Spectral Properties

74 BAL/ARM UVS, VIS

which indicates that the paper by Ballash and Armstrong (1974) reports studies on the ClNO ultraviolet and visible spectra.

To find the complete references for the above examples (61 ASH/BUR and 74 BAL/ARM) the reader should look in Part IV under the subheadings 1961 and 1974, where the papers by Ashmore and Burnett (1961) and Ballash and Armstrong (1974) are listed alphabetically within the same year.

For easy location, each reference listed in Part IV is preceded by the year and author code.

The Properties Codes (including the IUPAC list for Data Flagging Abbreviations and--separately--the list for Descriptive Terms) follow below. For the convenience of the reader, these two lists are repeated in the last page of this bibliography, after the References.

*The complete IUPAC list is published in: CODATA (Committee on the Data for Science and Technology) Bulletin No. 12, "Flagging and Tagging Data," P. 20 ff. (June 1976, Paris, France)

LIST OF ABBREVIATIONS

Abbreviations for Data Flagging
Fourth Interim IUPAC List

AB	Absorption Cross Section
BE	Bond Energy, Atomization Energy, Dissociation Energy
BA	Bond Angle, Bond Length
BT	Boiling Temperature (Boiling Point)
CD	Critical State Data (Critical Density, Critical Temperature, Critical Pressure)
DC	Dielectric Constant
DM	Dielectric Properties (Electric Dipole Moment, Molecular Polarization Quadrupole Coupling Constant)
DN	Density Data (Density, Specific Density)
EN	Entropy
EQ	Equilibrium Data (Equilibrium Constant)
ET	Enthalpy (Heat of Vaporization, Heat of Sublimation, Heat of Reaction)
HC	Heat Capacity
IP	Ionization Potential, Electron Affinity
IRS	Infrared Spectrum
MG	Magnetic Data, (Magnetic Dipole (and Higher) Moments, Magnetic Susceptibility)
ML	Molecular Energy Level, Rotational and Vibrational Constants, Force Constant, Moment of Inertia
MSS	Mass Spectrum
MT	Melting Temperature (Melting Point)
MWS	Microwave Spectrum
NMS	Nuclear Magnetic Resonance Spectrum
QY	Quantum Yield (and Quantum Efficiency)
RAS	Raman Spectrum
RD	Radii (Atomic, Ionic, Molecular, Molecular Volume, Molecular Diameter, Molecular Cross Section)
RR	Reaction Rate Data (Rate Constant, Relaxation Time, Half-life)
ST	Surface Tension
TC	Thermal Conductivity
TE	Thermodynamic Energy Data (Gibbs Free Energy, Helmholtz Energy, Thermodynamic energy functions)
UVS	Ultraviolet Spectrum
VIS	Visible Spectrum
VP	Vapor Pressure (Sublimation Pressure)
VS	Viscosity Data
XPS	X-ray Photoelectron Spectrum
XRS	X-ray Spectrum

Descriptive Terms

Clc	Calculation
Dec	Decomposition
For from:	Formation from another compound
Mec	Mechanism
Phl	Photolysis
Rad	Radiation
Rev	Review
Rlp	Related Paper
Rxn with:	Reaction with other compounds
Syn	Synthesis (preparative methods)
Thp	Theoretical Paper

PART I

NITROSYL CHLORIDE
ClNO

Chemistry and Chemical Kinetics

74 TIL Rlp, Rxn with: Au and Pt, Syn
 91 SUD Rlp, Rxn with: metals
 12 BRI/PYI Rlp, Syn
 14 TRA RR, For from: NO and Cl₂
 15 TRA/HIN Dec, For from: NO and Cl₂, Rlp
 16 BRI For from: HNO₃ and HCl, Mec, Rlp, Rxn with: Cl₂ and H₂O
 16 TRA/HIN Dec, For from: NO and Cl₂, Rlp
 16 TRA/WAC Dec, For from: NO and Cl₂
 23 CUT/TAR Rlp, Rxn with: CuO and Tl₂O, Syn
 23 KIS RR, Dec, For from: NO and Cl₂, Mec, Phl
 24 KIS RR, For from: ClNO₂ and NO, Mec
 24 TRA/GER Rlp, Syn
 24 TRA/SCH RR, For from: NO and Cl₂, Mec
 25 BOW/SHA QY, Phl
 26 LYN/SHO Rlp, Rxn with: Inorg. and Org. Chem.
 27 GAL/MEN Rlp, Rxn with: MCln (M = metal, n = 1 to 5), Syn
 27 TAY/DEN RR, Dec
 28 NOY For from: NCl₃, Rlp, Rxn with: NCl₃
 29 SCH/SPR1 Rlp, Rxn with: O₃
 29 SCH/SPR3 Rlp, Rxn with: O₃
 30 KIS QY, Dec, Mec, Phl, Rxn with: Cl
 30 NOY For from: NCl₃ and N⁴, Mec
 31 WHY/LUN Rlp, Rxn with: NaOH, Syn
 34 TRA/FRE Dec, Rlp
 35 WAD/TML RR, Dec
 37 KRA/SAR RR, For from: NO and Cl₂
 38 SCH RR, Dec, For from: NO and Cl₂, Rev
 38 WEL/TAY RR, Dec, For from: NO and Cl₂
 39 CBL/LIL Rlp, Syn
 39 GBO/KRA Rlp, Dec
 39 NAT QY, RR, Mec, Phl

40 ASM	Rlp, Rxn with: MCl_n ($M = \text{metal}$, $n = 1 \text{ to } 5$)
40 NAT	FR, Cle, Dec, Thp
41 ATW/RGL	QY, Phl
47 SCH	Rlp, Rxn with: θ_3
48 MCG	Dec, Rev, Rxn with: $H_2\theta$, θ , S and Org. Comp., Syn
48 PAR/WHY	Rlp, Rxn with: M and MCl_n ($M = \text{metal}$, $n = 1 \text{ to } 5$)
48 SOL	Dec, Rev, Rxn with: Inorg. and Org. Comp., Syn
49 ADD/TH01	Rlp, Rxn with: $N_2\theta_4$, CCl_4 , metals
49 DR θ /GAL	RR, for from: $HN\theta_3$, Rxn with: θ_3
49 PAR/WHY1	Rlp, Rxn with: M , MCl_3 and $M(N\theta_3)_n$ ($M = \text{metal}$, $n = 1 \text{ to } 4$)
50 GGG/WIL	Dec, For from: $ClN\theta_2$, Rlp, Rxn with: $N_2\theta_5$ and θ_2
51 BEC/FES	QY, RR, Dec, Phl, Rev, Rxn with: Inorg. and Org. Comp., Syn
52 BUR/MCK	Rlp, Rxn with: $FeCl_3$
52 BUR/DAI2	RR, Rxn with: Cl, C θ Cl
52 CHA/ASH	RR, Dec
52 FRE/JGH	RR, For from: $ClN\theta_2$ and $N\theta$
53 ASH/CHA1	RR, Dec, For from: Cl_2 , Mec, Rxn with: Cl, M
53 ASH/CHA2	RR, Dec, Mec, Rxn with: Cl
53 ASH/CHA3	RR, Clc, For from: Cl_2
53 JGH/LEI	RR, Mec, Rxn with: θ_3 and $N\theta_3$
54 FRE	For from: Cl_2 and $N\theta$, Mec, Thp
54 LEI	RR, Mec, Rxn with: θ_3 and $N\theta_3$
55 EPS/NIK	RR, For from: $HN\theta_3$ and NaCl or KCl
55 MAR/KGH	RR, Rxn with: $Cl\theta_2$
55 RAY	RR, Mec, Rxn with: $N\theta_2$
56 PIT/PGW	RR, Clc, Dec, For from: $ClN\theta_2$ $N\theta$ and Cl_2 , Rxn with: Cl, Thp
57 ASH/LEV	Dec, Rlp
57 RAY/GGG	RR, Mec, Rxn with: $N\theta_2$
57 SCH/FIN	Rlp, Rxn with: $ClN\theta_3$
58 ART/STR	For from: $N\theta$, Phl, Rxn with: C_6H_6 , Cl
58 COL/GIN	For from: $ClN\theta_2$ and $H_2\theta$ or HCl, Rlp
58 GIN/GSD	RR, For from: $ClN\theta_2$, $H_2\theta$, $HN\theta_2$, Rxn with: Mesitylene)
58 MAR	For from: $Cl_2\theta$ and $N\theta$, Rxn with: $N_2\theta_5$
58 MAR/KGH	RR, Mec, Rxn with: $Cl\theta_2$, θ Cl, $N\theta_2$, $N\theta_3$
59 DUH/BAU	RR, Dec, For from: Cl_2 , Phl, Rxn with: Cl

59 MAR/SPE RR, Dec, For from: Cl_2 , Mec, Rxn with: Cl
 59 NEU QY, Phl
 59 TAL/THG RR, For from: HCl and NO_2 , Mec
 60 FIN/LFE QY, For from: Cl and NO, Phl, Rxn with: AlCl_3
 60 GEO Rlp, Rev, Rxn with: Inorg. Salts, Syn
 60 MAR/WOH RR, Dec, Mec, Phl, Rxn with: Cl
 60 MCK/FIN Qy, For from: NO and Cl_2 , Phl
 61 ASH/BUR RR, Dec, Mec, Rxn with: Cl, NO_2
 61 BAS/NOR Phl
 61 CAS/PGL RR, Rxn with: H
 61 DEK RR, Dec, Mec, Rxn with: Cl
 61 MAR/WOH1 QY, RR, Dec, For from: NO and Cl_2 , Mec, Rev,
Rxn with: Cl
 61 MAR/WOH2 QY, RR, Dec, For from: NO and Cl_2 , Phl
 61 RIC RR, Mec, Rxn with: N_2O_5
 61 WAR Rlp, Rxn with: H_2
 62 ASH/BUR RR, Dec, Mec
 62 BAS Mec, Phl, Rxn with: Cl, NO
 62 BAS/NOR Mec, Phl
 62 CHA/KHA Rxn with: H
 62 DEK/PAL RR, Dec, Mec, Rxn with: Cl
 62 MAR/CHU QY, Phl
 63 MER Rlp, For from: NO and Cl_2 , Phl
 63 WEI Rlp, Rxn with: H_2O and SO_3
 63 WOL/ECK Rlp, Rxn with: Cl_2 and N_2O_4
 64 ASH/HER RR, Dec
 64 WAY QY, Phl
 65 ASH/WES RR, Dec, Mec, Rxn with: Cl, H
 65 VAN/HEU Rlp, Rxn with: SO_3
 65 ZEV RR, Rxn with: N_2O_5 and NO_3
 66 CLY/STE RR, Rxn with: H
 66 DEU Dec, Rlp
 66 MAR RR, Mec, Rxn with: Cl_2 , OCl , NO_2 , NO_3 , N_2O_5
 66 NIE/WAG Rad, Rlp
 66 PAP QY, Mec, Phl, Rxn with: Alkanes
 66 PGL Dec, Phl, Rxn with: Cl
 66 STO/GRG Rlp, For from: ClNO_2 and SO_2
 66 WEL Dec, Phl
 67 CAL/PIT QY, Mec, Phl, Rev

67 DEJ/LEG For from: NaSO_3Cl , Rlp
 67 KUH Rlp, Rxn with: HF and Lewis acid fluorides
 67 MIT/SIM Rlp, Phl, Thp
 67 VAN Rlp, Rxn with: SO_3
 68 AMI/KEF RR, Mec, Rxn with: O_2
 68 GRI/COS RR, Rxn with: Cs and Rb
 68 LEN/GKA QY, Dec, Phl
 69 BIG Mec, Rxn with: Cl, N
 69 HAT/HUS RR, Rxn with: I
 69 TIM/DAR QY, RR, Dec, For from: Cl and NO, Mec, Phl, Rxn with: Cl
 70 ANL Rxn with: H
 70 FOR/SAI RR, Clc, Dec, Thp
 70 GGO/GRA Dec, k
 71 DUN/FRE1 RR, Mec, Rxn with: N
 71 DUN/FRE2 RR, Rxn with: O
 71 DUN/SUT RR, Rxn with: H
 71 YAG/AMI Rlp, Rxn with: C and O_2
 72 BEL/PER Rlp, Rxn with: Olefins
 72 BUS/WIL RR, Phl
 72 CGL/PER Rlp, Rxn with: H_2O
 72 CLY/CRU1 RR, Rxn with: Br, Cl
 72 CLY/CRU2 RR, Rxn with: Br, Cl
 72 DEA/HUS RR, Rxn with: I
 72 DIJ/SCH Dec, For from: NO_2 and HCl, Rlp, Rxn with: NO_2
 72 DUB/DEV Rlp, Syn
 72 ENG/GAR Dec, Rlp
 72 FOR/LIN QY, RR, Dec, For from: NO and Cl, Mec, Phl, Rxn with: Cl
 72 MAL RR, Dec, Rxn with: Cl
 72 MAR/RGB RR, Mec, Rxn with: Cl_2O , OCl, NO_2
 72 MEN/MEN RR, Rxn with: H_2
 72 SER/LGB Rlp, Rxn with: Be or BeCl_2 and N_2O_4
 73 BRA/WHY RR, Rxn
 73 FCK/EDE Rxn with: Ba, Ca, Mg, Sr
 73 GAV Phl, Rlp, Rxn with: cyclohexane
 73 JAN/ENG RR, Dec, For from: HCl, HNO_3 , Rev,
 Rxn with: Cl and Inorg. Comp., Syn
 73 MAL/PAL RR, Dec
 73 MGV/KYA Rlp, Rxn with: Cyclic ethers
 73 PRA/KAR QY, RR, Mec, Phl, Rxn with: I and R^* (R^* = alkyl)
 73 SAV/LAC RR, Dec

73 SYR/GIL Rlp, Rxn with: e-
 73 VIA/AMA Rlp, Rxn with: TiOCl₂
 73 WU Dec, For from: Cl and NO, Nec, Phl, Rxn with: Cl
 74 BAL/BGL Nec, Phl
 74 DEJ/HEU Rlp, Rxn with: SO₃
 74 ECK/EDE Rxn with: Ba, Ca, Mg, Sr
 74 KAR/PRA1 QY, Phl, Rxn, k, Nec
 74 KAR/PRA2 QY, RR, Nec, Phl, Rxn with: I and C₃H₇I
 74 KNA/MAR For from: ClNO₂, Nec, Rxn with: NO₂ and ClNO₃
 74 NAZ/PGL RR, Rxn with: H
 74 PGI/KEF Rlp, Rxn with: Cl₂
 74 TSE/DRG1 Rlp, Rxn with: HNO₃
 74 SCH/URG For from: NaCl and NO₂, Rlp
 74 TSE/DRG2 Rlp, Rxn with: HNO₃
 74 WIL RR, For from: NO and ClNO₂, Rxn with: N₂O₅ and HNO₃
 74 WIL/DGD RR, For, from: NO and ClNO₂
 75 BEC/FIC For from: VCl₄, Rlp, Rxn with: V(CO)₆
 75 BRA/TIC Rlp, Rxn with: enamines
 75 DEG/KAC QY, RR, Nec, Phl, Rxn with: polyethylene
 75 DGR/SCH RR, Dec
 75 DUB/AMA Rlp, Rxn with: TiCl₃(RCO₂), R = alkyl
 75 GAL/GST Dec, For from: NO and Cl₂, Rlp, Rxn with: NaAlCl₄
 75 HAB/SCH Rxn with: H and D
 75 KIR/SPR Rlp, Rxn with: (CF₂NCl)₃
 75 LAZ/GAV QY, Phl, Rxn with: Cycloalkanes
 75 LEZ/MAL Rlp, Rxn with: carbonyl complexes
 75 MAL/KAT Rlp, Rxn with: AsBr₃, PBr₃, Ph₃l, Ph₃As
 75 MAR1 Rlp, Rxn with: Pinene
 75 MAR2 Rlp, Rxn with: C₆H₅MgBr
 75 MEH/PAN Rlp, Rxn with: Polycyclic Hydroc.
 75 RGG/DEM Nec, Rxn with: Cyclohexene
 75 RGG/VIT Nec, Rxn with: Cyclic ketones
 75 SCH/CHR RR, Rxn with: e-
 75 VGL/SCH Rlp, Rxn with: RN₃ (R = alkyl)
 75 WAT/MAR1 Nec, Rxn with: C₆H₅MgBr
 75 WAT/MAR2 Nec, Rxn with: C₆H₅MgBr
 75 WIL RR, Nec, Rxn with: amines
 75 YAR/NOF Rlp, Rxn with: CF₃SO₃H

76 AMI/KEF	For from: Cl ₂ and N ₂ O ₄ , Rlp
76 AUS/RAK	Rlp, Rxn with: C ₈ H ₁₇ NH ₂ , (CH ₃ CH ₂) ₃ N
76 HIP/TRG	RR, For from: Cl and NO, Rxn with: Cl
76 ISA/GAS	QY, RR, Phl
76 KYU/CLA	Mec, Rxn with: Oximes
76 MIR/PDV	Rlp, Rxn with: Polycyclic Hydro.
76 SCH	Rlp, Rxn with: Hydroxy polymers
76 SER/LEE	RR, Rxn with: Epoxides
76 VDS	Rlp, Rxn with: K ₂ (Mg ₃ Cl ₈)
77 MGL/MGL	AB, UVS (for ClONO ₂ , Chlorine Nitrite Isomer)

ClNO

Molecular Properties

37 KET/PAL	BO, RD
38 KET	BE, BO, ML
39 BEE/YGS1	BO, ML
43 KET	BO, DC, DM
50 BER	BO, ML
50 BUR/BER	BO, ML
51 BEC/FES	BO, RD, Rev
51 PUL/WAL	ML
51 RGG/PIE	MG, ML
52 BUR/MCK	DC
52 EBE/BUR	ML
54 SIE	ML, Clc
55 KAW/SIM	BO, ML
56 PIT/PGW	EQ, ML
57 TAN	BO
58 SUT	BO, Clc
60 ERR	BE
60 GEG	BO, DM, Rev
60 LAN/FLE	ML
61 LIN	BO
61 LUM	DM
61 MAR/WGH2	BO, DC, DM, IP, MG, ML, RD, Rev
61 MIL/PAN	BO, DM, ML
61 RGG/WIL	BO
62 BEN	RD
62 KHA	BO, ML
62 MIR/FAV	ML

63 DUR/LØR	Ø, DM, ML, RD
64 RAY	DM
65 GUA/FAY	ML
65 VEN/MAR1	Ø, ML, Clc
65 VEN/MAR2	Ø, ML
66 GER/HØH	MT
66 LIP/NAG	DM
66 MIR/MAZ	ML
66 MOR	BE
66 NAG	Ø, DM, ML, RD
66 TAN/TAN	Ø, DM
67 NEL/LID	DM
68 JØN/RYA	ML
68 LEN/ØKA	BE
70 FØR/SAI	RD
71 RAJ/PØU	DM
71 RAM/NAM	ML, Clc
71 STU/PRØ	Ø, ML
72 CØT/WIL	Ø
72 NAT/RAM	Ø, ML, Clc
72 SHI	ML
73 JAN/ENG	DC, ML, Rev
73 RAG	BE, Ø, DC, DM, IP, MG, Rev
75 BER/BØC	DM, IP
75 CHA/CUR	Ø, ML
75 FRØ/LEE	IP
75 SPI/SPE	ML, Clc
76 ABB/DYK	IP
76 GIL/SCH	IP, Clc
76 STØ	Ø, IP, Clc

Cling

Physical Properties

12 BRI/PYL	BT, CD, DN, ST, VP, VS
24 TRA/GER	VP
27 GAL/MEN	BT, MT, VP
34 TRA/FRE	TC, VS
39 CØL/LIL	BT, CD, DN, MT, VP
40 ASM	BT, MT
48 MCG	BT, CD, DN, MT, Rev
48 SØL	BT, CD, DN, MT, VP, Rev

49 ADD/THØ2	MT
49 PAR/WHY1	MT
49 PAR/WHY2	VP
51 BEC/FES	BT, DN, MT, ST, Rev
51 EPS/MIK	BT, VP
52 BUR/DAI1	MT, VP
52 BUR/MCK	VP
60 GEO	BT, DN, MT, Rev
61 DEV/HIS	BG, ML, Clc
61 MAR/WØH2	BT, CD, DN, ML, ST, VP, VS, Rev
62 BEN	CD, DN
62 SVE	TC, VS
63 WØL/ECK	VP
68 KUZ/EGG	CD
69 PAN/RIP	BT, CD
72 CØT/WIL	BT, MT
72 DUB/DEV	MT
73 JAN/ENG	MT, VP, Rev
73 RAG	BT, CD, DN, MT, Rev
74 KHØ/RØZ	VP
75 KHØ/RØZ	VP
76 AMI/KEF	VP

Cling

Spectral Properties

30 KIS	UVS, VIS
32 LEE/RAM	VIS
34 BAI/CAS	IRS
39 GØØ/KAT	UVS, VIS
39 NAT	VIS
41 PRI·SIM	UVS
50 BER	MWS
50 BUR/BER	IRS
50 PIE/RØG1	MWS
50 PIE/RØG2	MWS
50 WIS/ELM	IRS
51 BEC/FES	IRS, UVS, VIS
51 PUL/WAL	IRS
51 RØG/PIE	MWS
52 EBE/BUR	IRS
52 WØL/JØN	IRS

53 WAL	UVS, VIS, Rev
54 HAS/JAN	IRS
55 KAW/SIM	IRS
56 BAY/WAT	UVS
56 GEN/FIN	UVS, VIS
56 MAR/GAR	UVS
56 PIE/FLE	IRS
57 BEL/WIL	IRS
57 TAN	UVS
58 CØL/GIN	IRS, UVS
59 RAY/ØGG	IRS
60 BRI	UVS
60 LAN/FLE	IRS
61 CAS/PØL	IRS
61 MIL/PAN	MWS
62 MIR/FAV	MWS
63 DUR/LØR	IRS
63 GØL	IRS
63 HIS/MIL	IRS
63 LEN/ØKA	UVS
65 GUA/FAV	MWS
66 MIR/MAZ	MWS
66 TAN/TAN	UVS
68 JØN/RYA	IRS
68 LEN/ØKA	UVS
70 AND/MAS	NMS
71 DUN/SUT	MSS
72 FØR/LIN	MSS
72 MAC/DEV	IRS, RAS
73 JAN/ENG	IRS, Rev
74 BAL/ARM	UVS, VIS
74 DUB/CAB	XRS
74 HØE/WAD	AB, RAS
75 BER/BØC	XPS
75 CAZ/CER	IRS, MWS
75 FRØ/LEE	XPS
75 STØ	XRS
76 A8B/DYK	XPS
76 GIL/SCH	XPS
76 ILL/TAK	AB, UVS
76 SAV/BES	MSS
77 MØL	AB, UVS

CLNG

Thermodynamic Properties

12 BRI/PYL	ET
15 TRA/HIN	EQ
16 BRI	ET
16 TRA/HIN	EQ
16 TRA/WAC	EQ
24 TRA/SCH	EQ
27 GAL/MEN	VP
31 DIX	EN, EQ, ET
31 WHI/LUN	ET, TE
32 LEE/RAM	EN, EQ, ET, TE, Cle
36 BIC/RGS	ET
38 JAH	EN, EQ, ET, TE, Cle
39 BEE/YGS1	EN, EQ, ET, HC, TE
39 BEE/YGS2	EQ
40 ASM	ET
41 PRI/SIM	ET
41 SCH/MAS	EQ, TE
49 DRG/GAL	IE
49 PAR/WHY2	ET
50 BUR/BER	EN, HC, TE
51 BEC/FES	EN, EQ, ET, HC, Rev
51 PUL/WAL	EN
57 RAY/EGG	EQ
58 MAR/KGH	ET
59 RAY/EGG	EN, ET
60 GEO	ET, Rev
61 MAR/WGH2	EN, EQ, ET, HC, TE, Rev
61 WAR	EN, ET, TE
62 GOR	EN, ET, HC, TE
62 SVE	HC
65 CAL/GLA	ET
65 VEN/MAR2	EN, HC, TE
66 NAG	EN, HC, TE
68 GLU	EN, ET, HC, TE
68 KUZ/EGG	ET
68 LEN/GKA	ET
68 WAG/EVA	EN, ET, HC, TE
69 PAN/RIP	ET
70 GGG/GRA	ET

71 STU/PRO	EN, ET, HC, TE
71 YAG/AMI	TE
72 DUB/DEV	ET
73 JAN/ENG	EN, BC, Rev
73 RAG	ET, TE, Rev
73 VIA/AMA	EQ
74 GUR/KAR	ET
75 CHA/CUR	EN, ET, HC, TE
76 AMI/KEF	EQ

PART II

NITRYL CHLORIDE ClNO_2

Chemistry and Chemical Kinetics

24 KIS	RR, For from: Cl and NO_2 , Mec, Rxn with: NO
29 SCH/SPR1	Rlp, Syn
29 SCH/SPR2	RR, Dec
29 SCH/SPR3	RR, Dec, For from: ClNO and O_3 , Mec
31 SCH/SPR	RR, Dec
47 SCH	Dec, For from: ClNO and O_3 , Rxn with: NH_3 , NaOH , AgNO_3 , AgNO_3 , Syn
48 PET	Rlp, Rxn with: NaOH , NH_3 , Syn
50 GGG/WIL	For from: Cl_2 , N_2O_4 , N_2O_5 , ClNO , O_2
52 BAT/SIS	Rlp, Rxn with: NH_3 , metals, Inorg. oxides and salts
52 FRE/JOH	RR, Rxn with: NO
52 SEE/NOG	Dec, Rlp, Rxn with: H_2l , N_3^- , Syn
53 JØH/LEI	RR, For from: ClNO and NO_3
54 CØR	RR, Dec
54 CØR/JØH	RR, Dec, Mec, Rxn with: Cl
54 LEI	RR, For from: ClNO and O_3
55 MAR/KØH	RR, For from: ClO_3 and ClNO
55 RAY	For from: Cl_2 , ClNO , NO_2 , Mec
55 SCH	Rlp, Rxn with: Cl_2O_6 , H_2O_2 , NaOH , NH_3 , N_3^- , Syn
56 HER/JØH	RR, Clc, Rxn with: NO, Thp
56 VOL/JØH	RR, Dec, Mec, Rxn with: Cl, H, NO
57 CAS	RR, Dec

57 RAY/OGG RR, For from: ClNO and NO₂
 57 SCH/FIN Rlp, Rxn with: ClNO₃
 58 CGL/GIN Rlp, Dec, Rxn with: C₂H₅O C₂H₅, HCl, H₂SO₄, Syn
 58 GIN/GOD RR, Rxn with: Alkylbenzenes, H₂O, HNO₂
 58 MAR RR, For from: Cl₂O, NO₂, N₂O₅
 58 MAR/KOH RR, Dec, For from: ClO₂, NO₂, NO₃, ClNO, Mec
 59 MAR/MEI RR, For from: Cl₂O, N₂O₅
 59 NIK RR, Dec, Clc
 59 TAL/THO For from: HCl and N₂O₄, Mec, Rxn with: NO
 60 MAR/MEI RR, For from: Cl₂O, NO₂, N₂O₄, ClNO, Rxn with ClNO₃
 61 ASH/BUR RR, Dec, Mec, Rxn with: NO and ClNO
 61 DGH/WIL RR, Dec, Phl, Rxn with: Cl
 61 HEU Rlp, Syn
 62 ASH/BUR RR, Dec, Mec
 62 HIR/HAR RR, Dec, Rxn with: O₂
 62 WIE/MAR RR, Clc, Dec, Thp
 63 SIN RR, Clc, Dec, Rxn with: Cl, Thp
 63 WEI Rlp, Rxn with: H₂O and SO₃
 65 VAN/HEU Rlp, For from: Inorg. Nitro Comp., Rxn with: SO₃
 66 DRE Dec
 66 MAR RR, For from: ClO₂, Cl₂O, NO₂, NO₃, N₂O₅, ClNO, Mec
 66 MIL Rlp, Syn
 66 TAR/RAB Clc, Dec, Thp
 67 BEG Rlp, Rxn with: Olefins
 67 DEJ/LEG For from: NO₂SO₃Cl and N₂O₄, Rlp
 67 KUH Rlp, Rxn with: HF and Lewis acid fluorides
 67 VAN For from: Inorg Nitro comp., Rlp
 68 TAR/RAB Clc, Dec, Thp
 69 PAU/SIN Rlp, Rxn with: H₂S₂O₇, H₂SO₄, SbCl₅, BC₁₃
 70 BEN/O'N RR, Dec, For from: NO₂ and Cl, Mec, Rev, Rxn with: Cl
 70 CAI RR, Dec
 71 HIR Rlp, Rxn with: LiN(CH₃)₂, Syn
 72 DUT RR, Dec
 72 DUT/BUN RR, Dec
 72 MAR/RGB RR, For from: Cl₂O, ClNO
 72 PAU/ARG Rlp, Rxn with: SO₃
 73 JAN/ENG Dec, Rev, Rxn with: Inorg. subst., Syn
 73 TRG Dec, Thp

73 TSA	RR, Dec, Rev, Rxn with: Cl
74 KNA/MAR	RR, For from: NO ₂ , ClNO ₃ , ClNO, Cl ₂ O, Mec, Rxn with: NO
74 VGR/ENG	Dec, Rlp, Rxn with: SF ₅
74 WIL	RR, For from: N ₂ O ₅ and ClNO, Rxn with: NO
74 WIL/DOD	RR, Mec, Rxn with: NO
76 AMI/KEF	For from: Cl ₂ and N ₂ O ₄ , Rlp
76 BIR/JES	RR, Phl
77 MOL/MOL	RR, For from: ClONO, ClNO, and ClNO ₃ , Mec, Phl (for ClONO, Chlorine Nitrite Isomer)

ClNO₂

Molecular Properties

37 LUC	RD
50 GGG/WIL	BE
54 RYA/WIL	ML
55 MIL/SIN	ML
56 CLA/WIL	DM, ML
56 HER/JOH	ML
57 GEI/RAT	BO
58 HAR	ML, Clc
58 MIL/SIN	BO, ML
58 SUT	BO, Clc
59 CLA/WIL	BO, DM, ML
60 GEO	BO, Rev
61 DEV/HIS	BO, ML, Clc
61 LIN	BO
61 LUM	DM
61 KRI	ML, Clc
61 PUR/RAG	BO, ML, Clc
61 VEN/THI	ML, Clc
62 BEN	ML
62 KHA	BO
62 VEN/RAJ	ML, Clc
63 OKA/MER	DM, ML
64 RAY	DM
65 MGR/TAN	BO, ML
65 PUR/RAG	BO, Clc
65 SUT	BO
66 EAG/WEA	DM

66 MOR	BE, Clc
67 BER/MIL	ML
67 MUL/NAG	Bo, Clc
67 NEL/LID	DM
67 NEM1	ML, Clc
67 NEM2	ML, Clc
68 MUL/KRE	ML, Clc
68 NEM	ML, Clc
69 FRE	ML, Clc
69 RAO	DM, ML
71 STU/PRO	Bo, ML
72 COT/WIL	Bo
72 SHI	ML
73 JAN/ENG	DM, Rev
75 FRC/LEE	IP

Cl₂N₂

Physical Properties

29 SCH/SPR1	BT, DN, MT, VP
37 LUC	VS
48 PET	BT, DN, MT
57 GEI/RAT	EN, EQ, HC, TE
58 CGL/GIN	BT, MT
61 HEU	BT, MT, DN
62 BEN	CD, DN
66 DRE	TC
68 KUZ/EGG	CD
69 PAN/RIP	BT, CD
69 PAU/SIN	FP
72 COT/WIL	BT, MT
73 JAN/ENG	VP, Rev

Cl₂N₂

Spectral Properties

50 GGG/WIL	IRS
54 RYA/WIL	IRS, RAS
55 MIL/SIN	MWS
56 CLA/WIL	MWS
56 MAR/GAR	UVS

58 CØL/GIN	IRS, UVS
58 MIL/SIN	MWS
59 CLA/WIL	MWS
59 RAY/ØGG	IRS
63 ØKA/MØR	MWS
65 MØR/TAN	MWS
66 EAG/WEA	MWS
66 MIL	IRS
67 BER/MIL	IRS
69 PAU/SIN	IRS, RAS
70 MAS/BRØ	NMS
71 BAR/VAS	IRS
71 HIR	IRS
73 JAN/ENG	IRS, Rev
74 CHR/SCH	IRS, RAS
75 FRØ/LFE	XPS
75 FIL/LØR	MWS
76 BIR/JES	AB, UVS
76 ILL/TAK	AB, UVS
77 MØL	AB, UVS (for both isomers: ClNO ₂ , Nitryl Chloride, and ClONO, Chlorine Nitrite)
77 MØL/MØL	AB, UVS (for ClONO, Chlorine Nitrite Isomer)

ClNO₂

Thermodynamic Properties

29 SCH/SPR1	ET
55 RAY	EN, EQ, ET
57 GEI/RÅT	EN, EQ, HC, TE
57 RAY/ØGG	EQ
58 MAR/KØH	ET
59 RAY/ØGG	EN, ET
60 GEG	ET, Rev
61 KRI	EN, HC, TE, Clc
61 LAR/MAR	EN, HC, TE
61 PIL	EN, HC
61 PUR/RÅS	EN, HC, TE
66 MIL	EN, ET, HC, TE
67 BER/MIL	EN, ET, HC, TE
68 GLU	EN, ET, HC, TE
68 KUZ/EGØ	ET
68 WAG/EVA	EN, ET, MC, TE
69 PAN/RIP	ET

70 BEN/G'N	EN, ET, HC
71 STU/PRØ	EN, ET, HC, TE
73 JAN/ENG	EN, ET, HC, Rev
74 GUR/KAR	ET

PART III

CHLORINE NITRATE ClNO_3

Chemistry and Chemical Kinetics

35 USH/CHI	Rlp, Rxn with: Olefins
36 USH/CHI	Rlp, Syn
37 USH/CHI	Rlp, Syn
55 MAR/JAC	RR, For from: ClO , ClO_2 , NO_2 , Mec
56 MAR/GAR	RR, For from: ClO_2 , NO_2 , Mec
57 SCH/BRA	Rlp, Rxn with: ICl_3 , $\text{S}u\text{Cl}_4$, TiCl_4
57 SCH/FIN	For from: ClO_2 , $\text{Cl}_2\theta$, ClOAsG_5 , NO_2 , $\text{N}_2\theta_5$, Rlp, Rxn with: HCl , NO_2 , ClNO , ClNO_2 , Syn
58 MAR	RR, For from: ClCO_2 , $\text{Cl}_2\theta$, NO_2 , $\text{N}_2\theta_5$, Mec
58 SKI/CAD	Rlp
59 MAR/MEI	RR, For from: $\text{Cl}_2\theta$, NO_2 , $\text{N}_2\theta_5$
60 MAR/MEI	RR, For from: $\text{Cl}_2\theta$, $\text{S}u\text{Cl}$, NO_2
61 CAF	RR, Dec
61 CAF/SIC	RR, Dec
61 FIN1	Rlp, Rxn with: Olefins
61 FIN2	Rlp, Rxn with: Olefins
61 SCH/BRA	For from: ClO_2 , NO_2 , $\text{N}_2\theta_5$, Rxn with: Inorg. Solvent, Syn
66 MAR	RR, For from: ClO_2 , $\text{Cl}_2\theta$, NO_2 , $\text{N}_2\theta_5$, ClNO , Mec
66 MIL	Rlp, Syn
67 SCH1	Rlp, Syn
67 SCH2	Rlp, Syn
68 MUL/DEH	Rlp, Rxn with: SbF_3Cl_2
70 BEN/G'N	RR, Dec, Rxn with: NO_2 , $\text{S}u\text{Cl}$, θ_2 , Cl_2 , Mec, Rev, Rxn with: $\text{S}u\text{Cl}$
74 KNA/MAR	RR, Dec, Mec, Rxn with: Cl and NO_2
74 SCH/CHR	Rlp, Rxn with: θ_3
75 COO/PRI	RR, Rxn with: HCl
76 RØW/SPE1	For from: ClO and NO_2 , Phl, Rlp, Rxn with: θ

76 R _O W/SPE2	For from: ClO and NO ₂ , Phl, Rxn with: O
76 BIR/JES	RR, Phl
76 R _O W/SPE1	For from: ClO and NO ₂ , Phl, Rlp, Rxn with: O
76 R _O W/SPE2	For from: ClO and NO ₂ , Phl, Rxn with: O
77 KUR/MAN	RR, Rxn with: Cl
77 MOL/SPE	RR, Rxn with: O, Syn
77 RAV/DAV	RR, Rxn with: O, OH
77 SMI/CH _O	OY, Phl

ClNO₃

Molecular Properties

37 PAU/BRO	BE, Rlp
60 BRA/SCH	ML
63 ARV/CAF1	ML
63 ARV/CAF2	ML
67 MIL/BER	BE, BE, ML
76 SUE/JOH	ML

ClNO₃

Physical Properties

55 MAR/JAC	BT, MT
58 MAR	BT, MT, VP
60 GEG	BT, MT, Rev
61 SCH/BRA	BT, MT
67 SCH1	BT, VP
67 SCH2	BT, MT

ClNO₃

Spectral Properties

56 MAR/GAR	UVS
60 BRA/SCH	IRS
63 ARV/CAF1	IRS
63 ARV/CAF2	IRS
66 MIL	IRS
67 MIL/BER	IRS

74 CHR/SCH	IRS, RAS
74 SHA/YEL	RAS
75 AMG/FLE	RAS
76 BIR/JES	AB, UVS
76 ROW/SPE1	UVS
76 SUE/JOH	MWS
77 BIR/JES	RR, Phl
77 GRA/TUA	AB, IRS
77 SMI/CHG	QY, PHL
77 KUR/MAN	RR, Rxn with: O, OH
77 RAV/DAV	RR, Rxn with: O, OH
77 MOL	AB, UVS

C₁N₂O₃

Thermodynamic Properties:

60 GEG	ET, Rev
61 SCH/BRA	ET
67 MIL/BER	EN, ET, HC, TE
67 SCH1	ET
68 GLU	EN, ET, HC, TE
70 BEN/O'N	EN, ET, HC
74 KNA/MAR	ET

PART IV

References

1874

- 74 TIL Tilden, W. A., "On Aqua Regia and the Nitrosyl Chlorides," J. Chem. Soc. (London) 27, 630 (1874)

1891

- 91 SUD Sudborough, J. J., "Action of Nitrosyl Chloride on Metals," J. Chem. Soc. (London) 59, 655 (1891)

1912

- 12 BRI/PYL Briner, M. E., and Pylkoff, M. Z., "Contributions a la Connaissance des modes de Formation et des Proprietes du Chlorure de Nitrostyle," J. Chim. Phys. 10, 640 (1912)

1914

- 14 TRA Trautz, M., "Der Temperaturkoeffizient der Nitrosylchloridbildung aus Stickoxyd und Chlor," Z. Anorg. Chem. 88, 285 (1914)

1915

- 15 TRA/HIN Trautz, M., and Hinck, C. F., "Das Zerfallsgleichgewicht $2\text{NO} + \text{Cl}_2 \rightleftharpoons 2\text{NOCl}$ des Nitrosylchlorids. Eine Bestatigung des Gesetzes von der Additivitat der inneren Atomwarmen," Z. Anorg. Allg. Chem. 93, 177 (1915)

1916

- 16 BRI Briner, M. E., "Sur le Mecanisme des Reactions dans l'eau Regale," C. R. Hebd. Seances Acad. Sci. (Paris) 162, 387 (1916)
- 16 TRA/HIN Trautz, M., and Hinck, C. F., "Das Zerfallsgleichgewicht $2\text{NO} + \text{Cl}_2 \rightleftharpoons 2\text{NOCl}$ des Nitrosylchlorids. II. Ersetzung der chemischen Konstanten durch Integrationskonstanten, berechnet aus der Molekulgrossse," Z. Anorg. Allg. Chem. 97, 127 (1916)
- 16 TRA/WAC Trautz, M., and Wachenheim, L., "Das Zerfallsgleichgewicht von Nitrosylchlorid," Z. Anorg. Allg. Chem. 97, 241 (1916)

1923

- 23 CUT/TAR Cuttica, V., Tarchi, A., and Alinari, P., "L'azione di VOCl_2 , e di NOCl Sopra gli Ossidi Metallici," Gazz. Chim. Ital. 53, 189 (1923)
- 23 KIS Kiss, A., "Ueber Den Lichtzerfall des Nitrosylchlorids," Rec. Trav. Chim. Pays-Bas 52, 665 (1923)

1924

- 24 KIS Kiss, A., "Studien Über Katalyse bei Homogenen Gasreaktionen II. Katalyse der Nitrosylchloridebildung Durch Nitrogendioxyd," Rec. Trav. Chim. Pays-Bas 43, 68 (1924)
- 24 TRA/GER Trautz, M., and Gerwig, W., "Der Dampfdruck des flüssigen Nitrosylchlorids," Z. Anorg. Allg. Chem. 134, 409 (1924)
- 24 TRA/SCH Trautz, M., and Schlueter, H., "Dreirstosse als Folge von Zweierstossen in physikalischer und in chemischer Betrachtungsweise," Z. Anorg. Allg. Chem. 136, 1 (1924)

1925

- 25 BOW/SHA Bowen, E. J., and Sharp, J. F., "The Photochemical Decomposition of Nitrosyl Chloride," J. Chem. Soc. (London) 127, 1026 (1925)

1926

- 26 LYN/SHO Lynn, E. V., and Shoemaker, H. A., "Nitrosyl Chloride," J. Am. Pharm. Assoc. 15, 217 (1926)

1927

- 27 GAL/MEN Gall, H., Mengdehl, H., "Über die Anlagerung von Nitrosylchlorid an Metallsalze," Ber. Dtsch. Chem. Ges. 60, 86 (1927)
- 27 TAY/DEN Taylor, H. A., and Denslow, R. R., "The Thermal Decomposition of Nitrosyl Chloride," J. Phys. Chem. 31, 374 (1927)

1928

- 28 NOY Noyes, W. A., "The Interaction Between Nitrogen Trichloride and Nitric Oxide. Reactions of Compounds with Odd Electrons," J. Am. Chem. Soc. 50, 2902 (1928)

1929

- 29 SCH/SPR1 Schumacher, H. J., and Sprenger, G., "Die Darstellung und Eigenschaften des Nitrylchlorids," Z. Anorg. Allg. Chem. 182, 139 (1929)
- 29 SCH/SPR2 Schumacher, H. J., and Sprenger, G., "Die Geschwindigkeit des monomolekularen Zerfalls einfacher Gase," Naturwissenschaften 17, 997 (1929)
- 29 SCH/SPR3 Schumacher, H. J., and Sprenger, G., "Nitrylchlorid: Bildung und thermischer Zerfall. Ein experimenteller Beitrag zur Theorie der monomolekularen Reaktionen," Z. Elektrochem. 35, 653 (1929)

1930

- 30 KIS Kistiakowsky, G. B., "Photochemical Decomposition of Nitrosyl Chloride," J. Am. Chem. Soc. 52, 102 (1930)
- 30 NOY Noyes, W. A., "The Interaction Between Nitrogen Trichloride and Nitric Oxide at -150°. II. Further Evidence for the Formation of Nitrogen Dichloride and of Mono-Oxygen-Dinitrogen-Dichloride," J. Am. Chem. Soc. 52, 4298 (1930)

1931

- 31 DIX Dixon, J. K., "The Equilibrium between Chlorine, Nitric Oxide and Nitrosyl Chloride," Z. Phys. Chem. A Bodenstein-Festband, 679 (1931)
- 31 SCH/SPR Schumacher, H. J., and Sprenger, G., "Der thermische Zerfall des Nitrylchlorides. Eine homogene Gasreaktion erster Ordnung," Z. Phys. Chem. B 12, 115 (1931)
- 31 WHI/LUN Whittaker, C. W., Lundstrom, F. G., and Merz, A. R., "Preparation of Potassium Nitrate from Solid Potassium Chloride and Nitrogen Peroxide," Ind. Eng. Chem. 23, 1410 (1931)

1932

- 32 LEE/RAM Leermakers, J. A., and Ramsperger, H. C., "The Gas Phase Equilibrium Between Methyl Nitrite, Hydrogen Chloride, Methyl Alcohol, and Nitrosyl Chloride. The Absorption Spectrum of Nitrosyl Chloride," J. Am. Chem. Soc. 54, 1837 (1932)

1934

- 34 BAI/CAS Bailey, C. R., and Cassie, A. B. D., "Investigations in the Infra-red Region of the Spectrum. Part X. The Asymmetrical Molecule Nitrosyl Chloride, NOCl ," Proc. Roy. Soc. (London) A 165, 336 (1934)
- 34 TRA/FRE Trautz, M., and Freytag, A., "Die Reibung, Wärmeleitung und Diffusion in Gasmischungen XXVIII. Die innere Reibung von Cl_2 , NO und NOCl , Gasreibung während der Reaktion $2\text{NO} + \text{Cl}_2 = 2\text{NOCl}$," Ann. Physik 20, 135 (1934)

1935

- 35 WAD/TGL Waddington, G., and Tolman, R. C., "The Thermal Decomposition of Nitrosyl Chloride," J. Am. Chem. Soc. 57, 689 (1935)
- 35 USH/CHI Ushakov, M. I., Chistov, V. G., and Shlosberg, M. A., "The Salt Properties of Halides. Products of the Reaction of the Compounds of Univalent Positive Halides with Unsaturated Hydrocarbons," Zh. Obshch. Khim. 5, 1391 (1935); Chem. Abstr. 30:2190-9 (1936)

1936

- 36 BIC/RGS Bichowsky, F. R., and Rossini, F. D., "The Thermochemistry of the Chemical Substances," Reinhold Publishing Corporation, 35 (1936)
- 36 USH/CHI Ushakov, M. I., and Chistov, V. G., "Chlorine Nitrate," Bull. Soc. Chim. France 3, 2142 (1936)

1937

- 37 KET/PAL Ketelaar, J. A. A., and Palmer, K. J., "The Electron Diffraction Investigation of Nitrosyl Chloride and Nitrosyl Bromide," J. Am. Chem. Soc. 59, 2629 (1937)
- 37 KRA/SAR Krauss, W., and Saracini, M., "Der Mechanismus der Reaktion von Stickoxyd mit Sauerstoff, Chlor und Brom. III," Z. Phys. Chem. A 178, 245 (1937)
- 37 LUC Luchinskii, G. P., "Mechanical Characteristics of Anhydrous Halogen Compounds," Zh. Obshch. Khim. 7, 2110 (1937)

- 37 PAU/BRG Pauling, L., and Brockway, L. G., "The Adjacent Charge Rule and the Structure of Methyl Azide, Methyl Nitrate, and Fluorine Nitrate," J. Am. Chem. Soc. 59, 13 (1937)
- 37 USH/CHI Ushakov, M. I., and Chistov, V. G., "Chlorine Nitrate," Zh. Obshch. Khim. 1, 253 (1937); Chem. Abstr. 31:3405-6 (1937)

1938

- 38 BEE/CGR Beeson, C. M., and Coryell, C. D., "The Diamagnetism of Gaseous Nitrosyl Chloride," J. Chem. Phys. 6, 656 (1938)
- 38 JAH Jahn, F. P., "The Free Energy and Entropy of Nitrosyl Chloride," J. Chem. Phys. 6, 335 (1938)
- 38 KET Ketelaar, J. A. A., "La Structure Moleculaire du Chlorure de Nitrosyle," Atti Congr. Int. Chim. 16, 301 (1938)
- 38 SCH Schumacher, H. J., "Chemische Gasreaktionen," (T. Steinkopff Publisher, Dresden and Leipzig, 1938), pp. 127, 281, and 321 (Photo-Lithoprinted in 1943 by E. Brother, Inc., Ann Arbor, Michigan)
- 38 WEL/TAY Welinsky, I., and Taylor, H. A., "The Energy and Entropy of Activation of the Reaction Between Nitric Oxide and Chlorine," J. Chem. Phys. 6, 466 (1938)

1939

- 39 BEE/YOS1 Beeson, C. M., and Yost, D. M., "The Equilibrium Dissociation and Thermodynamic Constants of Nitrosyl Chloride. Comparison with Spectroscopic Data," J. Chem. Phys. 7, 44 (1939)
- 39 BEE/YOS2 Beeson, C. M., and Yost, D. M., "The Thermodynamic Constants of Bromine Chloride. The Equilibrium Reaction Between Nitric Oxide, Bromine, Chlorine, Nitrosyl Bromide and Chloride, and Bromine Chloride," J. Am. Chem. Soc. 61, 1432 (1939)
- 39 CGL/LIL Coleman, G. H., Lillis, G. A., and Goheen, G. E., "Nitrosyl Chloride. $\text{S}\text{O}_2 + \text{HN}\text{O}_3 \rightarrow \text{H}\text{S}\text{O}_2\text{N}\text{O}$, $\text{HS}\text{O}_2\text{N}\text{O} + \text{HCl} \rightarrow \text{NOCl} + \text{H}_2\text{S}\text{O}_4$," Inorg. Synth. 1, 55 (1939)
- 39 GGD/KAT Goodeve, C. F., and Katz, S., "The Absorption Spectrum of Nitrosyl Chloride," Proc. Roy. Soc. (London) A 172, 432 (1939)
- 39 NAT Natanson, G. L., "On the Mechanism of Photochemical Decomposition of Nitrosyl Chloride," Acta Physicochim. URSS 11, 521 (1939)

1940

- 40 ASM Asmussen, R. W., "Über Nitrosylchlorid und seine Verbindungen mit anorganischen Chloriden. Magnetoochemische Untersuchungen. 3., Z. Anorg. Allg. Chem. 243, 127 (1940)
- 40 NAT Natanson, G. L., "The Lifetime of Activated Triatomic Molecules and the Mechanism of Predissociation of Nitrosyl Chloride," Acta Physicochim. URSS 13, 317 (1940)

1941

- 41 ATW/RGL Atwood, K., and Rollefson, G. K., "The Efficiency of the Primary Photochemical Process in Solution," J. Chem. Phys. 2, 506 (1941)
- 41 PRI/SIM Price, W. C., and Simpson, D. M., "The Absorption Spectra of Nitrogen Dioxide, Ozone and Nitrosyl Chloride in the Vacuum Ultra-Violet," Trans. Faraday Soc. 37, 106 (1941)

41 SCH/MAS Schmid, H., and Maschka, A., "Photometrische Bestimmung der freien Bildungsenthalpie wasserigen Nitrosylchlorids," Z. Phys. Chem. B 49, 171 (1941)

1943

43 KET Ketelaar, J. A. A., "The Dipole Moment and the Constitution of Nitrosyl Chloride and Nitrosyl Bromide," Rec. Trav. Chim. Pays-Bas 62, 289 (1943)

1947

47 SCH Schmeisser, M., "Über das Nitrylchlorid NO_2Cl ," Z. Anorg. Allg. Chem. 255, 33 (1947)

1948

48 PAR/WHY Partington, J. R., and Whynes, A. L., "The Action of Nitrosyl Chloride on Some Metals and Their Compounds," J. Chem. Soc. (London) 1952 (1948)

48 PET Petri, H., "Über das Nitrylchlorid," Z. Anorg. Allg. Chem. 257, 180 (1948)

48 MCG McGonigle, T. J., "Properties presented and Reactions of Nitrosyl Chloride," presented at Amer. Chem. Soc. Meeting (1948), The Solvay Process Division, Allied Chemical & Dye Corporation, Product Development Department, 40 Rector Street, New York 6, N. Y., see also Solvay Process Division

48 SOL Solvay Process Division, "Nitrosyl Chloride," presented at Amer. Chem. Soc. Meeting (1948), Solvay Process Division, Allied Chemical & Dye Corporation, Product Development Department, 40 Reactor Street, New York 6, N. Y., see also McGonigle

1949

49 ADD/THG1 Addison, C. C., and Thompson, R., "The Liquid Dinitrogen Tetroxide Solvent System. Part I. General Introduction," J. Chem. Soc. (London), S211 (1949)

49 ADD/THG2 Addison, C. C., and Thompson, R., "The Liquid Dinitrogen Tetroxide Solvent System. Part II. Liquid and Solid Solutions of Nitrosyl Chloride in Dinitrogen Tetroxide," J. Chem. Soc. (London), S218 (1949)

49 DRG/GAL Drozin, N. N., and Galinker, I. S., "Oxidation of Nitrosyl Chloride," Zh. Prikl. Khim. 22, 475 (1949)

49 PAR/WHY1 Partington, J. R., and Whynes, A. L., "Reactions of Nitrosyl Chloride. Part II," J. Chem. Soc. (London) 3135 (1949)

49 PAR/WHY2 Partington, J. R., and Whynes, A. L., "The Vapor Pressure of Nitrosyl Chloride," J. Phys. Colloid Chem. 53, 500 (1949)

1950

50 BER Bernstein, H. J., "The Structure of Nitrosyl Chloride from the Microwave Absorption Spectrum," J. Chem. Phys. 18, 1514 (1950)

50 BUR/BER Burns, W. G., and Bernstein, H. J., "The Vibrational Spectra and Structure of Inorganic Molecules. III. The Infra-Red Spectra of Nitrosyl Chloride and Nitrosyl Bromide from 2.0 to 25 μ ," J. Chem. Phys. 18, 1669 (1950)

- 50 GGG/WIL Ggg, R. A., and Wilson, M. K., "The Stability of Gaseous Nitryl Chloride," J. Chem. Phys. 18, 900 (1950)
- 50 PIE/RØG1 Pietenpol, W. J., Rogers, J. D., and Williams, D., "Microwave Spectra of Asymmetric Top Molecules," Phys. Rev. 78, 480 (1950)
- 50 PIE/RØG2 Pietenpol, W. J., Rogers, J. D., and Williams, D., "Microwave Spectrum of Nitrosyl Chloride," Phys. Rev. 77, 741 (1950)
- 50 WIS/ELM Wise, J. H., and Elmer, J. T., "The Infra-Red Spectrum of Nitrosyl Chloride," J. Chem. Phys. 18, 1411 (1950)

1951

- 51 BEC/FES Beckham, L. J., Fessler, W. A., and Kise, M. A., "Nitrosyl Chloride," Chem. Rev. 48, 319 (1951)
- 51 EPS/MIK Epshtain, D. A., and Mikhaleva, S. V., "The System $\text{Cl}_2\text{-NOCl}$," Dokl. Akad. Nauk SSSR 78, 71 (1951); Chem. Abstr. 54:1786-h (1954)
- 51 PUL/WAL Pulford, A. G., and Walsh, A. "The Infra-Red Spectrum and Thermodynamic Constants of Nitrosyl Chloride," Trans. Faraday Soc. 47, 347 (1951)
- 51 RØG/PIE Rogers, J. D., Pietenpol, W. J., and Williams, D., "The Microwave Absorption Spectrum of Nitrosyl Chloride NOCl ," Phys. Rev. 83, 431, (1951)

1952

- 52 BAT/SIS Batey, H. H., and Sisler, H. H., "Some Inorganic Reactions of Nitryl Chloride," J. Am. Chem. Soc. 74, 3408 (1952)
- 52 BUR/MCK Burg, A. B., and McKenzie, D. E., "Further Studies of Nitrosyl Chloride as an Ionizing Solvent," J. Am. Chem. Soc. 74, 3143 (1952)
- 52 BUR/DAI1 Burns, W. G., and Dainton, F. S., "The Vapour Pressure Curves of Solid and Liquid Nitrosyl Chloride," Trans. Faraday Soc. 48, 21 (1952)
- 52 BUR/DAI2 Burns, W. G., and Dainton, F. S., "The Rate Constants of the Reaction of Nitrosyl Chloride with Chloride Atoms and COCl Radicals," Trans. Faraday Soc. 48, 52 (1952)
- 52 CHA/ASH Chanmugam, J., and Ashmore, P. G., "The Hydrogen-Oxygen Reaction Sensitized by Nitrosyl Chloride," Nature 170, 1067 (1952)
- 52 FBE/BUR Eberhardt, W. H., and Burke, T. G., "An Absorption Band of NOCl at 30μ ," J. Chem. Phys. 20, 529 (1952)
- 52 FRE/JØH Freiling, E. C., Johnston, H. S., and Ggg, R. A., Jr., "The Kinetics of the Fast Gas-Phase Reaction Between Nitryl Chloride and Nitric Oxide," J. Chem. Phys. 20, 327 (1952)
- 52 SEE/NØG Seel, F., and Nograd, J., "Zur Konstitution und Reaktionsweise des Nitrylchlorids," Z. Anorg. Allg. Chem. 269, 188 (1952)
- 52 WØL/JØN Woltz, P. J. H., Jones, E. A., and Nielsen, A. H., "The Infrared Spectrum of Nitrosyl Fluoride. Part I. Prism Spectrum," J. Chem. Phys. 20, 378 (1952)

1953

- 53 ASH/CHA1 Ashmore, P. G., and Chanmugam, J., "Reactions in the System Hydrogen, Chlorine, Nitric Oxide and Nitrosyl Chloride Part 1. The Reaction Between Hydrogen and Chlorine in the Presence of Nitric Oxide and Nitrosyl Chloride," Trans. Faraday Soc. 49, 254 (1953)
- 53 ASH/CHA2 Ashmore, P. G., and Chanmugam, J., "Reactions in the System Hydrogen, Chlorine, Nitric Oxide, and Nitrosyl Chloride Part 2. The Thermal Decomposition of Nitrosyl Chloride," Trans. Faraday Soc. 49, 265 (1953)

- 53 ASH/CHA3 Ashmore, P. G., and Channugam, J., "Reactions in the System Hydrogen, Chlorine, Nitric Oxide, and Nitrosyl Chloride. Part 3. The Velocity Constant of the Reaction $\text{NO} + \text{Cl}_2 \rightarrow \text{NOCl} + \text{Cl}$," Trans. Faraday Soc. 49, 270 (1953)
- 53 JGH/LEI Johnston, H. S., and Leighton, F., Jr., "The Mechanism of the Reaction between Ozone and Nitrosyl Chloride," J. Am. Chem. Soc. 75, 3612 (1953)
- 53 WAL Walsh, A. D., "The Electronic Orbitals, Shapes, and Spectra of Polyatomic Molecules. Part II. Non-hydride AB_2 and BAC Molecules," J. Chem. Soc., (London) 2266 (1953)

1954

- 54 COR Cordes, H. F., Jr. "The Thermal Decomposition of Nitryl Chloride at Low Pressure," Diss. Abstr. 14, 1558 (1954)
- 54 CGR/JGH Cordes, H. F., Jr., and Johnston, H. S., "Thermal Decomposition of Nitryl Chloride. I. Second-Order Unimolecular Rate Study," J. Am. Chem. Soc. 76, 4264 (1954)
- 54 FRE Frejacques, C., "Sur la Cinetique Anormale des Reactions du Dioxyde d'Azote," J. Chim. Phys. Phys.-Chim. Biol. 51, 78 (1954)
- 54 HAS/JAN Haszeldine, R. N., and Jander, J., "Studies in Spectroscopy. Part VI. Ultra-Violet and Infra-Red Spectra of Nitrosamines, Nitrites, and Related Compounds," J. Chem. Soc. (London), 691 (1954)
- 54 LEI Leighton, F., Jr., "The Mechanism of the Reaction Between Nitrosyl Chloride and Ozone," Diss. Abstr. 14, 935 (1954)
- 54 RYA/WIL Ryason, R., and Wilson, M. K., "Vibrational Spectrum and Structure of Nitryl Chloride," J. Chem. Phys. 22, 2000 (1954)
- 54 SIE Siebert, H., "Kraftkonstante und Strukturchemie. IV. Struktur der Nichtmetall-Oxyde und -Oxyhalogenide," Z. Anorg. Allg. Chem. 275, 210 (1954)

1955

- 55 EPS/NIK Epshtain, D., A., and Nikanova, I. N., "Formation of Solid Products from Reactions of Water-soluble Salts with Gaseous Substances in the Presence of Water Vapor," Issledovaniya po Priklad. Khim., Akad. Nauk SSSR Otdel Khim. Nauk., 50 (1955); Chem. Abstr. 50:4607f (1956)
- 55 KAW/SIM Kawai, K., and Simizu, K., "Potential Constants for Some Nitrosyl Halides," Kagaku To Kogyo 29, 9 (1955)
- 55 MAR/JAC Martin, H., and Jacobsen, Th., "Über die Bildung von NO_3Cl bei Reaktionen zwischen Chlordioxyd und Oxyden des Stickstoffs," Angew. Chem. 67, 524 (1955)
- 55 MAR/KOH Martin, H., and Kohnlein, E., "Die Gasreaktion," Angew. Chem. 67, 524 (1955)
- 55 MIL/SIN Millen, D. J., and Sinnott, K. M., "The Microwave Spectrum and Structure of Nitryl Chloride," Chem. & Industry, 538 (1955)
- 55 RAY Ray, J. D., "Thermodynamics and Kinetics of the Nitrogen Dioxide Catalyzed Oxidation of Nitrosyl Chloride to Nitryl Chloride," Diss. Abstr. 15, 1739 (1955)
- 55 SCH Schmeisser, M., "Die Chemie der anorganischen Acylnitrate (ein Problem des Nitrylchlorids) und Acyperchlorate (ein Problem des Dichlorhexoxyds)," Angew. Chem. 67, 493 (1955)

1956

- 56 BAY/WAT Bayliss, N. S., and Watts, D. W., "The Spectra and Equilibria of Nitrosonium Ion, Nitro-Acidium Ion, and Nitrous Acid in Solutions of Sulphuric, Hydrochloric, and Phosphoric Acids," Aust. J. Chem. 9, 319 (1956)
- 56 CLA/WIL Clayton, L., Williams, Q., and Weatherly, T. L., "Quadrupole Coupling Constants of Nitryl Chloride," Am. Phys. Soc. Bull. 1, 341 (1956)
- 56 GEN/FIN Genkina, E. V., Finkel'shtein, A. I., and Artem'ev, A. A., "Molecular Complexes of Nitrosyl Chloride," Dokl. Akad. Nauk SSSR 109, 528 (1956)
- 56 HER/JOH Herschbach, D. R., Johnston, H. S., Pitzer, K. S., and Powell, R. E., "Theoretical Pre-Exponential Factors for Twelve Bimolecular Reactions," J. Chem. Phys. 25, 736 (1956)
- 56 MAR/GAR Martin, H., and Gareis, R., "Die Kinetik der Reaktion von ClNO_2 mit N_2 in der Lösungssphase," Z. Elektrochem. 60, 959 (1956)
- 56 PIE/FLF Pierson, R. H., Fletcher, A. N., and St. Clair Gantz, E., "Catalog of Infrared Spectra for Qualitative Analysis of Gases," Anal. Chem. 28, 1218 (1956)
- 56 VOL/JOH Volpe, M., and Johnston, H. S., "Energy Transfer Processes in the Unimolecular Decomposition of Nitryl Chloride," J. Am. Chem. Soc. 78, 3903 (1956)

1957

- 57 ASR/LEV Ashmore, P. G., and Levitt, B. P., "The Thermal Reaction Between Hydrogen and Nitrogen Dioxide. Part 3. Further Experimental Work on the Kinetics: Reaction Mechanism," Trans. Faraday Soc. 53, 945 (1957)
- 57 BEL/WIL Bellamy, L. J., and Williams, R. L., "Infrared Spectra and Polar Effects. Part VI. Internal and External Spectral Relationships," J. Chem. Soc. (London), 863 (1957)
- 57 CAS Casaleotto, G. J., "Kinetics of the Thermal Decomposition of Nitryl Chloride at High Pressures," Diss. Abstr. 17, 43 (1957)
- 57 GEI/RÄT Geiseler, G., and Rätzsch, M., "Thermodynamische Eigenschaften des Nitrylchlorids," Z. Phys. Chem. 207, 138 (1957)
- 57 RAY/GGG Ray, J. D., and Egg, R. A., Jr., "Kinetics of the Nitrogen Catalyzed Oxidation of Nitric Oxide," J. Chem. Phys. 26, 984 (1957)
- 57 SCH/BRA Schmeisser, M., and Brändle, K., " ClNO_3 als Ausgangsmaterial für Acylniträte. Über Acylniträte und Acylperchlorate (IV)," Angew. Chem. 69, 781 (1957)
- 57 SCH/FIN Schmeisser, M., Fink, W., and Brandle, K., "Darstellung und Reaktionen des Chlornitrats. Über Acylniträte und Acylperchlorate (III)," Angew. Chem. 69, 780 (1957)
- 57 TAN Tanaka, J., "Effects of Substituents on the Electronic Spectra of Organic Compounds. III. Electronic Structure and Electronic Spectra of Nitroso Group and its Related Substances," Nippon Kagaku Zasshi 78, 1647 (1957)

1958

- 58 ART/STR Artem'ev, A. A., Strel'tsova, A. A., Genkina, E. V., and Vul'fson, K. S., "Photochemical Reactions with Nitrosyl Chloride," Khim. Nauka i Prom. 3, 629 (1958)
- 58 COL/GIN Collis, M. J., Gintz, F. P., Goddard, D. R., Hebdon, E. A., and Minkoff, G. J., "Nitryl Chloride. Part II. Its Preparation and the Properties of its Solutions in Some Organic Solvents," J. Chem. Soc. (London) 438 (1958)
- 58 GIN/GOD Gintz, F. P., Goddard, D. R., and Collis, M. J., "Nitryl Chloride. Part III. The Reaction with Alkylbenzenes," J. Chem. Soc. (London) 445 (1958)

- 58 HAR Hariharan, T. A., "The Force Constants of Nitryl Chloride and Nitryl Fluoride," Proc. Indian Acad. Sci. A 48, 49 (1958)
- 58 MAR Martin, H., "Bildungsreaktionen des Nitroxychlorids," Angew. Chem. 70, 97 (1958)
- 58 MAR/KOH Martin, H., and Kohnlein, E., "Die Reaktion des Chlordioxyds mit Nitrosylchlorid in der Gasphase," Z. Physik. Chem. [NF] 18, 375 (1958)
- 58 MIL/SIN Millen, D. J., and Sinnott, K. M., "The Microwave Spectrum, Structure, and Dipole Moment of Nitryl Chloride," J. Chem. Soc. (London) 350 (1958)
- 58 SKI/CAD Skjens, W. E., and Cady, G. H., "Thermal Decomposition of Fluorine Nitrate," J. Am. Chem. Soc. 80, 5640 (1958)
- 58 SUT Sutton, L. E., (Scientific Editor), "Tables of Interatomic Distances and Configuration in Molecules and Ions," Chem. Soc. Spec. Publ. No. 11 S6, S7 and M43 (1958)

1959

- 59 ASH/SPE Ashmore, P. G., and Spencer, M. S., "Concurrent Molecular and Chlorine Atom Mechanisms in the Reversible Dissociation of Nitrosyl Chloride," Trans. Faraday Soc. 55, 1868 (1959)
- 59 CLA/WIL Clayton, L., Williams, Q., and Weatherly, T. L., "Nitryl Chloride Molecular Constants from Microwave Spectrum Analysis," J. Chem. Phys. 30, 1328 (1959); Erratum, ibid 31, 554 (1959)
- 59 DUH/BAU Duhaud, P., and Baumgartner, P., "Etude d'un Equilibre Photostationnaire," Bull. Soc. Chim. France, 1540 (1959)
- 59 MAR/MEI Martin, H., and Meise, W., "Die Kinetik der Reaktionen des Dichlormonooxyds mit NO_2 und mit N_2O_5 in der Lösungssphase," Z. Elektrochem. 63, 162 (1959)
- 59 NEU Neuwirth, G. S., "The Photolysis of Nitrosyl Chloride and the Storage of Solar Energy," J. Phys. Chem. 63, 17 (1959)
- 59 NIK Nikitin, E. E., "Calculation of the Rate Constant for the Thermal, Bimolecular Decomposition of Molecules," Zh. Fiz. Khim. 33, (1959)
- 59 RAY/EGG Ray, J. D., and Egg, R. A., Jr., "Thermodynamic Properties of Nitryl Chloride," J. Chem. Phys. 31, 168 (1959)
- 59 TAL/THO Talbot, P. J., and Thomas, J. H., "The Reaction Between Hydrogen Chloride and Nitrogen Peroxide," Trans. Faraday Soc. 55, 1884 (1959)

1960

- 60 BRA/SCH Brändle, K., Schmeisser, M., and Luttko, W., "Infrarot-Spektrum und Struktur des NO_3Cl ," Chem. Ber. 93, 2300 (1960)
- 60 BRI Brim, W. W., "Low Frequency Vibration Rotation Bands of ND_3 , NOCl , and CH_3CCH ," Diss. Abstr. 21, 769 (1960)
- 60 ERR Errede, L. A., "Simple Equations for Calculating Bond Dissociation Energies," J. Phys. Chem. 64, 1031 (1960)
- 60 FIN/LEE Findl, E., Lee, W. B., Margerum, J. D., and McKee, W. E., "Solar Regenerative Fuel Cell System on the Way. Regeneration and Fuel Cell Phases Work Separately in Lab Tests. Next Step is to Combine Them," S. A. E. Journ., 84-87 (1960)
- 60 GEO George, J. W., "Halides and Oxyhalides of the Elements of Group Vb and VIb," Prog. Inorg. Chem. 2, 33 (1960)
- 60 LAN/FLE Landau, L., and Fletcher, W. H., "The Infrared Spectrum and Potential Function of Nitrosyl Chloride," J. Mol. Spectroscopy 4, 276 (1960)

- 60 MAR/MEI Martin, H., Meise, W., and Engelmann, E., "Über die Kinetik der Reaktion des Dichlormonoxyds mit Stickstoffdioxyd in der Gasphase und im flüssigen Kondensat," *Z. Physik. Chem. [NF]* 24, 285 (1960)
- 60 MAR/WOH Marcus, R. J., and Wohlers, H. C., "Photolysis of Nitrosyl Chloride in the Solar Furnace," *J. Sol. Energy Sci. Eng.* 4, 1 (1960)
- 60 MCK/FIN McKee, W. E., Findl, E., Margerium, J. D., and Lee, W. B., "Solar Regenerative Fuel Cells," *Power Sources Symp. Proc.* (1960), Fort Monmouth, N.J.

1961

- 61 ASH/BUR Ashmore, P. G., and Burnett, M. G., "Thermal Decomposition of Nitrosyl Chloride Catalyzed by Nitrogen Dioxide," *Trans. Faraday Soc.* 57, 1315 (1961)
- 61 BAS/NOR Basco, N., and Norrish, R. G. W., "Vibrationally Excited Nitric Oxide Produced in the Flash Photolysis of Nitrosyl Chloride," *Nature* 189, 455 (1961)
- 61 CAF Cafferata, L. F. R., "Kinetic Study of the Thermal Decomposition of the Gaseous Nitryl Oxychloride (NO_3Cl)," *Rev. Fac. Cienc. Quim., Univ. Nacl. La Plata* 33, 103 (1961); *Chem. Abstr.* 58:5068f (1963)
- 61 CAF/SIC Cafferata, L. F. R., Sicre, J. E., and Schumacher, H. J., "Die Kinetik des thermischen Zerfalls von Nitrooxychlorid (NO_3Cl)," *Z. Physik. Chem. [NF]* 29, 188 (1961)
- 61 CAS/PGL Cashion, J. K., and Polanyl, J. C., "Infrared Chemiluminescence in the System $\text{H} + \text{NOCl}$," *J. Chem. Phys.* 35, 600 (1961)
- 61 DEK Deklau, B., "Nitrosyl Chloride Decomposition Rates in Shock Waves," *Diss. Abstr.* 21, 1883 (1961)
- 61 DEV/HIS Devlin, J. P., and Hisatsune, I. C., "Urey-Bradley Potential Constants in Nitrosyl and Nitryl Halides," *Spectrochim. Acta* 17, 206 (1961)
- 61 DGH/WIL Dohner, A. S., and Wilson, D. J., "Photochemical Decomposition of Nitryl Chloride," *J. Chem. Phys.* 35, 1510 (1961)
- 61 FIN1 Fink, W., "Reaktion von ClNO_3 mit Vinyl-Metall-Verbindungen," *Angew. Chem.* 73, 532 (1961)
- 61 FIN2 Fink, W., "Umsetzung von ClNO_3 mit Olefinen," *Angew. Chem.* 73, 466 (1961)
- 61 HEU Heubel, J., "Action du Chlorure d'Hydrogène Liquide sur l'Anhydride Nitrique. Préparation du Chlorure de Nitryle," *C. R. Acad. Sci. (Paris)* 252, 3268 (1961)
- 61 KRI Krishna Pillai, M. G., "Potential Energy Constants, Rotational Distortion Constants and Thermodynamic Properties of Nitryl Fluoride and Nitryl Chloride," *Z. Phys. Chem.* 218, 334 (1961)
- 61 LAR/MAR Larmann, J. P., Martire, D. E., and Pollara, L. Z., "Thermodynamic Functions for Nitryl Chloride," *J. Chem. Eng. Data* 6, 330 (1961)
- 61 LIN Linnett, J. W., "A Modification of the Lewis-Langmuir Octet Rule," *J. Am. Chem. Soc.* 83, 2643 (1961)
- 61 LUM Lumbroso, H., "Nouvelles Recherches sur les Moments de Liaison Azote-Halogène," *Bull. Soc. Chim. France*, 373 (1961)
- 61 MAR/WOH1 Marcus, R. J., and Wohlers, H. C., "Flow Systems in the Solar Furnace and the Photolysis of Nitrosyl Chloride," *J. Sol. Energy Sci. Eng.* 5, 121 (1961)
- 61 MAR/WOH2 Marcus, R. J., and Wohlers, H. C., "Photochemical Systems for Solar Energy Conversion - Nitrosyl Chloride," *J. Sol. Energy Sci. Eng.* 5, 44 (1961)
- 61 MIL/PAN Millen, D. J., and Pannell, J., "The Microwave Spectrum, Structure, and Nuclear Quadrupole Coupling Coefficients of Nitrosyl Chloride," *J. Chem. Soc. (London)* 1322 (1961)
- 61 PUR/RAG Puranik, P. G., and Rao, E. V., "Potential Constants and Calculated Thermodynamic Properties of Nitryl Fluoride and Nitryl Chloride," *Indian J. Phys.* 35, 177 (1961)

- 61 RIC Ricci, R. W., "A Kinetic Study of the Gas Phase Reactions Between Nitrogen Pentoxide and Some Reducing Agents," *Diss. Abstr.* 22, 1425 (1961)
- 61 ROG/WIL Rogers, J. D., and Williams, D., "Nitrosyl Chloride Structure," *J. Chem. Phys.* 34, 2195 (1961)
- 61 SCH/BRA Schmeisser, M., and Brandle, K., "Halogennitratrate und ihre Reaktionen. Zur Chemie der positiven Oxydationsstufen der Halogene," *Angew. Chem.* 73, 388 (1961)
- 61 VEN/THI Venkateswarlu, K., Thirugnanasambandam, P., and Balasubramanian, C., "Force Constants of Planar XYZ₂ Type Molecules," *Z. Phys. Chem.* 218, 7 (1961)
- 61 WAR Warren, K. S., "Survey of Potential Vapor-Phase Explosions in Darex and Sulfex Processes," *U.S. AEC Report ORNL-2937*, 22 (1961)

1962

- 62 ASH/BUR Ashmore, P. G., and Burnett, M. G., "Velocity Constants in the Decomposition of Nitryl and Nitrosyl Chlorides," *Trans. Faraday Soc.* 58, 1801 (1962)
- 62 BAS Basco, N., "Spectroscopic Studies of Some Excited Inorganic Free Radicals," *Adv. Chem. Ser.* 36, 26 (1962)
- 62 BAS/NOR Basco, N., and Norrish, R. G. W., "Vibrationally Excited Nitric Oxide Produced in the Flash Photolysis of Nitrosyl Halides," *Proc. Roy. Soc. (London) A* 268, 291 (1962)
- 62 BEN Benko, J., "Zusammenhang des Molvolumens und des kritischen Drucks mit der Atomzahl," *Acta Chim. Acad. Sci. Hung.* 34, 217 (1962)
- 62 CHA/KHA Charters, P. E., Khare, B. N., and Polanyi, J. C., "Infra-Red Chemiluminescence from the Reactions of Atomic Hydrogen at Low Pressures," *Nature* 193, 367 (1962)
- 62 DEK/PAL Deklau, B., and Palmer, H. B., "The Rate of Decomposition of Nitrosyl Chloride in Shock Waves," *Symp. Combust.* 8, (The Williams & Wilkins Co., Baltimore, 1962)
- 62 GGR Gordon, J. S., "Thermodynamic Functions for Nitrosyl Chloride", *J. Chem. Eng. Data* 7, 82 (1962)
- 62 HIR/HAR Hiraoka, H., and Hardwick, R., "Thermal Decomposition of Nitryl Chloride in Shock Waves," *J. Chem. Phys.* 36, 2164 (1962)
- 62 KHA Kharitonov, Y. Y., "Empirical Relations Between the Force Constants, and the Length and Frequencies of the Valence Vibrations of Nitrogen - Oxygen Bonds," *Bull. Acad. Sci. USSR Div. Chem.* 11, 1865 (1962); tr. *Izv. Akad. Nauk SSSR, Otd. Khim Nauk* 11, 1953 (1962)
- 62 MAR/CHU Marcus, R. J., and Church, F. M., "The Effect of Concentrated Light on Photochemical Energy Conversion by Nitrosyl Chloride Solutions," A. F. Cambridge Research Lab., Bedford, Mass., AFCLR-62-256, Report 9, Scientific Report III (Feb. 1962) NTIS AD 273 662
- 62 MIR/FAV Mirri, A. M., Favero, P., Guarneri, A., and Semerano, G., "Millimeter Spectrum of Asymmetric Triatomic Nitrosyl Chloride Molecules," *Boll. Sci. Fac. Chim. Ind. Bologna* 20, 110 (1962)
- 62 SVE Svehla, R. A., "Estimated Viscosities and Thermal Conductivities of Gases at High Temperatures," NASA, Lewis Research Center, Cleveland, Ohio, Technical Report R-132 (1962) NTIS N63-22862
- 62 VEN/RAJ Venkateswarlu, K., and Rajalakshmi, K. V., "Potential Constants of Polyatomic Molecules - Part II," *J. Annamalai Univ. B* 24, 38 (1962)
- 62 WIE/MAR Wieder, G. M., and Marcus, R. A., "Dissociation and Isomerization of Vibrationally Excited Species. II. Unimolecular Reaction Rate Theory and Its Applications," *J. Chem. Phys.* 37, 1835 (1962)

1963

- 63 ARV/CAF1 Arvia, A. J., Cafferata, L. F. R., and Schumacher, H. J., "Das Infrarotspektrum und die Struktur von NO_3Cl und NO_3F ," Chem. Ber. 96, 1187 (1963)
- 63 ARV/CAF2 Arvia, A. J., Cafferata, L. F. R., and Schumacher, H. J., "El Espectro Infrarrojo y la Estructura del Nitrato de Cloro y del Nitrato de Fluor," Anal. Asoc. Quim. Argent. 51, 319 (1963)
- 63 DUR/LGR Durig, J. R., and Lord, R. C., "Pure Rotational Absorption of Nitrosyl Fluoride and Nitrosyl Chloride in the 80-250 μ Region," Spectrochim. Acta 19, 421 (1963)
- 63 GOL Goldfarb, T. D., "P-R Maxima Separations in Unresolved Parallel Bands of Symmetric- and Slightly Asymmetric-Top Molecules," J. Chem. Phys. 39, 2860 (1963)
- 63 HIS/MIL Hisatsune, I. C., and Miller, P., Jr., "Environmental Effects on the Infrared Spectra of NOCl and NOBr Solids," J. Chem. Phys. 38, 49 (1963)
- 63 LEN/GKA Lenzi, M., and Okabe, H., "Photodissociation of NOCl and NO_2 in the Vacuum Ultraviolet," Ber. Bunsenges. Phys. Chem. 72, 168 (1963)
- 63 MER Meriel, Y., "Mechanical Energy From the Action of Light [on Nitrosyl Chloride]," Nature (London) 466 (1963); Chem. Abstr. 60:10225-d (1964)
- 63 GKA/MOR Gka, T., and Morino, Y., "Inertia Defect Part III. Inertia Defect and Planarity of Four-Atomic Molecules," J. Mol. Spectroscopy 11, 349 (1963)
- 63 SIN Singh, K., "Theory of Unimolecular Reactions," Proc. Nat. Inst. Sci. India Part A 29, 662 (1963)
- 63 WEI Weinreich, G. H., "Etude de Derives Polysulfones Mineraux," Bull. Soc. Chim. France 2820 (1963)
- 63 WGL/ECK Wolf, F., Eckert, L., and Schier, H., "Über die Dampfdruckverhältnisse im System Distickstofftetroxyd-Chlor-Nitrosylchlorid," Chem. Techn. 15, 728 (1963)

1964

- 64 ASH/HER Ashmore, P. G., and Hertl, W., "Decomposition of Nitrosyl Chloride on Glass and Quartz Surfaces," J. Catal. 3, 438 (1964)
- 64 RAY Ray, J. D., "Electric Quadrupole Contribution to Chemical Shifts in Liquids Induced by Intramolecular Hindered Rotations," J. Chem. Phys. 40, 3440 (1964)
- 64 WAY Wayne, R. P., "Photolysis of Nitrosyl Chloride by Ultra-Violet Radiation," Nature 203, 516 (1964)

1965

- 65 ASH/WES Ashmore, P. G., and Wesley, T. A. B., "A Test of Thermal-Ignition Theory in Autocatalytic Reactions," Symp. Combust. 10, (Combustion Institute, Pittsburgh 1965) 217
- 65 CAL/GIA Calder, G. V., and Giauque, W. F., "The Entropy of Iodine Monochloride. Heat Capacity from 17 to 322°K. Vapor Pressure. Heats of Fusion and Vaporization," J. Phys. Chem. 69, 2443 (1965)
- 65 GUA/FAV Guarneri, A., and Favero, P. G., "Quadrupole Coupling Constants of Nitrogen in NOCl and NOBr ," Nuovo Cimento 39, 77 (1965)
- 65 MOR/TAN Morino, Y., and Tanaka, T., "Microwave Spectra of Nitryl Chloride in the Excited Vibrational States," J. Mol. Spectroscopy 16, 179 (1965)
- 65 PUR/RAG Puranik, P. G., and Rao, E. V., "Mean Amplitudes of Vibrations of Nitryl Fluoride and Nitryl Chloride," Curr. Sci. 34, 559 (1965)

- 65 SUT Sutton, L. E., (Scientific Editor), "Tables of Interatomic Distances and Configuration in Molecules and Ions Supplement 1956-1959," Chem. Soc. Spec. Publ. No. 18, S7s, S8s, and M23s (1965)
- 65 VAN/HEU Vandorpe, B., and Heubel, J., "Syntheses Directes a Partir de Sg_3 pur Liquide et de Derives Azotes tri et Pentavalents," C. R. Acad. Sci. (Paris) 260, 6619 (1965)
- 65 VEN/MAR1 Venkateswarlu, K., and Mariam, S., "Mean Amplitudes of Vibration: Bent XYZ Molecules," Proc. Indian Acad. Sci. 61, 260 (1965)
- 65 VEN/MAR2 Venkateswarlu, K., and Mariam, S., "Molecular Force Fields: Bent XYZ Type of Molecules," Indian J. Pure Appl. Phys. 3, 117 (1965)
- 65 ZEV Zevos, N., "A Study of the Kinetics of the Unimolecular Reaction Between Nitrogen Pentoxide and Nitrosyl Chloride," Diss. Abstr. 18, 4434 (1965)

1966

- 66 CLY/STE Clyne, M. A. A., and Stedman, D. H., "Reactions of Atomic Hydrogen with Hydrogen Chloride and Nitrosyl Chloride," Trans. Faraday Soc. 62, 2164 (1966)
- 66 DEU Deutsch, T. F., "N₂ Molecular Laser," Appl. Phys. Lett. 9, 295 (1966)
- 66 DRE Dresvyannikov, F. N., "Experimental Study of Chloro-nitrile Thermal Conductivity," J. Eng. Phys. 11, 761 (1966); tr. Inzhenorno-Fiz. Zh. 11, 761 (1966)
- 66 EAG/WEA Eagle, D. F., Weatherly, T. L. and Williams, Q., "Stark Effect and Hyperfine Splitting for Near-Degenerate Levels of an Asymmetric Rotor. Application to N₂Cl and N₂Br," J. Chem. Phys. 44, 847 (1966)
- 66 GER/HOH Gerding, H., Hohle, Th., and van Schaik, K., "Le Systeme Binaire Chlorure de Nitrosoyle-Trioxyde de Soufre," Rev. Chim. Miner. 3, 617 (1966)
- 66 LIP/NAG Lippincott, E. R., Nagarajan, G., and Stutman, J. M., "Polarizabilities from the 6-Function Model of Chemical Binding. II. Molecules with Polar Bonds," J. Phys. Chem. 70, 78 (1966)
- 66 MAR Martin, H., "Kinetic Relationships between Reactions in the Gas Phase and in Solutions," Angew. Chem. (Intern. Ed.) 5, 78 (1966)
- 66 MIL Miller, R. H., "Vibrational Spectra of Some Nitrogen Oxyhalides," Diss. Abstr. 26, 6393 (1966)
- 66 MIR/MAZ Mirri, A. W., and Mazzariol, E., "Millimeter Wave Spectra of N₂Cl and N₂Br and Force Constant Determination," Spectrochim. Acta 22, 785 (1966); Erratum ibid, 23 A, 3035 (1967)
- 66 MOR Mortimer, F. S., "Energies of Atomization from Population Analysis on Buckel Wave Functions," Adv. Chem. Ser. 54, 39 (1966)
- 66 NAG Nagarajan, G., "Electronic Configurations, Molecular Polarizabilities, Mean Amplitudes of Vibration & Thermodynamic Functions of Some Non-linear Asymmetrical Triatomic Molecules," Indian J. Pure Appl. Phys. 4, 217 (1966)
- 66 NIE/WAG Nielsen, R. P., Wagner, C. D., Campanile, V. A., and Wilson, J. N., "A Survey Study of the Effects of Ionizing Radiation on Volatile Inorganic Compounds of Fluorine, Oxygen, and Nitrogen," Adv. Chem. Ser. 54, 168 (1966)
- 66 PØL Pollack, M. A., "Molecular Laser Action in Nitric Oxide by Photodissociation of N₂OCl," Appl. Phys. Lett. 9, 94 (1966)
- 66 STØ/GRØ Stopperka, E., and Grove, V., "Über die Reaktion von Nitrylchlorid mit Schefeldioxid," Z. Anorg. Allg. Chem. 347, 19 (1966)
- 66 TAR/RAB Tardy, D. C., and Rabinovitch, B. S., "Collisional Energy Transfer. Thermal Unimolecular Systems in the Low-Pressure Region," J. Chem. Phys. 45, 3720 (1966)
- 66 TAN/TAN Tanaka, M., Tanaka, J., and Nagakura, S., "The Electronic Structures and Electronic Spectra of Some Aliphatic Nitroso Compounds," Bull. Chem. Soc. Jpn. 39, 766 (1966)
- 66 WEL Welge, K. H., "Electronically Excited N₂ by Photodissociation of N₂O and N₂OCl," J. Chem. Phys. 45, 1113 (1966)

1967

- 67 BEG Beger, J., "Über die Umsetzung von Nitrylchlorid mit Olefinen," *J. Prakt. Chem.* 35, 326 (1967)
- 67 BER/MIL Bernitt, D. L., Miller, R. H., and Hisatsune, I. C., "Infrared Spectra of Isotopic Nitryl Halides," *Spectrochim. Acta A* 23, 237 (1967)
- 67 CAL/PIT Calvert, J. C., and Pitts, J. N., Jr., "Photochemistry," *J. Wiley and Sons, Inc.* 230 (1967)
- 67 DEJ/LEG De Jaeger, R. D., Legrand, P., and Heubel, J., "Sur Quelques Réactions de Chlorosulfate de Nitrosyle," *C. R. Acad. Sci. (Paris) C* 265, 1117 (1967)
- 67 KUH Kuhn, S. J., "Nitronium and Nitrosonium Salts. III. Preparation of Nitronium and Nitrosonium Salts by the Interaction of Nitryl and Nitrosyl Chloride with Anhydrous HF and Lewis Acid Fluorides," *Can. J. Chem.* 45, 3207 (1967)
- 67 MIL/BER Miller, R. H., Bernitt, D. L., and Hisatsune, I. C., "Infrared Spectra of Isotopic Halogen Nitrates," *Spectrochim. Acta A* 23, 223 (1967)
- 67 MIT/SIM Mitchell, R. C., and Simons, J. P., "Energy Distribution among the Primary Products of Photo-dissociation," *Disc. Faraday Soc.* 44, 208 (1967)
- 67 MUL/NAG Muller, A., and Nagarajan, G., "Mean Amplitudes of Vibration in Some ZXY_2 Molecules and Ions of C_{2v} Symmetry," *Z. Phys. Chem.* 235, 113 (1967)
- 67 NEL/LID Nelson, R. D., Jr., Lide, D. R. Jr., and Maryott, A. A., "Selected Values of Electric Dipole Moments for Molecular in the Gas Phase," *NSRDS-NBS 10* (1967)
- 67 NEM1 Nemes, L., "Normal Coordinate Analysis of Nitric Acid and Nitryl Halides, II Results of Normal Coordinate Analysis for NO_2Cl , NO_2F and $NO_2(SH)$ Molecules. Application of the Hybrid Orbital Force Field Model for SP^2 Hybridized Central Nitrogen Atom," *Acta Chim. Acad. Sci. Hung.* 52, 179 (1967)
- 67 NEM2 Nemes, L., "Normal Coordinate Analysis of Nitric Acid and Nitryl Halides, III Calculation of Vibrational Forms: Study of the Multiplicity and Frequency Assignment Problems," *Acta Chim. Acad. Sci. Hung.* 52, 189 (1967)
- 67 PAP Pape, M., "Die Photooximierung gesättigter Kohlenwasserstoffe," *Fortschr. Chem. Forsch.* 7, 559 (1967)
- 67 SCH1 Schack, C. J., "A New Synthesis of Chlorine Nitrate," *Inorg. Chem.* 6, 1938 (1967)
- 67 SCH2 Schmeisser, M., "Chlorine (I) Nitrate. $Cl_2O + N_2O_5 \rightarrow 2ClNO_3$," *Inorg. Syntheses* 2, 127 (1967)
- 67 VAN Vandorpe, B., "Contribution à l'étude de l'Anhydride Sulfurique et de Quelques-uns de ses Dérivés Minéraux," *Rev. Chim. Miner.* 4, 589 (1967)

1968

- 68 AMI/KEF Amirova, S. A., Kefer, R. G., and Yagud, B. Yu., "Infrared Spectroscopic Study of Nitrosyl Chloride Oxidation," *Sb. Nauch. Tr., Perm. Politekhn. Inst.* 44, 45 (1968)
- 68 GLU Glushko, V. P., "Thermicheskie Konstanty Veshchestv," Vol. III (N, P, As, Sb, Bi) Akad. Nauk SSSR, Moscow (1968)
- 68 GRI/CGS Grice, R., Cosandey, M. R., and Herschbach, D. R., "Correlation of Dynamics with Electronic Structure in Reactions of Alkali Atoms with Triatomic Molecules," *Ber. Bunsenges. Phys. Chem.* 72, 975 (1968)
- 68 JGN/RYA Jones, L. H., Ryan, R. R., and Asprey, L. B., "Vibrational Spectra and Force Constants for Isotopic Species of Nitrosyl Chloride," *J. Chem. Phys.* 49, 581 (1968)

- 68 KUZ/EGS Kuznetsova, T. V., Egorova, L. F., Rips, S. M., Zercheninov, A. N., and Pankratov, A. V., "Physicochemical Properties of Nitrogen Inorganic Fluorides," Izv. Sib. Otd. Akad. Nauk SSSR Ser. Khim. Nauk, 68 (1968)
- 68 LEN/GKA Lenzi, M., and Skabe, H., "Photodissociation of N_2Cl and N_2 in the Vacuum Ultraviolet," Ber. Bunsenges. Phys. Chem. 72, 168 (1968)
- 68 MUL/DEH Muller, U., Dehnicke, K., and Vorres, K. S., "Sodium Difluoro-Tetrachloroantimonate: Preparation, I. R. Spectrum and its Reaction with Chlorine Nitrate," J. Inorg. Nucl. Chem. 30, 1719 (1968)
- 68 MUL/KRE Muller, A., Krebbs, B., Fadini, A., Glemsen, G., Cyvin, S. J., Brunvoll, J., Cyvin, B. N., Elvebredd, I., Hagen, G., and Vizi, B., "Mean Amplitudes of Vibration, Force Constants and Coriolis Coupling Constants of $\text{ZXY}_2(\text{C}_{2v})$ and $\text{ZXY}_3(\text{C}_{3v})$ Type Molecules and Ions," Z. Naturforsch. 23 A, 1656 (1968)
- 68 NEM Nemes, L., "Harmonic Force Field Refinement Calculations for Polyatomic Molecules, II Force Field Calculations on N_2F and N_2Cl Molecules Containing ^{14}N and ^{15}N Isotopes," Acta Chim. Acad. Sci. Hung. 56, 153 (1968)
- 68 TAR/RAB Tardy, D. C., and Rabinovitch, B. S., "Collisional Energy Transfer in Thermal Unimolecular Systems. Dilution Effects and Falloff Region," J. Chem. Phys. 48, 1282 (1968)
- 68 WAG/EVA Wagman, D. D., Evans, W. H., Parker, V. B., Halow, I., Bailey, S. M., and Schumm, R. H., "Selected Values of Chemical Thermodynamic Properties. Tables for the First Thirty-Four Elements in the Standard Order of Arrangement," NBS Tech. Note 270-3 (1968)

1969

- 69 BIG Biordi, J. C., "The Behavior of Nitrogen Atoms in the Presence of Nitrosyl Chloride," J. Phys. Chem. 73, 3163 (1969)
- 69 FRE Freeman, D. E., "Stretching Force Constants in N_2F and N_2Cl ," Acta Chim. Acad. Sci. Hung. 61, 163 (1969)
- 69 HAT/HUS Hathorn, F. G. M., and Husain, D., "Some Reactions of Electronically Excited Iodine Atoms, $\text{I}(5^2\text{P}_{1/2})$, with Halides and Oxides," Trans. Faraday Soc. 65, 2678 (1969)
- 69 PAN/RIP Pankratov, A. V., Rips, S. M., Zercheninov, A. N., and Kuznetsova, T. V., "Thermodynamic Properties of Some Fluorides and Chlorides of Nitrogen," Russ. J. Phys. Chem. 43, 380 (1960)
- 69 PAU/SIN Paul, R. C., Singh, D., and Malhotra, K. C., "Chemistry of Nitryl Chloride. Part I," J. Chem. Soc. (London) A, 1396 (1969)
- 69 RAO Rao, E. V., "Coriolis Coupling Constants for Nitryl Fluoride (FN_2) & Nitryl Chloride (ClN_2)," Indian J. Pure Appl. Phys. 7, 762 (1969)
- 69 TIM/DAR Timmons, R. B., and Darwent, B. deB., "The Decomposition and Deactivation of Chemically Activated ClN_2 ," J. Phys. Chem. 73, 2208 (1969)

1970

- 70 AND/MAS Andersson, L.-G., Mason (Banus) J., and van Bronswijk, W., "Nitrogen Nuclear Magnetic Resonance. Part I. The Nitroso (Nitrosyl) Group," J. Chem. Soc. (London) A, 296 (1970)
- 70 ANL Anlauf, K. G., "Energy Distributions Among Reaction Products from the System $\text{H} + \text{Cl}_2$, $\text{H} + \text{Br}_2$, and $\text{H} + \text{ClN}_2$," Diss. Abstr. Intern. B 31, 1195 (1970)
- 70 BEN/G'N Benson, S. W., and G'Neal, H. E., "Kinetic Data on Gas Phase Unimolecular Reaction," Natl. Standards Ref. Data Series, NSRDS-NBS 21, 1-628 (1970)

- 70 CAI Cairns, R. W., "The Low Pressure Thermal Decomposition of Nitryl Chloride," Diss. Abstr. Int. B 31, 1859 (1970)
- 70 FOR/SAI Forst, W., and Saint-Laurent, P., "Etude Theorique de la Pyrolyse du Chlorure de Nitrosyle," J. Chim. Phys. Phys.-Chim. Biol. 67, 1018 (1970)
- 70 GOF/GRA Goodman, H., and Gray, P., "Temperature Distribution in Endothermic Gas Reactions: Nitrosyl Chloride Pyrolysis," Trans. Faraday Soc. 66, 2772 (1970)
- 70 MAS/BRC Mason (Banus), J., and van Bronswijk, W., "Nitrogen Nuclear Magnetic Resonance Spectroscopy. Part II. The Nitro (Nitryl) and Nitrate Group," J. Chem. Soc. (London) A, 1763 (1970)

1971

- 71 BAR/VAS Barbes, H., and Vast, P., "Relation Entre le Pouvoir Nitrant et la Structure de NO_2^+ Dans Quelques Sels de Nitryle," Rev. Chim. Miner. 8, 851 (1971)
- 71 DUN/FRE1 Dunn, M. R., Freeman, C. G., McEwan, M. J., and Phillips, L. F., "Mass Spectrometric Study of the Reaction of Nitrogen Atoms with Nitrosyl Chloride," J. Phys. Chem. 75, 1172 (1971)
- 71 DUN/FRE2 Dunn, M. R., Freeman, C. G., McEwan, M. J., and Phillips, L. F., "Mass Spectrometric Study of the Reaction of Oxygen Atoms with Nitrosyl Chloride," J. Phys. Chem. 75, 1320 (1971)
- 71 DUN/SUT Dunn, M. R., Sutton, M. M., Freeman, C. M., McEwan, M. J., and Phillips, L. F., "Mass Spectrometric Study of the Reaction of Hydrogen Atoms with Nitrosyl Chloride," J. Phys. Chem. 75, 722 (1971)
- 71 HIR Hirata, T., "Study on Synthesis of N-Nitroborazine Compounds. I. Nitryl Chloride as Nitrating Agent," Picatinny Arsenal, Dover NJ Tech. Memo. 2010 (1971) NTIS AD 728 806
- 71 RAM/NAM Ramaswamy, K., and Namasyayam, R., "Molecular Constants of some Nitrogen Halogen Compounds-II-Nitrosyl Chloride and Nitrosyl Bromide," Z. Phys. Chem. 247, 8 (1971)
- 71 RAJ/P6U Rajzmann, M., Pouzard, G., and Bouscasse, L., "Application de la Methode CNDO/2 a la Determination de la Structure Electronique du Chlorure de Nitrosyle," C. R. Acad. Sci. (Paris) C 273, 595 (1971)
- 71 STU/PRG Stull, D. R., and Prophet, H., Eds., "JANAF Thermochemical Tables," Natl. Std. Ref. Data Series NSRDS-NBS 37 (1971), 1141 pgs.
- 71 YAG/AMI Yagud, B. Yu., Amirova, S. A., and Kefer, R. G., "The Reaction of Nitrogen Dioxide and Nitrosyl Chloride with Activated Charcoal," Russ. J. Inorg. Chem. 16, 792 (1971); tr. of Zh. Neorg. Khim. 16, 1497 (1971)

1972

- 72 BEL/PER Belot, G., and Perrot, R., "Analyse par Chromatographie des gaz qui Apparaissent au Cours de la Formation des Nitrosochlorures," Bull. Soc. Chim. France, 3637 (1972)
- 72 BUS/WIL Busch, G. E., and Wilson, K. R., "Triatomic Photofragment Spectra. III. NOCl Photodissociation," J. Chem. Phys. 56, 3655 (1972)
- 72 CLY/CRU1 Clyne, M. A. A., and Cruse, H. W., "Atomic Resonance Fluorescence Spectrometry for Rate Constants of Rapid Bimolecular Reactions, Part 1. Reactions $\text{O} + \text{NO}_2$, $\text{Cl} + \text{ClNO}$, $\text{Br} + \text{ClNO}$," J. Chem. Soc., Faraday Trans. II 68, 1281 (1972)
- 72 CLY/CRU2 Clyne, M. A. A., Cruse, H. W., and Watson, R. T., "Measurement of Ground State ${}^2\text{P}_{3/2}$ Bromine and Chlorine Atom Concentrations in Discharge-Flow Systems," J. Chem. Soc., Faraday Trans. II 68, 153 (1972)
- 72 COL/PER Colette, M., and Perrot, R., "Etude Experimentale de L'hydrolyse du Chlorure de Nitrosyle," C. R. Acad. Sci. (Paris) C 274, 1827 (1972)

- 72 COT/WIL Cotton, F. A., and Wilkinson, G., "Advanced Inorganic Chemistry," Interscience Publishers, (N. Y., 1972), p. 365
- 72 DEA/HUS Deakin, J. J., and Husain, D., "Electronically Excited Iodine Atoms, $I(5p^5 2P_{1/2})$: A Kinetic Study of Some Chemical Reactions by Atomic Absorption Spectroscopy Using Time-Resolved Attenuation of Resonance Radiation at $\lambda = 206.23$ nm $[I[5p^4 6s(2P_{3/2}) \leftarrow 5p^5(2P_{1/2})]]$," *J. Photochem.* **1**, 353 (1972/73)
- 72 DIJ/SCH van Dijk, C. P., and Schreiner, W. C., "Process for Conversion of HCl to Chlorine," *Chem. Econ. Eng. Rev.* **4**, 42 (1972)
- 72 DUB/DEV Dubois, C., and Devin, C., "Etude du Systeme Binaire Forme par le Chlorure de Nitrosyle et le Chloroforme," *C. R. Acad. Sci. (Paris)* **274 C**, 1289 (1972)
- 72 DUT Dutton, M. L., "High Pressure Gas Kinetics. I: The Thermal Decomposition of Nitryl Chloride. II: The Thermal Decomposition of Nitrogen Pentoxide," *Diss. Abstr. Int. B* **32**, 6324 (1972)
- 72 DUT/BUN Dutton, M. L., Bunker, D. L., and Harris, H. H., "Two Familiar Gas Reactions at Suprahigh Pressure," *J. Phys. Chem.* **76**, 2614 (1972)
- 72 ENG/GAR English, J. R., III, Gardner, H. C., and Merritt, J. A., "Pulsed Stimulated Emission from N, C, Cl, and F Atoms," *IEEE J. Quantum Electron.* **QE-8** 843 (1972); see also U.S. Army Missile Command Tec. Report RR-TR-72-5, Feb. 1972, NTIS 741 334 (1972)
- 72 FOR/LIN Fornstedt, L., and Lindquist, S. E., "Flash Photolytic Decomposition of Nitrosyl Chloride Studied by Time-of-Flight Mass Spectrometry," *Dyn. Mass Spectrom.* **3**, 193 (1972)
- 72 MAC/DEV MacCordick, J., Devin, C., Perrot, R., and Rohmer, R., "Etude des Compose's du Type $M^{IV}Cl_4$, $2 NGCl$ ($M = Zr, Hf, Th$) par Spectroscopie Infrarouge et Raman," *C. R. Acad. Sci. (Paris) C* **274**, 278 (1972)
- 72 MAL Maloney, K. L., "A Shock Tube Study of the Thermal Decomposition of Allyl Iodide, Nitrosyl Bromide and Nitrosyl Chloride," *Diss. Abstr. Int. B* **33**, 311 (1972)
- 72 MAR/ROR Martin, H., Robisch, J., Knauth, H.-D., and Prusseit, K.-G., "Kinetik und Mechanismus der Reaktion des Dichlormonoxids mit Nitrosylchlorid," *Z. Physik. Chem. [NF]* **77**, 227 (1972)
- 72 MEN/MEN Menard-Bourcin, F., Menard, J., and Henry, L., "Distribution de l'Energie Vibrattonnelle Entre les Molecules de gaz Chlorhydrique au cours d'une Reaction Chimique. Reaction du Chlorure de Nitrosyle et de l'Hydrogene," *C. R. Acad. Sci. (Paris)* **274**, 1134 (1972)
- 72 NAT/RAM Natarajan, A., and Ramasamy, R., "Generalized Mean-Square Amplitudes of Vibration & Coriolis Coupling Constants of Some Triatomic Systems," *Indian J. Pure Appl. Phys.* **10**, 12 (1972)
- 72 PAU/ARG Paul, R. C., Arora, C. L., and Malhotra, K. C., "Nature of the Complexes of Sulphur Trioxide with Acetyl & Monochloroacetyl Chlorides, Nitrosyl & Nitryl Chlorides, Phosphoryl Chloride & Selenyl Chloride," *Indian J. Chem.* **10**, 92 (1972)
- 72 RAM/NAM Ramaswamy, K., and Namasivayam, R., "Molecular Constants of Some Nitrogen Halogen Compounds by Green's Function Analysis. II," *Acta Phys. Pol. A* **41**, 129 (1972)
- 72 SER/LGB Serezhkina, L. B., Lobacheva, M. P., Serezhkin, V. N., Tamm, N. S., and Novoselova, A. V., "Interaction of Metallic Beryllium with Liquid Mixtures of Nitrosyl Chloride and Dinitrogen Tetroxide," *Russ. J. Inorg. Chem.* **17**, 1678 (1972); tr. of *Zh. Neorg. Khim.* **17**, 3191 (1972)
- 72 SHI Shimanouchi, T., "Tables of Molecular Vibrational Frequencies Part 5," *J. Phys. Chem. Ref. Data* **1**, 189 (1970)

1973

- 73 BRA/WHY Bradley, J. N., Whytock, D. A., and Zaleski, T. A., "Electron Spin Resonance Study of the Reaction of O(³P) Atoms with Chlorine and Nitrosyl Chloride," *J. Chem. Soc., Faraday Trans.* 69, 1251 (1973)
- 73 ECK/EDE Eckstrom, D. J., and Edelstein, S. A., Benson, S. W., Black, G., and Luria, M., "Study of New Chemical Laser System," Stanford Research Institute Tech. Report RK-CR-73-6 (SRI MP 73-15), Dec. 1973, NTIS AD 773 031 (1973)
- 73 GAV Gavrilkin, G. N., "Radiation Sources for Preparation of Lactams by Photonitrosation," *Svetotekhnika* 8, 4 (1973); *Chem. Abstr.* 83:9142u (1975)
- 73 JAN/ENG Jander, J., and Engelhardt, U., "Nitrogen Compounds of Chlorine, Bromine, and Iodine," *Dev. Inorg. Nitrogen Chem.* 2, 70 (1973)
- 73 MAL/PAL Maloney, K. K., and Palmer, H. B., "Low-Pressure Thermal Decomposition of ONBr and ONCl in Shock Waves," *Int. J. Chem. Kinet.* 5, 1025 (1973)
- 73 MOV/KYA Movsumzade, M. M., Kyazimov, A. S., and Sidekova, G. A., "Nitrosylchlorination of Oxiranes," *Sopryazhennoe Galogenirovanie Olefinov Ikh Protzvodnykh Kistorosoderzhashchimi Soedin.*, 129 (1973); *Chem. Abstr.* 84:43722 (1976)
- 73 PRA/KAR Pravilov, A. M., Karpov, L. G., Smirnova, L. G., and Vilesov, F. I., "The Reaction I(²P_{1/2}) + NaCl I. Measurement of Quantum Yields for the Formation of I(²P_{1/2}) by Photolysis of CH₃I and CF₃I and Ratios of Rate Constants for its Reactions," *High Energy Chem.* 7, 294 (1973); tr. *Khim. Vys. Energ.* 7, 335 (1973)
- 73 RAG Ragsdale, R. G., "Reactions of Nitrogen (II) Oxide," *Dev. Inorg. Nitrogen Chem.* 2, 1 (1973)
- 73 SAV/LAC Savall, A., Lacoste, G., and Routie, R., "Mise en Evidence de l'Existence d'un Maximum d'Activite de la Decharge Electrique au cours de la Dissociation primaire du Chlorure de Nitrosyle dans un Champ dans un Champ Electrique Alternatif," *C. R. Acad. Sci. (Paris) C* 277, 603 (1973)
- 73 SHI Shimanouchi, T., "Tables of Molecular Vibrational Frequencies," *J. Phys. Chem. Ref. Data* 2, 225 (1973)
- 73 SYR/GIL Syrvatka, B. G. and Gil'burd, M. M., "Mass-spectrometric Study of Trifluoronirosomethane," *Russ. J. Phys. Chem.* 47, 1215 (1973); tr. of *Zh. Fiz. Khim.* 47, 2146 (1973)
- 73 TRG Troe, J., "Collisional Energy Transfer in Thermal Unimolecular Reactions," *Ber. Bunsenges. Phys. Chem.* 77, 665 (1973)
- 73 TSA Tsang, W., "Comparisons between Experimental and Calculated Rate Constants for Dissociation and Combination Reactions Involving Small Polyatomic Molecules," *Int. J. Chem. Kinet.* 5, 947 (1973)
- 73 VIA/AMA Viard, B., Amaudrut, J., Devin, C., "Action du Chlorure de Nitrosyle sur l'Oxydichlorure de Titane," *C. R. Acad. Sci. (Paris) C* 276, 1279 (1973)
- 73 WU Wu, T.-l., "Kinetics of the Photochemical Reaction of Nitrosyl Chloride to Ethylene and 1-butene in the Gas Phase," *Diss. Abstr. Int. B* 33, 3568 (1973)

1974

- 74 BAL/ARM Ballash, N. M., and Armstrong, D. A., "On the Ultraviolet and Visible Absorption Spectrum of ClNO," *Spectrochim. Acta* 30 A, 941 (1974)
- 74 BAL/BOL Balzani, V., Bolletta, F., Moggi, L., and Gleria, M., "Trasformazione Fotochimica Della Energia Solare Mediante Sistemi non Biologici, Parte Seconda; Esame critico dei sistemi proposti," *Chim. Ind. (Milan)* 56, 115 (1974)
- 74 CHR/SCH Christe, K. G., Schack, C. J., and Wilson, R. D., "Halogen Nitrates," *Inorg. Chem.* 13, 2811 (1974)

- 74 DEJ/HEU De Jaeger, R. D., and Heubel, J., "Etude Conductimetrique de la Reaction de N_OCl sur S_O₃ Dans S_O₂ Liquide a -20°C," J. R. Neth. Chem. Soc. 93, 63 (1974)
- 74 DUB/CAB Dubois, C., Cabala, R., and Devin, C., "Mise au Point d'une Cellule Pour L'etude de la Diffraction des Rayons X, a Basse Temperature (-180°C) et Sous la Pression Atmospherique," C. R. Acad. Sci. (Paris) C 278, 781 (1974)
- 74 ECK/EDE Eckstrom, D. J., Edelstein, S. A., and Benson, S. W., "Chemiluminescence Photon Yields for Several Alkaline Earth Metal-Halogen/Oxygen Reactions," J. Chem. Phys. 60, 2930 (1974)
- 74 GUR/KAR Gurvich, L. V., Karachevtsev, G. V., Kondratieff, V. N., Lebedev, Y. A., Medvedev, V. A., Potapov, V. K., and Khodeev, Y. C., "Energii Razryva Chimicheskikh Svyazei. Potentsialy Ionizatsii i Srodstvo k Elektronu," Akad. Nauk SSSR, Moscow, 113 (1974)
- 74 HGE/WAD Hoell, J. M., and Wade, W. R., "Relative Cross Section and Depolarization of N_OCl," Appl. Phys. Lett. 25, 202 (1974)
- 74 KAR/PRA1 Karpov, L. G., Proivilov, A. M., and Vilessov, F. I., "The Reactions I(²P_{1/2}) + N_OCl II. Capture of CF₃ Radicals and Deactivation of I(²P_{1/2}) by Nitric Oxide in the Photolysis of CF₃I + N_O + N_OCl + M," High Energy Chem. 8, 415 (1974); tr. of Khim. Vys. Energ. 8, 483 (1974)
- 74 KAR/PRA2 Karpov, L. G., Proivilov, A. M., and Vilessov, F. and I., "Primary Processes in the Photolysis 1-Iodopropane and 2-Iodopropane," High Energy Chem. 8, 420 (1974); tr. of Khim. Vys. Energ. 8, 489 (1974)
- 74 KHO/RGZ Khodeeva, S. M., and Rozovskii, M. B., "Liquid Phase in the Carbon Tetrachloride-Cyclododecanone Oxime Hydrochloride-Hydrogen Chloride-Nitrosyl Chloride System," Tr. N.-i. i proekt. in-ta azot. prom-sti 23, 13 (1974); Chem. Abstr. 83:121668-w (1975)
- 74 KNA/MAR Knauth, H.-D., Martin, H., and Stockmann, W., "Bestimmung der Bildungsenthalpie von Nitroxychlorid (Chlornitrat, N_O₃Cl) als Beitrag zur Deutung der Kinetik des Thermischen N_O₃Cl-Zerfalls in der Gasphase und in der Loesungsphase," Z. Naturforsch. 29A, 200 (1974)
- 74 NAZ/POŁ Nazar, M. A., Polanyi, J. C., and Skrlac, W. J., "Energy Distribution among Reaction Products. H + N_OCl, H + ICl," Chem. Phys. Lett. 29, 473 (1974)
- 74 PGI/KEF Poilov, V. Z., Kefer, R. G., and Yagud, R. Y., "Calculation of the Adsorption Equilibrium of Nitrogen Dioxide(Nitrogen Tetroxide)-Chlorine (N_O₂(N_O₄)-Cl₂) and Nitrosyl Chloride-Chloride (N_OCl-Cl₂) Binary Systems on HK-Erionite," Sb. Nauch. Tr. Perm. Politekhn. In-T 154, 94 (1974); Chem. Abstr. 83:198179v (1975)
- 74 SCH/CHR Schack, C. J., and Christe, K. G., "Reactions of Ozone with Covalent Hypohalites," Inorg. Chem. 13, 2378 (1974)
- 74 SCH/URG Schreoder, W. H., and Urone, P., "Formation of Nitrosyl Chloride from Salt Particles in Air," Environ. Sci. Technol. 8, 756 (1974)
- 74 SHA/YEL Shamir, J., Yellin, D., and Claassen, H. H., "Laser Raman Spectra and Structure of Halogen Nitrates (F₃N_O₂ and Cl₃N_O₂)," Israel J. Chem. 12, 1015 (1974)
- 74 TSE/DRG1 Tseitlin, A. N., and Drozhina, D. N., "Oxidation of Nitrosyl Chloride by Nitric Acid," Vestn. Khar'k. Politekh. Inst. No. 91, 9 (1974); Chem. Abstr. 83:16379e (1975); see also Sheitlin
- 74 TSE/DRG2 Tseitlin, A. N., Drozhina, D. N., Rakvina, S. B., and Lavrik, L. D., "Oxidation of Nitrosyl Chloride," Vestn. Khar'kov. Politekhn. Inst. No. 98, 48 (1974); Chem. Abstr. 83:125538b (1975); see also Sheitlin
- 74 VGR/FIL Vorob'ev, M. D., Filatov, A. S., and Fnglin, M. A., "Some Reactions of Disulfur Decafluorine," J. Gen. Chem. USSR 44, 2677 (1974); tr. of Zh. Obshch. Khim. 44, 2724 (1974)
- 74 WIL Wilkins, R. A., Jr., "The Kinetics of Nitrosyl Chloride Oxidation by Denitrogen Pentoxide in the Presence and Absence of Nitric Acid," Diss. Abstr. Int. B 35, 174 (1974)

74 WIL/DGD Wilkins, R. A., Jr., Dodge, M. C., and Hisatsune, I. C., "Kinetics of Nitric Oxide Catalyzed Decomposition of Nitryl Chloride and its Related Nitrogen Isotope Exchange Reactions," *J. Phys. Chem.* 78, 2073 (1974)

1975

- 75 AMG/FLE Amos, D. W., and Flewett, G. W., "Raman Spectrum of Chlorine Nitrate," *Spectrochim. Acta A* 31, 213 (1975)
- 75 BEC/FIC Beck, W., Fick, H. G., Lottes, K., and Schmidner, K. H., "Darstellung und Reaktionen von Dichlorotrinitrosylvanadin," *Z. Anorg. Allg. Chem.* 416, 97 (1975)
- 75 BER/BGC Bergmann, H., and Bock, H., "Photoelectron Spectra and Molecular Properties. XLVI. Nitroso Compounds - Electron-rich Molecules," *Z. Naturforsch. B* 30, 629 (1975)
- 75 BER/PEN Bernard, J. M., and Penner, S. S., "Anomalous Transparency in Nitrosyl Chloride," *J. Quant. Spectrosc. Radiat. Transfer* 15, 357 (1975)
- 75 BRA/TIC Bravo, P., and Ticozzi, C., "The Reaction of Enamines with Nitrosyl Chloride and Keto-Stabilized Sulphonium Ylids: A New Synthesis of Isoxazoles," *Gazz. Chim. Ital.* 105, 91 (1975)
- 75 CAZ/CER Cazzoli, G., Cervellati, R., and Mirri, A. M., "Rotational Spectrum of CNCl in the $(0,0,1)$ and $(0,1,0)$ Vibrational States and b' Type Spectrum in the Ground State. Comparison of Force Field Obtained by Different Combinations of Experimental Data," *J. Mol. Spectroscopy* 55, 422 (1975)
- 75 CHA/CUR Chase, M. W., Curnutt, J. L., Prophet, H., McDonald, R. A., and Syverud, A. N., "JANAF Thermochemical Tables, 1975 Supplement," *J. Phys. Chem. Ref. Data* 4, 65 (1975)
- 75 CGG/PRI Coombe, R. D., Pratt, A. T., Jr., and Pilipovich, D., "Collisional Relaxation of $\text{HCl}(\nu-1)$ by Selected Polyatomic Molecules," *Chem. Phys. Lett.* 35, 349 (1975)
- 75 DEG/KAC Degtyareva, A. A., Kachan, A. A., Luk'yanchuk, L. F., and Shrubovich, V. A., "Photochemical Interaction of Nitrosyl Chloride with Polyethylene," *Vysokomol. Soedin.*, 17, 532 (1975); *Chem. Abstr.* 83:18016f (1975)
- 75 DGR/SCH Dorko, E. A., Scheller, U. G., and Mueller, G. W., "Shock Tube Decomposition of Dilute Mixtures of Nitrosyl Chloride in Argon," *J. Phys. Chem.* 79, 1625 (1975)
- 75 DUB/AMA Dubois, C., Amaudrut, J., and Devin, C., "Use of Powder Diagrams in Studying the Products Formed by the Action of Nitrosyl Chloride on Some Titanium Trichloride Monoalkanoates," *Bull. Soc. Chim. France*, 1597 (1975)
- 75 FIL/FGR Filgueira, R. R., Forti, P., and Corbelli, G., "Microwave Spectrum and Molecular Force Field of Tetratomic $\text{C}_2\nu$ Molecules: NO_2Cl ," *J. Mol. Spectroscopy* 57, 97 (1975)
- 75 FRG/LEE Frost, D. C., Lee, S. T., McDowell, C. A., and Westwood, N. P. C., "Photoelectron Spectroscopic Studies of Some Nitrosyl and Nitryl Halides and Nitric Acid," *J. Electron Spectros. Relat. Phenom.* 7, 331 (1975)
- 75 GAL/GST Gale, R. J., and Osteryoung, R. A., "Dissociative Chlorination of Nitrogen Oxides and Oxy Anions in Molten Sodium Chloride-Aluminum Chloride Solvents," *Inorg. Chem.* 14, 1232 (1975)
- 75 HAB/SCH Haberland, H., and Schmidt, K., "Reactive Scattering of Hydrogen and Deuterium Atoms. III. Angular Distributions for $\text{ClN}\theta$, SCl_2 , S_2Cl_2 , $\text{S}\theta\text{Cl}_2$ and ClF_3 ," *Chem. Phys.* 10, 33 (1975)
- 75 KHO/RGZ Khodeeva, S. M., and Rozovskii, M. B., "The Liquid-Gas Equilibria in the Hydrogen Chloride-Carbon Tetrachloride and Nitrosyl Chloride-Carbon Tetrachloride Systems," *Russ. J. Phys. Chem.* 49, 824 (1975); *tr. Zh. Fiz. Khim.* 49, 1396 (1975)
- 75 KIR/SPR Kirchmeier, R. L., Sprenger, G. H., and Shreeve, J. M., " $(\text{CF}_2\text{NCl})_3$, A New Mild Fluorinating Reagent," *Inorg. Nucl. Chem. Lett.* 11, 699 (1975)

- 75 LAZ/GAV Lazareva, M. P., Gavrilkina, G. N., Sarychev, G. S., Gromoglasov, Y. A., Levashova, L. A., and Karchikhina, V. V., "Quantum Efficiency of the Photonitrosation of Cyclododecane," Russ. J. Phys. Chem. 49, 529 (1975); tr. of Zh. Fiz. Khim. 49, 904 (1975)
- 75 LEG/MAL Legzdins, P., and Malito, J. T., "Organometallic Nitrosyl Chemistry. I. Reactions of Nitrosyl Chloride with Some Anionic and Neutral Carbonyl Complexes," Inorg. Chem. 14, 1875 (1975)
- 75 MAL/KAT Malhotra, K. C., and Katoch, D. S., "Redox Reactions in Acetic Anhydride," Aust. J. Chem. 28, 991 (1975)
- 75 MAR1 Markowicz, S. W., "Determination of Structure of 'By'-Product in the Reaction of α -Pinene with Nitrosyl Chloride, Rocz. Chem. 49, 2117 (1975)
- 75 MAR2 Marsh, P. G., "The Reaction Between Nitrosyl Chlorine and Phenylmagnesium Bromide," Diss. Abstr. Int. B 35, 3838 (1975)
- 75 MEH/PAN Mehta, G., and Pandey, P. N., "Stereochemistry and Mechanism of Electrophilic Additions to Tricyclo[4.2.2.0^{2,5}]deca-3,7-diene Derivatives," J. Org. Chem. 40, 3631 (1975)
- 75 RÖG/DEM Rogic, M. M., Demmin, T. R., Fuhrmann, R., and Koff, F. W., "Homospecific and Heterospecific Dimerization of Nitroso Compounds. The Controversy Surrounding the Nature of the 2-Chloronitrosocyclohexane Dimer Obtained by Addition of Nitrosyl Chloride to Cyclohexane," J. Am. Chem. Soc. 97, 3241 (1975)
- 75 RÖG/VIT Rogic, M. M., Vitrone, J., and Swerdloff, M. D., "Nitrosation in Organic Chemistry. Nitrosolysis, a Novel Carbon-Carbon Bond Cleavage Effected through Nitrosation. Nitrosolysis of Ketones," J. Am. Chem. Soc. 97, 3848 (1975)
- 75 SCH/CHR Schultes, E., Christodoulides, A. A., and Schindler, R. N., "Studies by the Electron Cyclotron Resonance (ECR) Technique. VIII. Interactions of low-energy electrons with the chlorine-containing molecules CCl_4 , CHCl_3 , CH_2Cl_2 , $\text{C}_n\text{H}_{2n+1}\text{Cl}$ ($n=1$ to 4), $\text{C}_2\text{H}_3\text{Cl}$, C_6Cl_2 , NCl and Cl_2 ," Chem. Phys. 8, 354 (1975)
- 75 SPI/SPE Spirko, V., and Speirs, G. K., "The Application of the Monte Carlo Method to Anharmonic Force Constant Calculations. The Anharmonic Potential Functions of ONF , ONCl , ONBr ," J. Mol. Spectroscopy 55, 151 (1975)
- 75 STO Stogard, A., "Molecular Orbital Interpretation of X-ray Emission Spectra of ClCN and ONCl ," Chem. Phys. Lett. 36, 357 (1975)
- 75 VOL/SCH Volgnandt, P., and Schmidt, A., "The Reaction of Alkyl Azides with Nitrosyl Chloride and Antimony(V) Chloride," Z. Naturforsch. B 30, 295 (1975)
- 75 WAT/MAR1 Waters, W. L., and Marsh, P. G., "Reaction of Nitrosyl Chloride with Phenylmagnesium Bromide," J. Org. Chem. 40, 3344 (1975)
- 75 WAT/MAR2 Waters, W. L., and Marsh, P. G., "Synthesis of Symmetrical Diarylamines," J. Org. Chem. 40, 3349 (1975)
- 75 WIL Williams, D. L. H., "Kinetics and Mechanism of the Fischer-Hepp Rearrangement and Denitrosation. Part VI. The Relative Reactivity of a Number of Nitrogen-containing Species towards Nitrosation, and Further Evidence against an Intermolecular Mechanism for the Rearrangement," J. Chem. Soc. Perkin Trans. II, 655 (1975)
- 75 YAR/NOF Yarbro, S. K., Noffle, R. E., and Fox, W. B., "The Reaction of Nitryl Chloride with Trifluoromethanesulfonic Acid," J. Fluorine Chem. 6, 187 (1975)

1976

- 76 ABB/DYK Abbas, M. I., Dyke, J. M., and Morris, A., "Photoelectron Spectrum of Nitrosyl Chloride," J. Chem. Soc. Faraday Trans. II 72, 814 (1976)
- 76 AMI/KEF Amirova, S. A., Kefer, R. G., Shuster, Ya. A., and Pfeifer, E. F., "Liquid - Vapor Equilibrium in the Binary Systems Chlorine - Nitrosyl Chloride, Nitrosyl Chloride - Nitrogen Tetroxide, and Chlorine - Nitrogen Tetroxide," J. Appl. Chem. USSR 49, 1770 (1976)
- 76 AUS/BAK Austigard, B., and Bakke, J. M., "A New One Step Synthesis of Diazooctane from Octylamine," Acta Chem. Scand. B 30, 274 (1976)

- 76 BIR/JES Birks, J. B., Jesson, J. P., Glasgow, L. C., and Young, R. A., "Solar Photodissociation Rates of $\text{Cl}_\theta\text{N}\theta_2$, $\text{ClN}\theta_2$ and $\text{Cl}\theta_2$ ", 12th Informal Conference on Photochemistry, Gaithersburg, MD. (1976)
- 76 GIL/SCH Gilberg, E., Schatzl, W., and Schrenk, H. W., "On the Electronic Structure of CNCl and $\text{N}\theta\text{Cl}$ ", *Chem Phys.* 13, 115 (1976)
- 76 HIP/TRG Hippel, H., and Troe, J., "Flash Photolysis Study of the Recombination of Chlorine Atoms in the Presence of Various Inert Gases and $\text{N}\theta$ ", *Int. J. Chem. Kinet.* 8, 501 (1976)
- 76 ILL/TAK Illies, A. J., and Takacs, G. A., "Gas Phase Ultra-Violet Photoabsorption Cross-Sections for Nitrosyl Chloride and Nitryl Chloride", *J. Photochem.* 6, 35 (1976)
- 76 ISA/GAS Isayan, G. A., Gasparyan, Zh. M., and Megrabyan, R. L., "Study of the Photochemical Dissociation of Nitrosyl Chloride", *Kinet. Katal.* 17, 268 (1976)
- 76 KYU/CLA Kyung, J. H. and Clapp, L. B., "Pathway Control of Products in the Reaction of Nitrosyl Chloride on Oximes", *J. Org. Chem.* 41, 2024 (1976)
- 76 MIR/PGV Mironova, M. K., Povolotskava, N. N., and Barkhash, V. A., "Reaction of Tetrafluorobenzobarrelene and Tetrafluorobenzodihydrobarrelene with Nitrosyl Chloride", *Izv. Akad. Nauk SSSR, Ser. Khim.*, 679 (1976); *Chem. Abstr.* 85:20490t (1976)
- 76 RFW/SPE1 Rowland, F. S., Spencer, J. E., and Molina, M. J., "Stratospheric Formation and Photolysis of Chlorine Nitrate", *J. Phys. Chem.* 80, 2711 (1976)
- 76 RFW/SPE2 Rowland, F. S., Spencer, J. E., and Molina, M. J., "Estimated Relative Abundance of Chlorine Nitrate among Stratospheric Chlorine Compounds", *J. Phys. Chem.* 80, 2713 (1976)
- 76 SAV/BES Savall, A., and Bes, R., "Study of the Mass Spectrum of Nitrosyl Chloride", *Analisis*, 4, 8 (1976); *Chem. Abstr.* 85:12797h (1976)
- 76 SCH Schweiger, R. G., "Nitrite Esters of Polyhydroxy Polymers", *J. Org. Chem.* 41, 90 (1976)
- 76 SER/LEE Sergeev, G. A., Leenson, L. A., Movsumzade, M. M., Shabanov, A. L., and Sidakova, G. A., "Kinetics and Mechanism of Reaction of α -Oxides with Nitrosyl Chloride", *Zh. Org. Khim.* 12, 506 (1976); *Chem. Abstr.* 85:45728q (1976)
- 76 STG Støgaard, A., "AB Initio Calculations on ClCN and CNCl ", *Chem. Phys. Lett.* 40, 429 (1976)
- 76 SUE/JOH Suenram, R. D., Johnson, D. R., Glasgow, L. C., and Meakin, P. Z., "Laboratory Microwave Spectrum of $\text{Cl}_\theta\text{N}\theta_2$ ", *Geophys. Res. Lett.* 3, (1976); Erratum, *ibid* 3, 758 (1976)
- 76 VOS Voss, K. E., "The Reaction of Potassium Octachlorodimolybdate(II) with Nitrosyl Chloride in Ethyl Acetate", *Diss. Abst. Int.* 36, 3378 (1976)

- 77 GRA/TUA Graham, R. A., Tuazon, E. C., Winer, A. M., Pitts, J. N., Jr., Molina, L. T., Beaman, L., and Molina, M. J., "High Resolution Infrared Absorptivities for Gaseous Chlorine Nitrate," *Geophys. Res. Lett.* 4, 3 (1977)
- 77 KUR/MAN Kurylo, M. J., and Manning, R. G., "Flash Photolysis Resonance Fluorescence Investigation of the Reaction of Cl (2P) Atoms with Cl_2NO_2 ," typescript, Phys. Chem. Div., Natl. Bureau of Standards, Washington, D. C. 20234 (1977)
- 77 MOL Molina, J. J., "Absorption Cross Section and Quantum Yields," typescript Dept. Chem., University of California, Irvine (1977)
- 77 MOL/MOL Molina, L. T., and Molina, M. J., "Ultraviolet Absorption Spectrum of Chloride Nitrite, Cl_2NO_2 ," *Geophys. Res. Lett.* 4, 83 (1977)
- 77 MOL/SPE Molina, L. T., Spencer, J. E., and Molina, M. J., "Rate Constant for the Reactions O(3P) Atoms with Cl_2NO_2 ," *Chem. Phys. Lett.* 45, 158 (1977)
- 77 RAV/DAV Ravishankara, A. B., Davis, D. D., Smith, G., Tesi, G., and Spencer, J., "A Study of the Chemical Degradation of Cl_2NO_2 in the Stratosphere," *Geophys. Res. Lett.* 4, 7 (1977)
- 77 SMI/CHG Smith, W. S., Chou, C. C., and Rowland, F. S., "Photolysis of Chlorine Nitrate at 302.5nm," 173rd Am. Chem. Soc. Natural Meeting, New Orleans Phys.-14 (1977)

LIST OF ABBREVIATIONS

Abbreviations for Data Flagging
Fourth Interim IUPAC List

AB	Absorption Cross Section
BE	Bond Energy, Atomization Energy, Dissociation Energy
BO	Bond Angle, Bond Length
BT	Boiling Temperature (Boiling Point)
CD	Critical State Data (Critical Density, Critical Temperature, Critical Pressure)
DC	Dielectric Constant
DM	Dielectric Properties (Electric Dipole Moment, Molecular Polarization Quadrupole Coupling Constant)
DN	Density Data (Density, Specific Density)
EN	Entropy
EQ	Equilibrium Data (Equilibrium Constant)
ET	Enthalpy (Heat of Vaporization, Heat of Sublimation, Heat of Reaction)
HC	Heat Capacity
IP	Ionization Potential, Electron Affinity
IRS	Infrared Spectrum
MG	Magnetic Data, (Magnetic Dipole (and Higher) Moments, Magnetic Susceptibility)
ML	Molecular Energy Level, Rotational and Vibrational Constants, Force Constant, Moment of Inertia
MSS	Mass Spectrum
MT	Melting Temperature (Melting Point)
MWS	Microwave Spectrum
NMS	Nuclear Magnetic Resonance Spectrum
QY	Quantum Yield (and Quantum Efficiency)
RAS	Raman Spectrum
RD	Radii (Atomic, Ionic, Molecular, Molecular Volume, Molecular Diameter, Molecular Cross Section)
RR	Reaction Rate Data (Rate Constant, Relaxation Time, Half-life)
ST	Surface Tension
TC	Thermal Conductivity
TE	Thermodynamic Energy Data (Gibbs Free Energy, Helmholtz Energy, Thermodynamic energy functions)
UVS	Ultraviolet Spectrum
VIS	Visible Spectrum
VP	Vapor Pressure (Sublimation Pressure)
VS	Viscosity Data
XPS	X-ray Photoelectron Spectrum
XRS	X-ray Spectrum

Descriptive Terms

Clc	Calculation
Dec	Decomposition
For from:	Formation from another compound
Mec	Mechanism
Phl	Photolysis
Rad	Radiation
Rev	Review
Rlp	Related Paper
Rxn with:	Reaction with other compounds
Syn	Synthesis (preparative methods)
Thp	Theoretical Paper

NOTE ADDED IN PROOF

Part III

Chlorine Nitrate
 ClNO_3

Chemistry and Chemical Kinetics

- 77 BIR/SHO RR, For from: ClO and NO_2 , Rxn with: HCl , NO , NO_2 , O_2
77 LEU/LIN RR, For from: ClO and NO_2
77 ZAH/CHA RR, For from: ClO and NO_2 , Rxn with: OH
-

Part IV

References

1977

- 77 BIR/SHO Birks, J. W., Shoemaker, B., Leck, T. J., Borders, R. A., and Hart, L. J., "Studies of Reactions of Importance in the Stratosphere. II. Reactions Involving Chlorine Nitrate and Chlorine Dioxide," *J. Chem. Phys.* (1977) (in press)
- 77 LEU/LIN Leu, M. T., Lin, C. L., and DeMoore, W. B., "Rate Constant for Formation of Chlorine Nitrate and by the Reaction $\text{ClO} + \text{NO}_2 + \text{M}$," *J. Phys. Chem.* 81, 190 (1977)
- 77 ZAH/CHA Zahniser, M. A., Chang, J. S., and Kaufman, F., "Chlorine Nitrate: Kinetics of Formation by $\text{ClO} + \text{NO}_2 + \text{M}$ and of Reaction with OH," *J. Chem. Phys.* (1977) (submitted)

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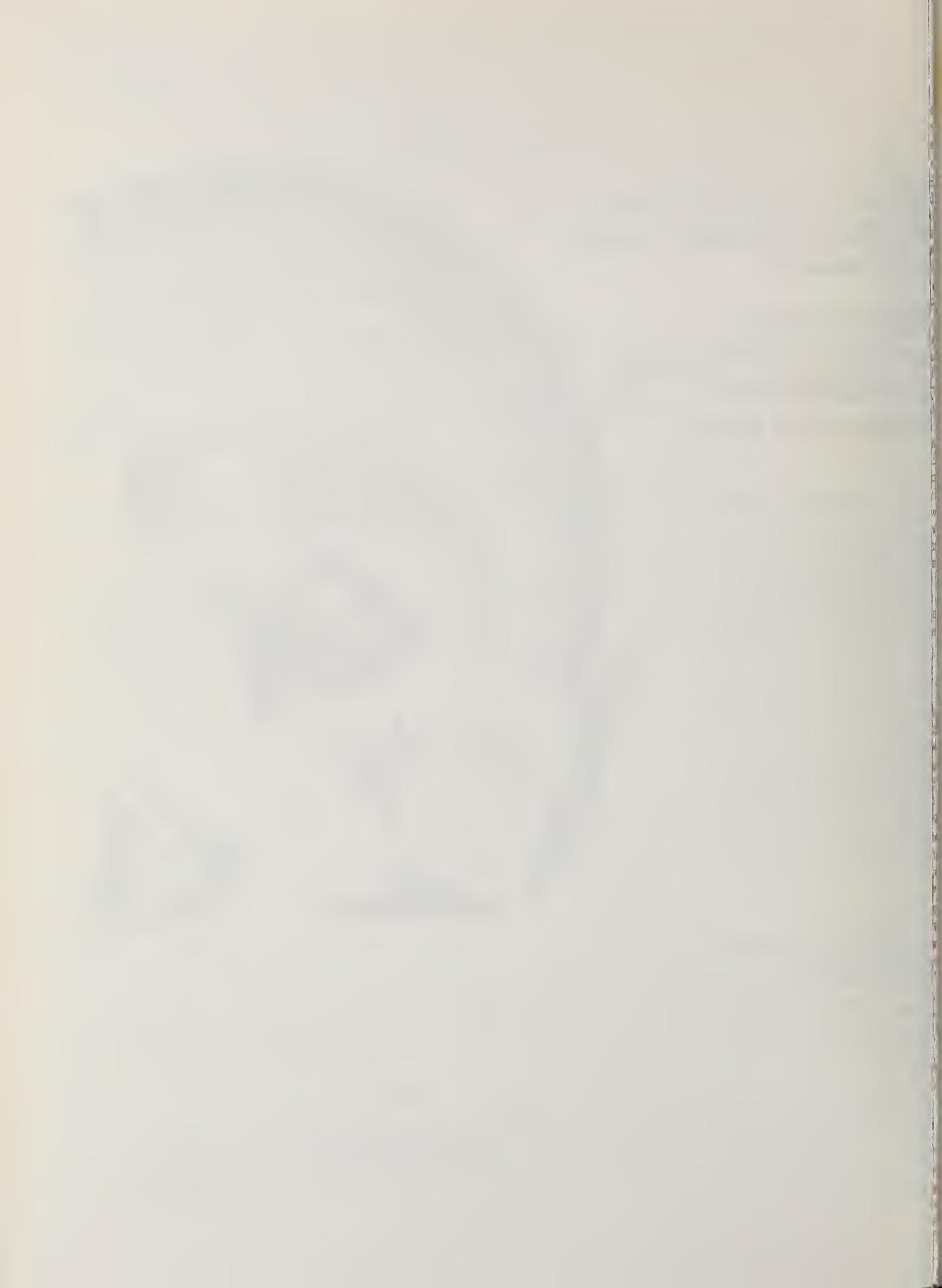
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