A Catalog of Data Compilations on Photochemical and Photophysical Processes in Solution
NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards was established by an act of Congress on March 3, 1901. The Bureau's overall goal is to strengthen and advance the Nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the Nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau's technical work is performed by the National Measurement Laboratory, the National Engineering Laboratory, and the Institute for Computer Sciences and Technology.

THE NATIONAL MEASUREMENT LABORATORY provides the national system of physical and chemical and materials measurement; coordinates the system with measurement systems of other nations and furnishes essential services leading to accurate and uniform physical and chemical measurement throughout the Nation's scientific community, industry, and commerce; conducts materials research leading to improved methods of measurement, standards, and data on the properties of materials needed by industry, commerce, educational institutions, and Government; provides advisory and research services to other Government agencies; develops, produces, and distributes Standard Reference Materials; and provides calibration services. The Laboratory consists of the following centers:


THE NATIONAL ENGINEERING LABORATORY provides technology and technical services to the public and private sectors to address national needs and to solve national problems; conducts research in engineering and applied science in support of these efforts; builds and maintains competence in the necessary disciplines required to carry out this research and technical service; develops engineering data and measurement capabilities; provides engineering measurement traceability services; develops test methods and proposes engineering standards and code changes; develops and proposes new engineering practices; and develops and improves mechanisms to transfer results of its research to the ultimate user. The Laboratory consists of the following centers:


THE INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY conducts research and provides scientific and technical services to aid Federal agencies in the selection, acquisition, application, and use of computer technology to improve effectiveness and economy in Government operations in accordance with Public Law 89-306 (40 U.S.C. 759), relevant Executive Orders, and other directives; carries out this mission by managing the Federal Information Processing Standards Program, developing Federal ADP standards guidelines, and managing Federal participation in ADP voluntary standardization activities; provides scientific and technological advisory services and assistance to Federal agencies; and provides the technical foundation for computer-related policies of the Federal Government. The Institute consists of the following centers:

Programming Science and Technology — Computer Systems Engineering.

1Headquarters and Laboratories at Gaithersburg, MD, unless otherwise noted: mailing address Washington, DC 20234.
2Some divisions within the center are located at Boulder, CO 80303.
A Catalog of Data Compilations on Photochemical and Photophysical Processes in Solution

James G. Brummer, W. Phillip Helman, and Alberta B. Ross

Radiation Chemistry Data Center
Radiation Laboratory
University of Notre Dame
Notre Dame, Indiana 46556

U.S. DEPARTMENT OF COMMERCE, Philip M. Klutznick, Secretary
Luther H. Hodges, Jr., Deputy Secretary
Jordan J. Baruch, Assistant Secretary for Productivity, Technology and Innovation
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, Director

Issued November 1980
Foreword

The National Standard Reference Data System was established in 1963 for the purpose of promoting the critical evaluation and dissemination of numerical data of the physical sciences. The program is coordinated by the Office of Standard Reference Data of the National Bureau of Standards but involves the efforts of many groups in universities, government laboratories, and private industry. The primary aim of the program is to provide compilations of critically evaluated physical and chemical property data. These tables are published in the Journal of Physical and Chemical Reference Data, in the NSRDS-NBS series of the National Bureau of Standards, and through other appropriate channels.

The task of critical evaluation is carried out in various data centers, each with a well-defined technical scope. A necessary preliminary step to the critical evaluation process is the retrieval from the world scientific literature of all papers falling within the scope of the center. Each center, therefore, builds up a comprehensive well-indexed bibliographical file which forms the base for the evaluation task. Bibliographies derived from these files are published when they appear to be of value to research workers and others interested in the particular technical area.

Further information on NSRDS and the publications which form the primary output of the program may be obtained by writing to the Office of Standard Reference Data, National Bureau of Standards, Washington, DC 20234.

David R. Lide, Jr., Chief
Office of Standard Reference Data
A Catalog of Data Compilations on Photochemical and Photophysical Processes in Solution

James G. Brummer, W. Phillip Helman and Alberta B. Ross

Reference Chemistry Data Center*, Radiation Laboratory.
University of Notre Dame, Notre Dame, Indiana 46556

References to compilations and reviews of data on photochemical and photophysical processes in solution have been annotated to indicate subject and data content. Indexes are included for data types, keywords and authors.

Keywords: Data compilations; photochemistry; photophysics; review; solutions.

Introduction

In 1971 a Report of the CODATA Task Group for Chemical Kinetics\(^1\) listed 228 reviews, compilations and evaluations of kinetic data which had been published, or which were planned, in preparation or in press. That catalog included only a few publications on photochemistry in solution. Since then the Chemical Kinetics Information Center\(^2\) and other groups sponsored by the National Standard Reference Data System\(^3\) have carried out a number of compilations and evaluations of gas phase kinetic data relevant to photochemistry. The present survey of availability of data compilations on photochemical and photophysical processes in solution has been undertaken in order to find areas where tabulations and reviews of such data have been made; the catalog will provide a reference aid for locating collections of such data.

\(^1\)The Radiation Laboratory is operated under Contract CY-76-C-02-0038 with the Department of Energy. The Radiation Chemistry Data Center is supported jointly by the National Bureau of Standards, Office of Standard Reference Data and by the Office of Basic Energy Sciences and the Office of Health and Environmental Research of the Department of Energy. This is Radiation Laboratory Document No. NDRL-2062.


\(^3\)National Bureau of Standards, Washington, DC, Dr. Robert Hampson, Jr., Director

The Radiation Chemistry Data Center collects and indexes current literature within its scope, which has recently been expanded to include photochemical and photophysical processes in solution. The citations herein are part of the RCDC Bibliographic Data Base which contains 45,000 references (mainly since 1966) on radiation chemistry and photochemistry. A careful examination was made of our files and other sources; we hope that readers will call our attention to compilations which should have been included. Although this catalog does not include unpublished works, we should also like to know of compilations in preparation or in press.

The present catalog has been limited to those publications which contain substantial tabulations of data. Some publications here cited contain kinetic data which were obtained by methods other than photochemistry, but which may be relevant to photochemical processes. Compilations are also included on spectroscopy of excited electronic states and transient radicals and radical ions in solution. Reviews have not been cited where data were included mainly for illustration; likewise, textbooks are omitted. References to publications available only in Japanese or Russian have also been omitted. In addition to the references cited here, our files show that several hundred reviews on photochemistry have been published in a wide variety of periodicals, books and serials. There are a number of review series devoted to photochemical topics which are listed in the
Appendix. Only a few of the reviews in those series are cited here. For current reviews the reader is referred to the references listed in category Z of the Biweekly List of Papers on Radiation Chemistry and Photochemistry.

**Arrangement of References and Indexes**

References to the data compilations have been grouped by year of publication. The reference list is followed by author, data type and keyword indexes. Each entry in the reference list has been given a number for convenience in preparing the indexes; the first two digits of the number represent the year of publication. Each entry contains one or more symbols indicating the type of data included. A list of symbols for data type follows this section. Symbols and abbreviations are also given for modifiers which are used in parentheses or as subscripts to the data types to represent processes or states; thus, $\tau_p$ = phosphorescence lifetime, $\phi_{aq}$ = quantum yield for aqation, and $\phi_F$ = fluorescence quantum yield are data identifiers combining a data type with a process.

Following the data identifiers are keywords representing classes of materials, compound types, or types of intermediates. The next line of the entry contains numbers of references, tables and figures. In some cases a further annotation was added. All of the references cover liquid phase solutions; where gas, pure liquid, or aqueous systems were also covered those terms are present as keywords. Indexes have been prepared using the data types and keywords associated with each entry. An author index is also included.

**List of Symbols and Abbreviations**

<table>
<thead>
<tr>
<th>Data Types</th>
<th>Processes and States</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\phi$</td>
<td>ab</td>
</tr>
<tr>
<td>prod. anal.</td>
<td>add</td>
</tr>
<tr>
<td>$E$</td>
<td>energy level</td>
</tr>
<tr>
<td>$\Delta E$</td>
<td>energy gap</td>
</tr>
<tr>
<td>abs. spec.</td>
<td>absorption spectra</td>
</tr>
<tr>
<td>emis. spec.</td>
<td>emission spectra</td>
</tr>
<tr>
<td>excit. spec.</td>
<td>excitation spectra</td>
</tr>
<tr>
<td>$\epsilon_{abs}$</td>
<td>absorptivity</td>
</tr>
<tr>
<td>$\epsilon_{emis}$</td>
<td>emissivity</td>
</tr>
<tr>
<td>$\lambda_{abs}$</td>
<td>absorption maximum</td>
</tr>
<tr>
<td>$\lambda_{emis}$</td>
<td>emission maximum</td>
</tr>
<tr>
<td>$f$</td>
<td>oscillator strength</td>
</tr>
<tr>
<td>$\tau$</td>
<td>lifetime</td>
</tr>
<tr>
<td>$t_{1/2}$</td>
<td>half-life</td>
</tr>
<tr>
<td>$k$</td>
<td>rate constant</td>
</tr>
<tr>
<td>$A$</td>
<td>preexponential factor</td>
</tr>
<tr>
<td>$E_a$</td>
<td>activation energy</td>
</tr>
<tr>
<td>$K$</td>
<td>equilibrium constant</td>
</tr>
<tr>
<td>$pK$</td>
<td>negative logarithm of</td>
</tr>
<tr>
<td>$E^o$</td>
<td>acid dissociation constant</td>
</tr>
<tr>
<td>$l$</td>
<td>luminescence intensity</td>
</tr>
<tr>
<td>I.P.</td>
<td>ionization potential</td>
</tr>
<tr>
<td>$\mu$</td>
<td>dipole moment</td>
</tr>
<tr>
<td>$R$</td>
<td>energy transfer distance</td>
</tr>
</tbody>
</table>

$\phi = \text{fluorescence quantum yield}$

$\phi = \text{fluorescence quantum yield}$

Notre Dame, IN, Radiation Chemistry Data Center, biweekly with annual indexed cumulation.

---

4Biweekly List of Papers on Radiation Chemistry and Photochemistry
References


\[
k(T-T); \tau_S; \Delta E(T-T)
\]
energy transfer; quenching; aromatics; singlet states; triplet states
98 ref.; 5 tab.; 4 fig.


\[
\phi_r; \tau_r; \epsilon_{emis}; F_{abs}; \lambda_{emis}; \lambda_{abs}; \text{abs. spec.; emis. spec. fluorescence; aromatics; heterocyclic compounds}
\]
\sim 100 \text{ ref.; } 147 \text{ spectra; See later edition [71-04]. Extensive bibliography containing references to 1000 works.}


\[
\phi_q; \phi_{nom}; E_a
\]
quartet states; transition metal complexes; chromium compounds; aqueous
26 ref.; 3 tab.; 3 fig.


\[
\phi_{redox}; \phi_q; \phi_{nom}; \phi_{rac}
\]
transition metal complexes; cobalt compounds; aqueous
111 ref.; 6 tab.; 8 fig.


\[
\phi_r; k_r; k_{ELF}; \tau_r; \lambda_{emis}; \lambda_{abs}; \text{emis. spec.; } \mu; R
\]
fluorescence; phosphorescence; transition metal complexes; solid; singlet-triplet transitions; singlet-singlet transitions; quenching; excimer; organic; aromatics; excited states; triplet-triplet transitions; triplet states; energy transfer; singlet states
\sim 1000 \text{ ref.; many tables and figures; index; main table includes 920 compounds}


\[
k
\]
aqueous; hydrated electron; hydrogen atom; hydroxyl radical
164 ref.; 3 tab.

\[ \epsilon_{\text{abs}}; \lambda_{\text{abs}}; t_{1/2} \]
solvated electrons; radicals; organic; inorganic; solid; heterocyclic compounds; liquid; aliphatics; aromatics

201 ref.; 12 tab.; Extensive compilation of data on radical transients (see [72-01]). Data for both aqueous and nonaqueous solution.


\[ \phi_{\text{ps}}; \phi_{\text{osc}}; \phi_{\text{red}}; \phi_{\text{adm}}; \tau_{\text{ps}}; E_a \]
solid; cobalt compounds; chromium compounds; aqueous; phosphorescence; transition metal complexes

151 ref.; 4 tab.; 7 fig.


\[ \phi_{\text{adm}}; E_\text{f}; \text{prod. anal.} \]
alkenes; carbonyl compounds; triplet states; solid; ketones; aldehydes

166 ref.; 22 tab.; 6 fig.


\[ \phi_{\text{roc}}; \phi_{\text{red}}; \lambda_{\text{abs}}; \epsilon_{\text{abs}}; E_a \]
transition metal complexes; cobalt compounds; rhodium compounds; platinum compounds; iron compounds; tungsten compounds; chromium compounds; aqueous

472 ref.; 8 tab.; 13 fig.


\[ \phi_{\text{adm}}; \phi_{\text{adm}}; E_\text{f}; \text{prod. anal.} \]
dienes; polyenes; carbonyl compounds; ketones; triplet states; aromatics

149 ref.; 22 tab.; 3 fig.


\[ \phi_{\text{ps}}; \phi_{\text{osc}}; k_{\text{ps}}; \Delta E(S-T); E_\text{f}; E_\text{T} \]
singlet states; triplet states; carbonyl compounds; alkenes; aromatics; ketones; organic; dienes; solid; polyenes

722 ref.; 11 tab.; 16 fig.


\[ \phi_{\text{ps}}; \phi_{\text{roc}}; k_{\text{ps}}; k_{\text{roc}}; \tau_{\text{ps}}; \tau_{\text{roc}}; \Delta E(S-T); \Delta E(T-T); f \]
triplet states; phosphorescence; aromatics; solid; singlet states; carbonyl compounds; azo-compounds; alkenes; benzene; dyes; heterocyclic compounds; nitro compounds; transition metal complexes; fluorescence

1233 ref.; 434 page book containing numerous tables of data and figures.


\[ \phi_{\text{ps}}; \phi_{\text{roc}}; \tau_{\text{ps}}; \tau_{\text{roc}}; \Delta E(S-T); pK(S); pK(T); \lambda_{\text{emis}} \]
aromatics; polycyclic; phosphorescence; fluorescence; heterocyclic compounds; singlet states; triplet states; solid; biological materials; porphyrins; transition metal complexes

525 ref.; 27 tab.; Data for both aqueous and nonaqueous solution.


\[
\phi_{\text{com}}; \phi_{\text{red}}; \phi_{\text{elim}}; \phi_{\text{prod}}; k_q; \tau_r; \tau_f; \tau_s; \text{prod. anal. ketones; aliphatics; fluorescence; singlet states; triplet states; quenching; Norrish type I processes; Norrish type II processes}
\]

102 ref.; 14 tab.; 9 fig.


\[
\phi_{\text{com}}; \phi_{\text{i}}; \phi_{\text{f}}; \phi_{\text{d}}; k_{\text{dim}}(\text{EXM}); k_{\text{di}}(\text{EXM}); k_{\text{e}}; k_{\text{E}}; k_{\text{q}}; \tau_{\text{r}}; \tau_{\text{f}}; \tau_{\text{s}}; \epsilon_{\text{abs}}(\text{T}); \epsilon_{\text{emi}}(\text{T})
\]

aromatics; fluorescence; excimer; exciplex; liquid; solid

245 ref.; 23 tab.; 21 fig.


\[
pK(S); pK(T)
\]

singlet states; triplet states; aromatics; amines; phenols, substituted; carboxylic acids; acidity

98 ref.; 10 tab.; 11 fig.


\[
k_{\text{com}}; k_{\text{disprop}}; k; E; A
\]

radicals; alkyl radicals; liquid; alkoxy radicals; phenols, substituted; peroxy radicals; radical processes; aryloxy radicals

165 ref.; 9 tab.; Data for both aqueous and nonaqueous solution.


\[
k_q; k_{\text{add}}; k_{\text{q}}
\]

exciplex; triplet states; ketones; alkenes; alkynes; quenching

61 ref.; 1 tab.


\[
\phi_{\text{f}}; \phi_{\text{com}}; k_{\text{E}}; \tau_{\text{f}}; \tau_{\text{p}}; E_{\text{f}}; E_{\text{S}}
\]

fluorescence; energy transfer; aromatics; ketones; aldehydes; carbonyl compounds; triplet states; singlet states; solid; phosphorescence

323 ref.; 12 tab.; 7 fig.


\[
k_{\text{com}}; k; E_{\text{S}}
\]

hydrogen atom; radicals; metal ions; transition metal complexes; peroxy radicals; alkyl radicals; hydroxyl radical; inorganic; organic

130 ref.; 6 tab.; Data for both aqueous and nonaqueous solution.

\( \phi_f; \tau_i; \tau_f; \epsilon_{abs}; \epsilon_{emis}; \lambda_{emis}; \lambda_{abs}; \) emiss. spec.; abs. spec.; \( R \)

heterocyclic compounds; polyphenyls; polycyclic; fluorescence; aromatics
\(~\sim 255\) ref.; 307 spectra; Extensive bibliography containing references to 1000 works. See earlier edition [65-01].


\( \epsilon_{abs}; \lambda_{abs}; \)

radicals; aromatics; aliphatics; heterocyclic compounds; solvated electrons; solid; liquid; organic; inorganic
\(~\sim 410\) ref.; 14 tab.; Extensive compilation of data on radical transients (see [68-01] for part I). Data for both aqueous and nonaqueous solution.


\( k; k_{H-ab}; k_{om}; k_{ox}; k_{disprop}; E_a; K; A \)

radicals; hydroxyl radical; alkoxy radicals; peroxy radicals; triplet states; gas; aromatics; aldehydes; ketones; phenols, substituted; amines; metal ions; nitroxy radicals; carbonyl compounds; aryloxy radicals; aliphatics
\(~\sim 300\) ref.; 50 tab.; Data for both aqueous and nonaqueous solution.


\( \phi(\text{prod}); \) prod. anal.

aldehydes; ketones; aliphatics; gas; excited states
333 ref.; 33 tab.; Data for both aqueous and nonaqueous solution.


\( k \)

aqueous; hydrated electron; organic; inorganic; metal ions; transition metal complexes; aliphatics; aromatics; biological materials
202 ref.; 4 tab Formula index.


\( k_{H-ab}; k_{om}; k_{et} \)

hydroxyl radical; aqueous; biological materials; oxide radical ion; radical processes; inorganic; alcohols; carboxylic acids; carbonyl compounds; organic; aliphatics; radicals
320 ref.; 21 tab.


\( \phi_{et}; E_a \)

transition metal complexes; chromium compounds quenching; aromatics; energy transfer
61 ref.; 4 tab.; 6 fig.

\[ \phi_{\text{pro}}; k_q^i; \eta_{\text{H-ab}}; \tau_{i}; \tau_r \]
gas; ketones: fluorescence; triplet states; carbonyl compounds; aromatics; amines; quenching; alcohols; boranes
199 ref.; 19 tab.; 3 fig.


\[ \phi; \phi_{\text{iso}}; k_q^i; k_T^i; k_{\text{H-ab}}; \tau_i; \tau_{\text{f}}; E_{\text{St}}; E_{\text{T}}; \epsilon_{\text{ab}}; \mu \]
quenching; aromatics; ketones; gas; solid; organic; energy transfer; triplet states; singlet states; carbonyl compounds; alkenes
Book of data tables covering materials of interest to photochemists. Bibliography. Indexes. Data for both aqueous and nonaqueous solution.


\[ \phi; k_{\text{ex}}; k_{\text{e}}; k_q^i; k_T^i; \tau_i; \tau_{\text{f}}; E_{\text{St}}; E_{\text{T}}; \Delta E(S-S); \Delta E(T-T); \epsilon_{\text{ab}}(S-S); \epsilon_{\text{ab}}(T-T) \]
aromatics; singlet states; triplet states; fluorescence; polycyclic; singlet–singlet transitions; singlet–triplet transitions; triplet–triplet transitions
98 ref.; 16 tab.


\[ \Delta E(T-T); \epsilon_{\text{ab}}(T-T) \]
triplet–triplet transitions; carbonyl compounds; aromatics; dyes; heterocyclic compounds; porphyrins; biological materials; solid
250 ref.; 9 tab.; 5 fig.


\[ \phi(\text{prod}) \]
azo-compounds; singlet states; aliphatics; triplet states
69 ref.; 3 tab.; 3 fig.


\[ \phi; \phi_{\text{iso}}; k_{\text{H-ab}}; \tau_f; \lambda_{\text{abs}}; \epsilon_{\text{ab}} \]
ketones; alkenes; triplet states; singlet states; carbonyl compounds; solid
222 ref.; 14 tab.


\[ \phi(\text{prod}; k) \]
carbenes; azo-compounds; alkanes; alkenes; gas; singlet states; liquid; triplet states; biradicals; ethers
140 ref.; 22 tab.


\[ R \]
organics; aromatics; heterocyclic compounds; energy transfer
~ 450 ref.; Extensive tables of donor–acceptor distances for efficient energy transfer.


\[ pK(\text{radicals}) \]
radicals; acidity; inorganic; organic; alkyl radicals; biological materials; hydroxyalkyl radicals; aqueous
108 ref.; 5 tab.; 1 fig.

\[ \varphi; \varphi_{\text{rad}}; \varphi; \varphi_{\text{trans}}; \tau; \lambda_{\text{abs}}; \lambda_{\text{emis}}; \varepsilon_{\text{ab}}; \varepsilon_{\text{emis}}\]; prod. anal.

metal carbonyls; solid; luminescence; alkenes; dienes; chromium compounds; molybdenum compounds; tungsten compounds; vanadium compounds; niobium compounds; tantalum compounds; iron compounds; ruthenium compounds; osmium compounds; rhenium compounds; transition metal complexes

273 ref.; 25 tab.; 7 fig.


\[ k_{\text{ab}}; k_{\text{com}}; k_{\text{non}}; k_{\text{hal-ab}}; k_{\text{hal-non}}; k_{\text{disprop}}; E_{\text{a}}; A\]

radicals; radical processes; organic; hydrogen atom; hydroxyl radical; alkyl radicals; aromatics; aliphatics; alkoxy radicals; aryloxy radicals; peroxy radicals; nitroxy radicals; halogen atoms; alkenes

1385 ref.; 114 tab.; The three chapters of this book are entitled (1) Reactions of Molecules, (2) Reactions of Free Atoms and Radicals, and (3) Ionic Homolytic Reactions. Data for both aqueous and nonaqueous solution.


\[ k_{\text{li-ab}}; E_{\text{a}}; A\]

carbonyl compounds; radicals; liquid; alkenes; alkenes; silanes; organic; halogen atoms; alcohols; ethers; alkoxy radicals; alky radicals; peroxy radicals

149 ref.; 39 tab.; 2 fig.

74-05 Standard fluorescence spectra, 4 Volumes. Sadtler Research Laboratories, Philadelphia, PA, 1974

\[ \lambda_{\text{emis}}; \text{emis. spec.; excit. spec.} \]

fluorescence; aromatics

4 volumes containing spectra for 1000 compounds. Data for both aqueous and nonaqueous solution.


\[ k\]

aqueous; hydrated electron; organic; inorganic

163 ref.; 3 tab.; Formula index. This volume is a Supplement to [73–01].


\[ k\]

aqueous; radicals; hydrogen atom; inorganic; organic

219 ref.; 4 tab.; Formula index.


\[ k_{\text{com}}; k_{\text{disprop}}; pK(\text{radicals}); \varepsilon_{\text{ab}}; \lambda_{\text{ab}}\]

aryloxy radicals; semiquinones; phenols, substituted; quinones; metal ions

205 ref.; 4 tab.; Data for both aqueous and nonaqueous solution.

\[ \phi_{EF}; k_{EF}; E_F; R \]
fluorescence; phosphorescence; energy transfer; metal ions; quenching; triplet states; singlet oxygen; transition metal complexes; polycyclics; solid; flavins; aromatics

110 ref.; 11 tab.; 2 fig.; Data for both aqueous and nonaqueous solution.


\[ \phi_F; \phi_0; k_p; k_m; k_{im}; \tau_p; \tau_m; \tau_m(S-S); \lambda_m(S-S); \epsilon_m(S-S) \]
benzene; gas; deuterium compounds; fluorescence; singlet states; triplet states; liquid; excimer

196 ref.; 11 tab.; 15 fig.; Data for both aqueous and nonaqueous solution.


\[ \phi_F; \phi_0; \phi_0; \phi_0; \phi_0(EM); k_m; \tau_F; R \]
energy transfer; triplet states; aromatics; triplet-singlet transitions; quenching; solid; excimer; singlet states; carbonyl compounds; heterocyclic compounds; porphyrins; dyes; amines

252 ref.; 12 tab.; 15 fig.


\[ \phi_F; \phi_p; \phi_q; k_p; k_m; k_{im}; k_{q}; \tau_p; \tau_m; \tau_m(S-S); \lambda_{im}; \lambda_{aq}; \epsilon_{aq}; \mu \]
aromatics; polycyclics; gas; liquid; excimer; singlet states; triplet states; fluorescence; phosphorescence; quenching; solid; alkanes; exciplex

618 ref.; 58 tab.; 20 fig.; Sequel, covering work published subsequent to [70-01].


\[ k_{EF}; k_q; E_T \]
iron compounds; molybdenum compounds; ruthenium compounds; rhodium compounds; platinum compounds; cobalt compounds; copper compounds; transition metal complexes; quenching; energy transfer; aromatics; chromium compounds; luminescence; zinc compounds; solid; manganese compounds; nickel compounds; rare-earth metal compounds; silver compounds; vanadium compounds; mercury compounds; iridium compounds; palladium compounds; excited states

216 ref.; 7 tab.; 8 fig.; Extensive catalog of excited states of coordination compounds including their modes of relaxation to the ground state. Data for both aqueous and nonaqueous solution.


\[ k_{EF}; \tau_F; R \]
energy transfer; luminescence; rare-earth metal ions; quenching; aromatics; fluorescence; dyes; ketones; triplet states

98 ref.; 13 tab.; 9 fig.; Data for both aqueous and nonaqueous solution.

\[ k_{\text{q}}; k_{\text{a}}; k_{\text{aq}} \]
quenching; singlet oxygen; alkenes; aromatics; amines; transition metal complexes; gas; energy transfer
77 ref.; 11 tab.; 3 fig.; Data for both aqueous and nonaqueous solution.


\[ k_{\text{d}}; k_{\text{ab}}; pK(S); pK(T) \]
singlet states; triplet states; acidity; aromatics; phenols, substituted; organic; aqueous; heterocyclic compounds; carbonyl compounds; proton transfer
~260 ref.; 17 tab.; 13 fig.


\[ k_{\text{s}}; k_{\text{m}}; k_{\text{d}} \]
singlet oxygen; biological materials; energy transfer; amines; quenching; polyenes; phenols, substituted; organic; inorganic; transition metal complexes
231 ref.; 10 tab.; 5 fig.; Data for both aqueous and nonaqueous solution.


\[ k_{\text{s}}; k_{\text{aq}}; \tau_{\text{d}} \]
singlet oxygen; gas; organic; amines; dienes; aromatics; heterocyclic compounds; biological materials; alkenes
150 ref.; 10 tab.

77-01 Farhataziz; Ross, A.B. Selected specific rates of reactions of transients from water in aqueous solution. III. Hydroxyl radical and perhydroxyl radical and their radical ions. NSRDS-NBS-59, Jan. 1977, 122p.

\[ k \]
aqueous; hydroxyl radical; perhydroxyl radical; radicals; oxide radical ion; superoxide ion; inorganic; organic
~ 460 ref.; 6 tab.; Formula index.


\[ \phi; k_{\text{ab}}; k_{\text{q}}; pK(S); pK(T) \]
singlet states; triplet states; aromatics; phenols, substituted; amines; proton transfer; heterocyclic compounds; acidity; carboxylic acids
186 ref.; 6 tab.; 3 fig.; Data for both aqueous and nonaqueous solution.


\[ \phi(\text{prod}); \epsilon_{\text{ab}}; \text{prod. anal.} \]
alcohols; ethers; amines; liquid; aqueous; gas; solid; aliphatics
295 ref.; 27 tab.; Data for both aqueous and nonaqueous solution.


\[ \phi_{\text{f}}; \phi_{\text{p}}; \phi_{\text{q}}(\text{EXM}); k_{\text{f}}; \tau_{\text{f}}; \tau_{\text{q}}; \tau(\text{EXM}); \text{abs. spec.}; \text{emis. spec.}; l \]
benzene; singlet states; triplet states; gas; fluorescence; excimer; solid
288 ref.; 15 tab.; 10 fig.

\[ k; k_{\text{com}}; k_{\text{add}}; k_{\text{dis}}; k_{\text{elim}}; pK(\text{radicals}) \]

aqueous; radicals; radical processes; organic; alkyl radicals; metal ions; proton transfer; hydroxyalkyl radicals; inorganic; semiquinones; biological materials

360 ref.; 58 tab.


\[ \phi_{\text{liq}}; \phi_{\text{isom}}; k_{\text{H-d}}; k_{\text{a}}; k_{\text{isom}}; \tau_{\text{f}}(B); E_{\text{a}}; A \]
biradicals; Norrish type II processes; ketones; triplet states; singlet states; gas; aliphatics; aromatics

288 ref.; 20 tab.; 3 fig.


\[ k_{\text{q}}; \tau_{\text{f}}; E_{\text{a}}; \Delta E; \lambda_{\text{abs}} \]
quenching; chromium compounds; ruthenium compounds; transition metal complexes; osmium compounds; iridium compounds; aromatics; uranium compounds

314 ref.; 6 tab.; 22 fig.


\[ \phi_{\text{liq}}; \lambda_{\text{abs}}(S-S); \lambda_{\text{abs}}(T-T); \epsilon_{\text{abs}}(S-S); \epsilon_{\text{abs}}(T-T) \]
triplet states; singlet states; aromatics; polycyclic; biological materials

68 ref.; 4 tab.; Data for both aqueous and nonaqueous solution.

k
aqueous; radicals; inorganic; organic; aliphatics; aromatics
95 ref.; 9 tab.; Data for over 560 radical reactions. Formula index.

79-02 Fox, M.A. The photoexcited states of organic anions. Chem. Rev. 79(3): 253-73 (1979)

λ_{abs}
carbanions; radicals; alkali metal ions
279 ref.; 7 tab.; 3 fig.; Data for both aqueous and nonaqueous solution.


k; k_{q}; k_{d}; \tau_{s}; E_{T}
singlet oxygen; organic; quenching; alkenes; amines; biological materials; phenols, substituted; transition metal complexes; heterocyclic compounds
332 ref.; 11 tab.; 7 fig.; Data for both aqueous and nonaqueous solution.


k; \tau_{s}; E_{T}; prod. anal.; I.P.
alkenes; singlet oxygen; gas
286 ref.; 15 tab.; 4 fig.; Includes an extensive catalog of product yields for the reaction of singlet oxygen with various alkenes.

Data Index

\phi
73-09 74-02 77-02

\phi_{prod}
70-02 72-03 73-08 73-10 77-03 77-05

\phi_{T}
65-01 67-03 69-03 69-04 70-01 70-03
71-02 71-04 73-05 75-05 75-06 75-07
77-04 77-06

\phi_{T}(EXM)
75-05 75-06 77-04

\phi_{P}
68-02 69-03 69-04 70-01 73-05 73-06
73-09 75-06 75-07

\phi_{T}
67-04 70-01 74-02 77-05

\phi_{ar}
70-03

\phi_{ase}
69-02 69-04 70-01 71-02 73-05 75-06
77-06 78-02 78-06

\phi_{a}
69-03 75-05

\phi_{T}
70-01 70-03 75-05 75-06 75-07 77-04

\phi_{add}
68-03 69-01 77-05

\phi_{aq}
67-01 67-02 68-02 68-04 73-03 75-04
\[ \Phi_{\text{dim}} \] 69-01

\[ \Phi_{\text{dis}} \] 78-04

\[ \Phi_{\text{elim}} \] 70-02

\[ \Phi_{\text{isom}} \] 67-01 67-02 70-02 73-09 74-02 77-05 77-06 78-04

\[ \Phi_{\text{rac}} \] 67-02 68-02 68-04

\[ \Phi_{\text{red}} \] 68-02 69-02 70-02 73-04

\[ \Phi_{\text{redox}} \] 67-02 68-04

\[ \Phi_{\text{sub}} \] 68-02 74-02 77-05

prod. anal.
68-03 69-01 70-02 72-03 74-02 77-03 79-04

\[ E_S \] 69-02 71-02 73-05 73-06 75-07

\[ E_T \] 68-03 69-01 69-02 69-03 70-01 71-02 73-05 73-06 75-04 75-07 75-08 79-03

\[ \Delta E \] 78-05

\[ \Delta E(S-S) \] 73-06

\[ \Delta E(S-T) \] 69-02 69-03 69-04 70-01

\[ \Delta E(T-T) \] 64-01 69-03 70-01 73-06 73-07

abs. spec.
65-01 71-04 77-04

emis. spec.
65-01 67-04 71-04 74-05 77-04

excit. spec.
74-05

\[ \epsilon_{\text{abs}} \] 65-01 68-01 68-04 71-04 72-01 73-05 73-09 74-02 75-03 77-03

\[ \epsilon_{\text{abs}}(S-S) \] 70-01 73-06 78-06

\[ \epsilon_{\text{abs}}(T-T) \] 70-01 73-06 73-07 78-06

\[ \epsilon_{\text{emis}} \] 65-01 71-04 75-07

\[ \lambda_{\text{abs}} \] 65-01 67-04 68-01 68-04 70-01 70-03 71-04 72-01 73-09 74-02 75-03 75-07 78-05 79-02

\[ \lambda_{\text{abs}}(S-S) \] 75-05 78-06

\[ \lambda_{\text{abs}}(T-T) \] 78-06

\[ \lambda_{\text{emis}} \] 65-01 67-04 69-04 70-01 70-03 71-04 74-02 74-05 75-07 77-05 77-06

\[ f \] 69-03 70-03

\[ \tau_F \] 65-01 67-03 69-04 70-01 70-02 70-03 71-02 71-04 73-05 73-09 75-05 75-06 75-07 76-01 77-04

\[ \tau_F(\text{EXM}) \] 75-05

\[ \tau_p \] 68-02 69-03 69-04 71-02 71-04 73-05 75-07 77-04

\[ \tau_r \] 67-04 70-01 73-04 73-06 74-02 75-05 77-05 78-05
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \tau_{nt} )</td>
<td>70-03 75-05</td>
</tr>
<tr>
<td>( \tau_S )</td>
<td>64-01 70-02</td>
</tr>
<tr>
<td>( \tau_T )</td>
<td>69-04 70-01 70-02 73-04 73-05 73-06 73-09 75-07 78-04</td>
</tr>
<tr>
<td>( \tau_d )</td>
<td>76-05 79-03 79-04</td>
</tr>
<tr>
<td>( \tau(B) )</td>
<td>78-04</td>
</tr>
<tr>
<td>( \tau(EXM) )</td>
<td>77-04</td>
</tr>
<tr>
<td>( t_{1/2} )</td>
<td>68-01</td>
</tr>
<tr>
<td>( k )</td>
<td>67-05 70-05 71-03 72-02 73-01 73-10 75-01 75-02 77-01 78-01 78-03 78-04 79-01 79-03 79-04</td>
</tr>
<tr>
<td>( k_f )</td>
<td>69-03 70-01 70-03 73-06 75-05 77-04</td>
</tr>
<tr>
<td>( k_p )</td>
<td>70-01</td>
</tr>
<tr>
<td>( k_r )</td>
<td>67-03 75-07 77-05</td>
</tr>
<tr>
<td>( k_{nr} )</td>
<td>70-03 73-06 75-07 77-05</td>
</tr>
<tr>
<td>( k_{ic} )</td>
<td>70-01 75-05</td>
</tr>
<tr>
<td>( k_{ic} )</td>
<td>69-02 69-03 70-01 73-06 75-05 75-06 75-07</td>
</tr>
<tr>
<td>( k_d )</td>
<td>70-01 76-02 76-04 79-03</td>
</tr>
<tr>
<td>( k_{ET} )</td>
<td>67-04 70-03 71-02 73-05 75-04 75-08 76-01 77-06</td>
</tr>
<tr>
<td>( k_q )</td>
<td>67-04 70-01 70-02 70-03 71-01 73-04 73-05 75-04 75-07 75-08 76-01 76-02 76-04 76-05 77-02 77-05 78-05 79-03</td>
</tr>
<tr>
<td>( k(T-T) )</td>
<td>64-01</td>
</tr>
<tr>
<td>( k_{add} )</td>
<td>71-01 73-02 74-03 76-03 77-02 77-05 78-03 78-04</td>
</tr>
<tr>
<td>( k_{com} )</td>
<td>70-05 72-02 74-03 75-03 78-03</td>
</tr>
<tr>
<td>( k_{dis(EXM)} )</td>
<td>70-01 70-03</td>
</tr>
<tr>
<td>( k_{ds} )</td>
<td>74-03 76-03 77-05</td>
</tr>
<tr>
<td>( k_{dis(EXM)} )</td>
<td>67-03 70-03</td>
</tr>
<tr>
<td>( k_{deprop} )</td>
<td>70-05 72-02 74-03 75-03</td>
</tr>
<tr>
<td>( k_{elim} )</td>
<td>78-03</td>
</tr>
<tr>
<td>( k_{et} )</td>
<td>71-03 73-02 78-03 78-04</td>
</tr>
<tr>
<td>( k_{H-ab} )</td>
<td>72-02 73-02 73-04 73-05 73-09 74-03 74-04 78-04</td>
</tr>
<tr>
<td>( k_{hal-ab} )</td>
<td>74-03</td>
</tr>
<tr>
<td>( k_{ism} )</td>
<td>74-03 77-06</td>
</tr>
<tr>
<td>( k_{ox} )</td>
<td>72-02 76-02 76-04 76-05</td>
</tr>
<tr>
<td>( k_{sub} )</td>
<td>74-03</td>
</tr>
</tbody>
</table>

14


\[ A \]
\begin{align*}
70-05 & \ 71-03 \ 72-02 \ 74-03 \ 74-04 \ 78-04 \\
E_s & \begin{align*}
67-01 & \ 68-02 \ 68-04 \ 70-01 \ 70-03 \ 70-05 \\
71-03 & \ 72-02 \ 73-03 \ 73-06 \ 74-03 \ 74-04 \\
75-07 & \ 78-03 \ 78-04 \ 79-04 \\
K & \ 72-02 \\
pK(S) & \ 69-04 \ 70-04 \ 76-03 \ 77-02 \\
pK(T) & \ 69-04 \ 70-04 \ 76-03 \ 77-02 \\
pK(\text{radicals}) & \ 74-01 \ 75-03 \ 78-03 \\
E^* & \ 78-03 \ 78-05 \\
I & \ 77-04 \\
I.P. & \ 70-01 \ 79-04 \\
\mu & \ 67-04 \ 73-05 \ 75-07 \\
R & \ 67-04 \ 70-01 \ 73-01 \ 75-04 \ 75-06 \ 76-01 \\
\end{align*}
\end{align*}

**Keyword Index**

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>acidity</td>
<td>70-04 74-01 76-03 77-02</td>
</tr>
<tr>
<td>alcohols</td>
<td>73-02 73-04 74-04 77-03</td>
</tr>
<tr>
<td>aldehydes</td>
<td>68-03 71-02 72-02 72-03</td>
</tr>
<tr>
<td>aliphatics</td>
<td>68-01 70-02 72-01 72-02 72-03 73-01</td>
</tr>
<tr>
<td>alkali metal ions</td>
<td>79-02</td>
</tr>
<tr>
<td>alkanes</td>
<td>73-10 74-04 75-07</td>
</tr>
<tr>
<td>alkenes</td>
<td>68-03 69-02 69-03 71-01 73-05 73-09</td>
</tr>
<tr>
<td>alkenes</td>
<td>73-10 74-02 74-03 74-04 76-02 76-05</td>
</tr>
<tr>
<td>alkenes</td>
<td>77-06 79-03 79-04</td>
</tr>
<tr>
<td>(see dienes, polyenes)</td>
<td></td>
</tr>
<tr>
<td>alkoxy radicals</td>
<td>70-05 72-02 74-03 74-04</td>
</tr>
<tr>
<td>alkyl radicals</td>
<td>70-05 71-03 74-01 74-03 74-04 78-03</td>
</tr>
<tr>
<td>alkynes</td>
<td>71-01</td>
</tr>
<tr>
<td>amines</td>
<td>70-04 72-02 73-04 75-06 76-02 76-04</td>
</tr>
<tr>
<td>aqueous</td>
<td>67-01 67-02 67-05 68-02 68-04 73-01</td>
</tr>
<tr>
<td>aqueous</td>
<td>73-02 74-01 75-01 75-02 76-03 77-01</td>
</tr>
<tr>
<td>aqueous</td>
<td>77-03 78-01 78-03 79-01</td>
</tr>
<tr>
<td>aromatics</td>
<td>64-01 65-01 67-03 67-04 68-01 69-01</td>
</tr>
<tr>
<td>aromatics</td>
<td>69-02 69-03 69-04 70-01 70-03 70-04</td>
</tr>
<tr>
<td>aromatics</td>
<td>71-02 71-04 72-01 72-02 73-01 73-03</td>
</tr>
<tr>
<td>aromatics</td>
<td>73-04 73-05 73-06 73-07 73-11 74-03</td>
</tr>
<tr>
<td>aromatics</td>
<td>74-05 75-04 75-06 75-07 75-08 76-01</td>
</tr>
<tr>
<td>aromatics</td>
<td>76-02 76-03 76-05 77-02 77-06 78-04</td>
</tr>
<tr>
<td>aromatics</td>
<td>78-05 78-06 79-01</td>
</tr>
<tr>
<td>(see benzene, dyes, heterocyclic compounds, phenols, substituted, polycyclic, polyphenyls)</td>
<td></td>
</tr>
</tbody>
</table>

15
aryloxy radicals
70-05 72-02 74-03 75-03

azo-compounds
69-03 73-08 73-10

benzene
69-03 75-05 77-04

biological materials
67-03 69-04 73-01 73-02 73-07 74-01
76-04 76-05 78-03 78-06 79-03

biradicals
73-10 78-04

boranes
73-04

carbanions
79-02

carbenes
73-10

carbonyl compounds
68-03 69-01 69-02 69-03 71-02 72-02
73-02 73-04 73-05 73-07 73-09 74-04
75-06 76-03
(see aldehydes, carboxylic acids, ketones,
metal carbonyls, quinones)
carboxylic acids
70-04 73-02 77-02

chromium compounds
67-01 68-02 68-04 73-03 74-02 75-08
78-05

cobalt compounds
67-02 68-02 68-04 75-08

copper compounds
75-08

deuterium compounds
75-05

dienes
69-01 69-02 74-02 76-05

dyes
67-03 69-03 73-07 75-06 76-01

energy transfer
64-01 67-04 70-01 71-02 73-03 73-05
73-11 75-04 75-06 75-08 76-01 76-02
76-04 77-06

ethers
73-10 74-04 77-03

excimer
67-03 67-04 70-01 70-03 75-05 75-06
75-07 77-04 77-06

exciplex
70-01 70-03 71-01 75-07

excited states
67-04 70-01 72-03 75-08
(see excimer, exciplex, quartet states,
singlet oxygen, singlet states, triplet
states)

flavins
75-04

fluorescence
65-01 67-03 67-04 69-03 69-04 70-01
70-02 70-03 71-02 71-04 73-04 73-06
74-05 75-04 75-05 75-07 76-01 77-04
77-06

gas
70-01 72-02 72-03 73-04 73-05 73-10
75-05 75-07 76-02 76-05 77-03 77-04
78-04 79-04

halogen atoms
74-03 74-04

heterocyclic compounds
65-01 68-01 69-03 69-04 71-04 72-01
73-07 73-11 75-06 76-03 76-05 77-02
79-03
(see dyes, flavins, porphyrins)

hydrated electron
67-05 73-01 75-01

hydrogen atom
67-05 71-03 74-03 75-02

hydroxyalkyl radicals
74-01 78-03

16
hydroxyl radical
67-05 71-03 72-02 73-02 74-03 77-01

inorganic
68-01 71-03 72-01 73-01 73-02 74-01 75-01 75-02 76-04 77-01 78-03 79-01
(see metal ions, metal-metal bonded complexes, rare-earth metal compounds, rare-earth metal ions, silanes, transition metal complexes, specific metal complexes)

iridium compounds
75-08 78-05

iron compounds
68-04 74-02 75-08

ketones
68-03 69-01 69-02 70-02 71-01 71-02 72-02 72-03 73-04 73-05 73-09 76-01 77-06 78-04

liquid
68-01 70-03 70-05 72-01 73-10 74-04 75-05 75-07 77-03

luminescence
74-02 75-08 76-01 77-05
(see fluorescence, phosphorescence)

manganese compounds
75-08

mercury compounds
75-08

metal carbonyls
74-02 77-05

metal ions
71-03 72-02 73-01 75-03 75-04 78-01 78-03

metal-metal bonded complexes
77-05

molybdenum compounds
74-02 75-08

nickel compounds
75-08

niobium compounds
74-02

nitro compounds
69-03

nitroxide radicals
72-02 74-03

Norrish type I processes
70-02

Norrish type II processes
70-02 78-04

organic
67-04 68-01 69-02 71-03 72-01 73-01 73-02 74-01 74-03 74-04 75-01 75-02 76-03 76-04 76-05 77-01 78-03 79-01 79-03
(see aliphatics, aromatics, specific compound class i.e. alcohols, ketones, heterocyclic compounds, quinones, etc.....)

osmium compounds
74-02 78-05

oxide radical ion
73-02 77-01

palladium compounds
75-08

perhydroxyl radical
77-01

peroxy radicals
70-05 71-03 72-02 74-03 74-04

phenols, substituted
70-04 70-05 72-02 75-03 76-03 76-04 77-02 79-03

phosphorescence
67-04 68-02 69-03 69-04 70-01 71-02 75-04 75-07

platinum compounds
68-04 75-08
polycyclic
67-03 69-04 71-04 73-06 75-04 75-07
78-06

polyenes
69-01 69-02 76-04

polymerization
77-06

polyphenyls
71-04

porphyrins
69-04 73-07 75-06

proton transfer
76-03 77-02 78-03

quartet states
67-01

quenching
64-01 67-04 70-01 70-02 71-01 73-03
73-04 73-05 75-04 75-06 75-07 75-08
76-01 76-02 76-04 77-05 78-05 79-03
(see energy transfer)

quinones
75-03

radical processes
70-05 73-02 74-03 78-03

radicals
68-01 70-05 71-03 72-01 72-02 73-02
74-01 74-03 74-04 75-02 77-01 78-01
78-03 79-01 79-02
(see hydrogen atom, hydroxyl radical,
solvated electrons, superoxide ion, specific
radical class i.e. alkyl radicals, biradicals,
halogen atoms, etc...)

rare-earth metal compounds
75-08

rare-earth metal ions
76-01

rhenium compounds
74-02

rhodium compounds
68-04 75-08

ruthenium compounds
74-02 75-08 78-05

semiquinones
75-03 78-03

silanes
74-04

silver compounds
75-08

singlet oxygen
75-04 76-02 76-04 76-05 79-03 79-04

singlet states
64-01 67-04 69-02 69-03 69-04 70-01
70-02 70-04 71-02 73-05 73-06 73-08
73-09 73-10 75-05 75-06 75-07 76-03
77-02 77-04 77-06 78-02 78-04 78-06
(see singlet oxygen)

singlet-singlet transitions
67-04 73-06

singlet-triplet transitions
67-04 73-06

solid
67-03 67-04 68-01 68-02 68-03 69-02
69-03 69-04 70-01 70-03 71-02 72-01
73-05 73-07 73-09 74-02 75-04 75-06
75-07 75-08 77-03 77-04 77-05

solvated electrons
68-01 72-01
(see hydrated electron)

superoxide ion
77-01

tantalum compounds
74-02
**transition metal complexes**
67-01 67-02 67-04 68-02 68-04 69-03 69-04 71-03 73-01 73-03 74-02 75-04 75-08 76-02 76-04 77-05 78-01 78-05 79-03
(see metal carboxyls, specific metal complex class i.e. cobalt compounds, iron compounds, manganese compounds, etc.....)

**triplet states**
64-01 67-04 68-03 69-01 69-02 69-03 69-04 70-01 70-02 70-04 71-01 71-02 72-02 73-04 73-05 73-06 73-08 73-09 73-10 75-04 75-05 75-06 75-07 76-01 76-03 77-02 77-04 77-05 77-06 78-02 78-04 78-06

**triplet–triplet transitions**
67-04 73-06 73-07 75-06

**tungsten compounds**
68-04 74-02

**uranium compounds**
78-05

**vanadium compounds**
74-02 75-08

**zinc compounds**
75-08

---

**Author Index**

Adams, G.E. — 73-02
Adamson, A.W. — 67-01 68-04
Anbar, M. — 67-05 73-01 75-02
Arnold, D.R. — 68-03
Azumi, T. — 69-03
Balzani, V. — 67-02 75-08 78-05
Bambenek, M. — 73-01
Becker, R.S. — 69-04
Bellus, D. — 76-04 79-03
Bensasson, R. — 78-06
Berces, T. — 72-03
Berlman, I.B. — 65-01 71-04 73-11
Birks, J.B. — 67-03 70-01 70-03 73-06 75-07
Bock, C.R. — 77-05
Boens, N. — 77-06
Bolletta, F. — 75-08 78-05
Buxton, G.V. — 78-01
Carassiti, V. — 67-02
Chapman, O.L. — 73-09
Cundall, R.B. — 75-05 77-04
Dalton, J.C. — 70-02
De Mayo, P. — 71-01
De Schryver, F.C. — 77-06
Demyashkevich, A.B. — 77-02
Denisov, E.T. — 70-05 71-03 74-03
Dilling, W.L. — 69-01
Dorfman, L.M. — 73-02
Eigenmann, H.K. — 74-04
Encina, M.V. — 78-04
Engel, P.S. — 71-02 73-08
Ermolaev, V.L. — 75-04 76-01

Farhataziz — 75-02 77-01
Fleischauer, P.D. — 68-04
Fox, M.A. — 79-02
Gandolfi, M.T. — 78-05
Gollnick, K. — 76-05 79-04
Habersbergerova, A. — 68-01 72-01
Hayon, E. — 74-01
Heinzelmann, W. — 73-07
Hendry, D.G. — 74-04
Howard, J.A. — 72-02 74-04
Ireland, J.F. — 76-03
Ivanov, V.B. — 76-02
Janovsky, I. — 68-01 72-01
Khudyakov, I.V. — 75-03
Kinoshita, M. — 69-03
Kirk, A.D. — 73-03
Kirmse, W. — 73-10
Koerner von Gustorf, E.A. — 77-05
Kourim, P. — 72-01
Laurence, G.S. — 75-08
Land, E.J. — 78-06
Laurens, G.S. — 75-08
Legler, R. — 67-04
Lindholm, R.D. — 68-04
Lissi, E.A. — 78-04
Maciejewski, A. — 78-02
Maestri, M. — 78-05
Manfrin, M.F. — 75-08
Martynov, I.Yu. — 77-02
Matuszewski, B. — 78-02
McGlynn, S.P. — 69-03
Mill, T. — 74-04
Moggi, L. — 67-02 75-08
Monroe, B.M. — 71-02
Munro, I.H. — 67-03
Murov, S.L. — 73-05
Neta, P. — 67-05 79-01
Ogilvie, S.McD. — 75-05
Pereira, L.C. — 77-04
Piszkiewicz, L. — 74-04
Put, J. — 77-06
Robinson, D.A. — 77-04
Ross, A.B. — 73-01 75-01 75-02 77-01 79-01
Scaiano, J.C. — 73-04 78-04
Scandola, F. — 67-02
Schmillen, A. — 67-04
Schuchmann, H.-P. — 77-03
Sellers, R.M. — 78-01
Shakhverdov, T.A. — 75-04 76-01
Shlyapintokh, V.Ya. — 76-02
Simic, M. — 74-01
Steel, C. — 73-08
Sveshnikova, E. — 75-04 76-01
Swallow, A.J. — 78-03
Teply, J. — 68-01
Turro, N.J. — 69-02 70-02
Valentine, D.,Jr. — 68-02
von Sonntag, C. — 77-03
Waltz, W.L. — 68-04
Watts, D.W. — 68-04
Weiss, D.S. — 73-09
Wrighton, M. — 74-02
Wyatt, P.A.H. — 76-03
Zinato, E. — 68-04

Appendix: Review Series in Photochemistry


*Creation and Detection of the Excited State*, Editor: A.A. Lamola, Marcel Dekker, Vol. 1– (1971–).


TLE AND SUBTITLE
Catalog of Data Compilations on Photochemical and Photophysical Processes in Solution

AUTHORS
James G. Brummer, W. Phillip Helman and Alberta B. Ross

PERFORMING ORGANIZATION NAME AND ADDRESS
Radiation Chemistry Data Center
Radiation Laboratory
University of Notre Dame
Notre Dame, IN 46556

Sponsoring Organization Name and Complete Address (Street, City, State, ZIP)
National Bureau of Standards and Department of Energy
Department of Commerce
Washington, DC 20234

ABSTRACT
References to compilations and reviews of data on photochemical and photophysical processes in solution have been annotated to indicate subject and data content. Indexes are included for data types, keywords, and authors.

KEY WORDS (six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)
compilations; photochemistry; photophysics; review; solutions.

AVAILABILITY [X] Unlimited
☐ For Official Distribution. Do Not Release to NTIS
☐ Order From National Technical Information Service (NTIS), Springfield, VA, 22161

19. SECURITY CLASS (THIS REPORT)
UNCLASSIFIED

20. SECURITY CLASS (THIS PAGE)
UNCLASSIFIED

21. NO. OF PRINTED PAGES
27

22. PRICE
$1.75

Library of Congress Catalog Card Number: 80-600117

Document describes a computer program; SF-185, FIPS Software Summary, is attached.
Where can you find all the reference data you need?

Right in the Journal of Physical and Chemical Reference Data!

Now in its sixth year, this valuable publication has proved that it fills the important gaps for you in the literature of the physical sciences. Published by the American Institute of Physics and the American Chemical Society for the National Bureau of Standards, this quarterly gives you quantitative numerical data, with recommended values and uncertainty limits chosen by experts in the field. Critical commentary on methods of measurement and sources of error, as well as full references to the original literature, is an integral part of each of your four issues a year.

Can you afford to be without this prime source of reliable data on physical and chemical properties? To start receiving your copies, just fill in the order form and drop into the mail. If you do use a purchase order, please attach the printed form as this will help us to expedite your order. Send for complete list of reprints!
Important Additions

TO THE JOURNAL OF PHYSICAL AND CHEMICAL REFERENCE DATA

Three comprehensive reference volumes, each, as the Journal itself, published by the American Institute of Physics and the American Chemical Society for the National Bureau of Standards...your triple assurance of their accuracy, immediacy, and usefulness.

Supplement No. 1 to Vol. 2

"PHYSICAL AND THERMODYNAMIC PROPERTIES OF ALIPHATIC ALCOHOLS"
by R. C. Wilhoit and B. J. Zwoinski, Thermodynamics Research Center, Department of Chemistry, Texas A & M University

Represents the most exhaustive review and critical analysis of selected physical and thermodynamic properties of aliphatic alcohols that has been published in the world literature of chemistry.

Supplement No. 1 to Vol. 3

"THERMAL CONDUCTIVITY OF THE ELEMENTS: A COMPREHENSIVE REVIEW"
by C. Y. Ho, R. W. Powell, and P. E. Liley, Thermophysical Properties Research Center, Purdue University, West Lafayette, Indiana

This comprehensive review of the world's thermal conductivity data presents recommended or estimated values for all 105 elements.

Supplement No. 1 to Vol. 6

ENERGETICS OF GASEOUS IONS
by H. M. Rosenstock, K. Draxl, B. Steiner, and J. T. Herron, National Bureau of Standards

Provides a comprehensive body of critically evaluated information on ionization potentials, appearance potentials, electron affinities and heats of formation of gaseous positive and negative ions. It is a complete revision and extension of the earlier reference work, "Ionization Potentials, Appearance Potentials, and Heats of Formation of Gaseous Positive Ions," NSRDS-NBS 26.

Business Operations—Books and Journals Dept.
American Chemical Society
1155 16th Street, N.W.
Washington, D.C. 20036

Please send copies of at $.___.

A. "PHYSICAL AND THERMODYNAMIC PROPERTIES OF ALIPHATIC ALCOHOLS." (First supplement to Vol. 2 of the Journal of Physical and Chemical Reference Data.) Hard Cover: $33.00, Soft Cover: $30.00.

B. "THERMAL CONDUCTIVITY OF THE ELEMENTS. A COMPREHENSIVE REVIEW." (First supplement to Vol. 3 of the Journal of Physical and Chemical Reference Data.) Hard Cover: $60.00, Soft Cover: $55.00.

C. "ENERGETICS OF GASEOUS IONS." (First supplement to Vol. 6 of the Journal of Physical and Chemical Reference Data.) Hard Cover: $70.00, Soft Cover: $65.00.

☐ I am enclosing a check ☐ I am enclosing a money order

Name ____________________________ Address ____________________________

City ____________________________ State ______________ Zip Code ______________

Title ____________________________ Employer ____________________________

Please add $1.50 extra for foreign postage and handling.
The expanded Journal of Research of the National Bureau of Standards reports NBS research and development in those disciplines of the physical and engineering sciences in which the Bureau is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology, and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Bureau's technical and scientific programs. As a special service to subscribers each issue contains complete citation to all recent NBS publications in NBS and non-NBS media. Issued six times a year. Annual subscriptions: domestic $17.00; foreign $21.25. Single copy, $3.00 domestic; $3.75 foreign.

- Note: The Journal was formerly published in two sections: Section A "Physics and Chemistry" and Section B "Mathematical Sciences."

NBS Board of Editors
Churchill Eisenhart, Executive Editor (Mathematics)
John W. Cooper (Physics)
Donald D. Wagman (Chemistry)
Andrew J. Fowell (Engineering)
Joseph O. Harrison (Computer Science)
Howard J. M. Hanley (Boulder Labs.)
NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH—The Journal of Research of the National Bureau of Standards reports NBS research and development in those disciplines of the physical and engineering sciences in which the Bureau is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Bureau’s technical and scientific programs. As a special service to subscribers each issue contains complete citations to all recent Bureau publications in both NBS and non-NBS media. Issued six times a year. Annual subscription: domestic $13; foreign $16.25. Single copy, $3 domestic; $3.75 foreign.

NOTE: The Journal was formerly published in two sections: Section A “Physics and Chemistry” and Section B “Mathematical Sciences.”

DIMENSIONS/NBS—This monthly magazine is published to inform scientists, engineers, business and industry leaders, teachers, students, and consumers of the latest advances in science and technology, with primary emphasis on work at NBS. The magazine highlights and reviews such issues as energy research, fire protection, building technology, metric conversion, pollution abatement, health and safety, and consumer product performance. In addition, it reports the results of Bureau programs in measurement standards and techniques, properties of matter and materials, engineering standards and services, instrumentation, and automatic data processing. Annual subscription: domestic $11; foreign $13.75.

NONPERIODICALS

Monographs—Major contributions to the technical literature on various subjects related to the Bureau’s scientific and technical activities.

Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NBS, NBS annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

Applied Mathematics Series—Mathematical tables, manuals, and studies of special interest to physicists, engineers, chemists, biologists, mathematicians, computer programmers, and others engaged in scientific and technical work.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world’s literature and critically evaluated. Developed under a worldwide program coordinated by NBS under the authority of the National Standard Data Act (Public Law 90-396).

NOTE: The principal publication outlet for the foregoing data is the Journal of Physical and Chemical Reference Data (JPCRD) published quarterly for NBS by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements available from ACS, 1155 Sixteenth St., NW, Washington, DC 20036.

Building Science Series—Disseminates technical information developed at the Bureau on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NBS under the sponsorship of other government agencies.

Voluntary Product Standards—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NBS administers this program as a supplement to the activities of the private sector standardizing organizations.

Consumer Information Series—Practical information, based on NBS research and experience, covering areas of interest to the consumer. Easily understandable language and illustrations provide useful background knowledge for shopping in today’s technological marketplace.


Order the following NBS publications—FIPS and NBSIR’s—from the National Technical Information Services, Springfield, VA 22161.


NBS Interagency Reports (NBSIR) A special series of interim or final reports on work performed by NBS for outside sponsors (both government and non-government). In general, initial distribution is handled by the sponsor; public distribution is by the National Technical Information Services, Springfield, VA 22161, in paper copy or microfiche form.

BIBLIOGRAPHIC SUBSCRIPTION SERVICES

The following current-awareness and literature-survey bibliographies are issued periodically by the Bureau:


