

THE JOURNAL OF CHEMICAL PHYSICS

J. W. Stout, Editor
Associate Editors

Term ending 31 December 1982

Steven D. Colson
R. F. Curl, Jr.
Donald H. Levy
J. P. McTague
L. M. Raff
J. Peter Toennies

Term ending 31 December 1983

J. A. Barker
Richard Bersohn
John E. Bertie
Robert S. Hansen
James L. Kinsey
Robert M. Mazo

Term ending 31 December 1984

Robert A. Bernheim
Paul J. Dagdigian
Karl F. Freed
J. D. McDonald
Keiji Morokuma
Isaiah Shavitt

Kathleen Strum, *Editorial Supervisor*; Carole A. McCormack, Deborah Moses, Marc Wiener, *Senior Copy Editors*; Joyce Brown, Daniel Bubbeo, Mary Ellen Echausse, Deborah McHone, *Copy Editors*.

The Journal of Chemical Physics is published semimonthly by the American Institute of Physics (AIP). Its purpose is to bridge a gap between journals of physics and journals of chemistry. The artificial boundary between physics and chemistry has now been in actual fact completely eliminated, and a large and active group is engaged in research which is as much the one as the other. It is to this group that the Journal is rendering its principal service and makes its greatest appeal, both as a prompt and efficient medium for publication of research and as a convenient and carefully edited assemblage of pertinent information.

Information for Contributors

Submit manuscripts to J. W. Stout, Editor, *Journal of Chemical Physics*, Department of Chemistry, 5735 S. Ellis Avenue, The University of Chicago, Chicago, IL 60637. Submission is a representation that the manuscript has not been published previously nor currently submitted for publication elsewhere. The manuscript should be accompanied by a statement transferring copyright from the authors (or their employers—whoever holds the copyright) to AIP; a suitable form for copyright transfer is occasionally printed in the back of this journal and is available from the Editor's office or AIP. This written transfer of copyright, which previously was assumed to be implicit in the act of submitting a manuscript, is necessary under the new (1978) U.S. copyright law in order for AIP to continue disseminating physics research results as widely as possible. Further information may be obtained from AIP.

Publication Charge: To support the cost of wide dissemination of research results through publication of journal pages and production of a data base of articles, the author's institution is requested to pay a *page charge* of \$80 per page (with a one-page minimum) and an *article charge* of \$20 per article. The page charge (if honored) entitles the author to 100 free reprints. For **Errata** the minimum page charge is \$10, with no article charge and no free reprints. Nonpayment of the publication charge may lead to delays in publication.

All mathematical expressions and formulas, insofar as possible, should be typed, with unavailable Greek letters or symbols inserted neatly in ink. Distinguish between capital and small letters. Avoid complicated superscripts and subscripts. Avoid repetition of a complicated expression by representing it as a symbol. Identify in the margin handwritten Greek letters and unusual symbols. Use fractional exponents instead of root signs.

References should appear as consecutively numbered footnotes. Literature citations of technical journals should be in the form indicated in the *AIP Style Manual* (price \$7.50 pre-

paid from American Institute of Physics, Dept. BN, 335 East 45th Street, New York, NY 10017).

Tables may be typewritten on sheets separate from the running text. Each table must have a caption that will make the data in the table intelligible without reference to the text. Avoid complicated column headings.

Figures should, whenever practicable, be planned for reproduction in one-column width (8 cm). Line drawings should be India ink on white paper or high-quality tracing cloth. The original drawing or a high-quality glossy print should be submitted. To facilitate mailing and handling, original drawings should not exceed 22 by 28 cm in size. Lettering, preferably drawn with a mechanical set, should be of a size so that when reduced the smallest lower-case letters will not be less than about 1.5 mm. Avoid gross disparities in lettering size on a drawing. Consult the *AIP Style Manual* for further discussion of figures. Type figure captions on a separate sheet of paper. Number figures consecutively. Identify each original drawing or photograph with the figure number and authors' names, written where they will not be reproduced.

AIP's **Physics Auxiliary Publication Service (PAPS)** is a low-cost depository for material which is part of and supplementary to a published paper, but is too long to be included in the journal; inquire of the Editor.

Proofs and all correspondence concerning papers in the process of publication should be addressed to: Editorial Supervisor, *The Journal of Chemical Physics*, American Institute of Physics, 335 East 45th Street, New York, NY 10017. In all correspondence, reference should be made to title, author, journal, and scheduled date of issue. A limited number of **alterations in proof** are unavoidable, but the cost of making extensive alterations after the article has been set in type will be charged to the author.

Copyright 1982, American Institute of Physics. Individual readers of this journal, and nonprofit libraries acting for them, are freely permitted to make fair use of the material in it, such as to copy an article for use in teaching or research. (For other kinds of copying see "Copying Fees.") Permission is granted to quote from this journal in scientific works with the customary acknowledgment of the source. To reprint a figure, table, or other excerpt requires, in addition, the consent of one of the original authors and notification of AIP. Republication or systematic or multiple reproduction of any material in this journal (including abstracts) is permitted only under license from AIP; in addition, AIP may require that permission also be obtained from one of the authors. Address inquiries and notices to Office of Rights and Permissions, American Institute of Physics, 335 East 45th Street, New York, NY 10017.

Spectroscopy and Light Scattering

The quenching mechanism of electronically excited Rydberg states of nitric oxide Micha Asscher and Yehuda Haas	2115
The infrared laser spectrum of the CN radical in its ground state P. B. Davies and P. A. Hamilton	2127
Green's functions and optical line shapes of a general two-level system in the strong electronic coupling limit Richard Friesner	2129
Donor and acceptor state selectivity in resonant energy transfer Hartmut Yersin and Manfred Stock	2136
Resonance Raman spectra of some radiolytically prepared halogen derivatives of <i>para</i>-benzosemiquinone radical anion G. N. R. Tripathi and R. H. Schuler	2139
Picosecond infrared double resonance studies on pentafluorobenzene Richard C. Sharp, Eli Yablonovitch, and N. Bloembergen	2147
Identification of a high energy state of I₂ by ion dip spectroscopy D. E. Cooper and J. E. Wessel	2155
Single crystal ESR study of x-irradiated thiophosphate O,O,O-triester of methyl β-D-ribose: Electron capture by the thiophosphate moiety J. H. H. Hamerlinck, P. Schipper, and H. M. Buck	2161
Laser excitation spectra and lifetimes of Pb₂ and Sn₂ produced by YAG laser vaporization V. E. Bondybey and J. H. English	2165
¹⁷O NMR in liquid O₂ Jeffrey M. Dundon	2171
Low-temperature thermoluminescent behavior of 5'dCMP single crystals D. Wayne Cooke and David M. Close	2174
Formation of perbromate radical anions by attachment of O⁻ to bromate in a solid matrix J. R. Byberg	2179

(Continued)

Subscription Prices (1982)	U.S.A.	Foreign	Optional air freight	
	& Poss.	(incl. Can. & Mex.)	Europe, Mideast, N. Africa	Asia and Oceania
Members (affiliated & member societies)	\$80.00	\$120.00	\$180.00	\$260.00
All other	\$420.00	\$460.00	\$520.00	\$600.00

Back number prices: Single copies: \$21.00.

The Journal of Chemical Physics is published semimonthly by the American Institute of Physics. Second-class postage rates paid at Woodbury, NY and at additional mailing offices.

Subscriptions, renewals, address changes, and single-copy orders should be addressed to *AIP Subscription Fulfillment Division*, 335 East 45th St., New York, NY 10017. Allow at least six weeks advance notice. For address changes please send both old and new addresses, and, if possible, include an address-stencil imprint from the mailing wrapper of a recent issue. For your convenience a **change of address form is included in every issue of *Physics Today*; please use it.** Requests from subscribers for missing journal issues will be honored without charge only if received within six months of the issue's actual date of publication; otherwise, the issue may be purchased at the single-copy price. (AIP Headquarters are located at 335 East 45th St., New York, NY

10017; Subscription Fulfillment offices are located at 500 Sunnyside Blvd., Woodbury, NY 11797.)

Reprints of individual articles in this journal may be ordered singly at \$10.00 per article copy (postage included) for articles up to 20 pages. Beyond 20 pages there is a surcharge of \$0.20 per page. Air mail delivery available. Orders are filled in 24 hours. Send orders to the American Institute of Physics, *Current Physics Reprints*, 335 East 45th St., New York, NY 10017.

Copying Fees: The code at the bottom of the first page of each article in this journal gives the fee for each copy of the article made beyond the free copying permitted under the 1978 US Copyright Law. (See also the statement under "Copyright" on the inside cover of this journal.) This fee can be paid to the American Institute of Physics through the *Copyright Clearance Center, Inc.*, 21 Congress St., Salem, MA 01970. For articles published before 1978 the copying fee is \$0.25 per article.

Microfilm editions of back volumes of *The Journal of Chemical Physics* are available on 16 mm and 35 mm. Special discounts for the complete backfile of journals published by AIP are also available. *The Journal of Chemical Physics* appears on a monthly basis in *Current Physics Microform* (CPM) along with 26 other journals published by the American Institute of Physics and its member societies. A *Microfilm Catalog* is available on request. *The Journal of Chemical Physics* is indexed quarterly in *Current Physics Index*, a subject and author index (with abstracts) to all journals published by AIP and its member societies.