

PUBLICATIONS

Compilation of principal recently published books and technical articles written by APL staff members.

- L. Monchick, "The Ehrenfest Theorem and Gas Transport Properties," *Physica* **78**, No. 1, Nov. 15, 1974, 64-72.
- B. F. Hochheimer and R. W. Flower, "Angiography of the Cervix," *Johns Hopkins Medical J.* **135**, No. 6, Dec. 1974, 375-382.
- V. O'Brien, "Stokes Drag for Arbitrary Bodies," *Canad. J. Chem. Eng.* **51**, Dec. 1974, 793-794.
- N. A. Blum and C. Feldman, "Mossbauer Investigation of Amorphous and Polycrystalline Tellurium," *J. de Physique* **35**, Dec. 1974, c6-401.
- A. N. Bloch, D. O. Cowan (The Johns Hopkins Univ.) and T. O. Poehler (APL), "Design and Study of One-Dimensional Organic Conductors. II. TTF-TCNQ and Other Organic Semimetals," pp. 167-173, *Energy and Charge Transfer* (K. Masuda and M. Silver, Editors), Plenum Press, 1974.
- R. M. Fristrom, "Fire Research in the United States," *Revue Energie Primaire* **X**, No. 1, 1974, 2-6.
- W. G. Spohn, "On the Derived Cuboid," *Canad. Math. Bull.* **17**, No. 4, 1974, 575-577.
- R. E. Walker (APL) and M. E. Langham (Johns Hopkins School of Medicine), "Pneumatic Applanation Tonometer Studies. III. Analysis of the Floating Tip Sensor," *Exp. Eye Res.* **20**, No. 2, Feb. 1975, 167-172.
- R. E. Walker and G. E. Compton (APL) and M. E. Langham (Johns Hopkins School of Medicine), "Pneumatic Applanation Tonometer Studies. IV. Analysis and Pulsatile Response," *Exp. Eye Res.* **20**, No. 3, Mar. 1975, 245-253.
- V. O'Brien, "Unsteady Separation Phenomena in a Two-Dimensional Cavity," *AIAA J.* **13**, No. 3, Mar. 1975, 415-416.
- L. L. Perini, "Compilation and Correlation of Stagnation Convective Heating Rates on Spherical Bodies," *J. Spacecraft and Rockets* **12**, No. 3, Mar. 1975, 189-191.
- H. J. Verschell, R. B. Mendell, and S. A. Korff (New York Univ.), E. C. Roelof (APL), "Two Classes of Cosmic Ray Decrease," *J. Geophys. Res.* **80**, No. 10, Apr. 1, 1975, 1189-1201.
- L. W. Hunter, "On Infinite Order Sudden Approximations for an Arbitrary Potential Energy," *J. Chem. Phys.* **62**, No. 7, Apr. 1, 1975, 2855-2859.
- R. J. Bartlett (The Johns Hopkins Univ.), D. M. Silver (APL) "Many-Body Perturbation Theory Applied to Electron Pair Correlation Energies. I. Closed-Shell First-Row Diatomic Hydrides," *J. Chem. Phys.* **62**, No. 8, Apr. 15, 1975, 3258-3268.
- A. A. Westenberg and N. deHaas, "Rates of $H + CH_3X$ Reactions," *J. Chem. Phys.* **62**, No. 8, Apr. 15, 1975, 3321-3325.
- J. W. Kohl, "Response of Various Thin-Film Scintillators to Low-Energy Particles," *Nuclear Instr. and Methods* **125**, No. 3, Apr. 15, 1975, 413-417.
- I. Katz, "Active Microwave Sensing of the Atmosphere from Satellites," *16th Radar Meteorology Conf.*, 246-252, Apr. 22-24, 1975, Houston.
- J. R. Rowland and A. Arnold, "Vertical Velocity Structure and Geometry of Clear Air Convective Elements," *16th Radar Meteorology Conf.*, 296-303, Apr. 22-24, 1975, Houston.
- I. Katz, "Rain Cell Statistics Experiment," *16th Radar Meteorology Conf.*, 378-380, Apr. 22-24, 1975, Houston.
- A. Arnold, J. R. Rowland, and T. G. Konrad (APL), J. H. Richter, D. R. Jensen, and V. R. Noonkester (Naval Electronics Lab. Center), "Simultaneous Observations of Clear Air Convection by a Pulse Radar, an FM-CW Radar, an Acoustic Sounder, and an Instrumented Aircraft," *16th Radar Meteorology Conf.*, 290-295, Apr. 22-24, 1975, Houston.
- T. G. Konrad, R. A. Kropfli, "Statistical Models of Rain Cells Derived from Radar Observations," *16th Radar Meteorology Conf.*, 381-386, Apr. 22-24, 1975, Houston.
- E. C. Roelof (APL) and S. Cuperman and A. Sternlieb (Tel Aviv Univ.), "On the Correlation of Coronal Green-Line Intensity and Solar Wind Velocity," *Solar Phys.* **41**, No. 2, Apr. 1975, 349-366.
- D. Venkatesan, T. Mathews (Univ. of Calgary), L. J. Lanzerotti (Bell Labs.), D. H. Fairfield (NASA Goddard), and C. O. Bostrom (APL), "Cosmic Ray Intensity Variations during 0200-0700 UT, August 5, 1972," *J. Geophys. Res.* **80**, No. 13, May 1, 1975, 1715-1724.
- D. M. Silver (APL) and M. Karplus (Harvard Univ.), "Valence-Bond Approach to Conservation of Symmetry in Concerted Reactions," *J. Am. Chem. Soc.* **97**, No. 10 May 14, 1975, 2645-2654.
- T. O. Poehler, R. E. Walker, and J. W. Leight, "High-Pressure Chemical Waveguide Laser," *Appl. Phys. Letters* **26**, No. 10, May 15, 1975, 560-561.
- E. A. McCullough, Jr. (Utah State Univ.), D. M. Silver (APL), "Reaction Path Properties at Critical Points on Potential Surfaces," *J. Chem Phys.* **62**, No. 10, May 15, 1975, 4050-4052.
- A. J. Haug (APL), R. D. Graves and H. Überall (The Catholic Univ. of America), "Normal-Mode Theory of Underwater Sound Propagation from Stationary Multipole Sources: Results from a Realistic Sound-Speed Profile," *J. Acoust. Soc. Am.* **57**, No. 5, May 1975, 1052-1061.
- B. M. Halpin (APL), E. P. Radford (The Johns Hopkins Univ.), R. Fisher and Y. Caplan (The Medical Examiners Office, State of Maryland), "A Fire Fatality Study," *Fire J.*, May 1975, 11-14.
- C. C. Kilgus, "Shaped-Conical Radiation Pattern Performance of the Backfire Quadrifilar Helix," *IEEE Trans. Antennas and Prop.* **AP-23**, No. 3, May 1975, 392-397.

PUBLICATIONS *(continued)*

- B. H. Nall, "Time and Space Resolution of Bulk Acoustic Waves Generated Concomitantly with Rayleigh Surface Waves by an Interdigital Transducer," *J. Appl. Phys.* **46**, No. 5, May 1975, 1884-1892.
- A. N. Jette, "Coupling Constants of the Fine and Hyperfine Interaction in the $c^3\pi_\mu$ Metastable State of H_2 ," *J. Chem. Phys.* **62**, No. 11, June 1, 1975, 4579-4580.
- A. A. Westenberg and N. deHaas, "Reaction Rates of $O + CH_3Br$ and $OH + CH_3Cl$," *J. Chem. Phys.* **62**, No. 11, June 1, 1975, 4477-4479.
- R. F. Gasparovic and L. D. Tubbs, "Influence of Reference Source Properties on Ocean Heat Flux Determination with Two-Wavelength Radiometry," *J. Geophys. Res.* **80**, No. 18, June 20, 1975, 2667-2671.
- F. F. Mark, C. B. Bargerion, and M. H. Friedman, "Experimental Investigation of Laminar Flow in a Rectangular Cross Section Bifurcation," *Proc. ASME 1975 Biochem. Symp.*, Troy, N.Y., June 23, 1975, 7-10.
- A. N. Bloch, D. O. Cowan, K. Bechgaard, R. E. Pyle, and R. H. Banks (The Johns Hopkins Univ.) and T. O. Poehler (APL), "Low Temperature Metallic Behavior and Resistance Minimum in a New Quasi-One-Dimensional Organic Conductor," *Phys. Rev. Letters*, **34**, No. 25, June 23, 1975, 1561-1564.
- R. M. Somers and T. O. Poehler (APL), P. E. Wagner (Univ. of Maryland), "Microwave Time Domain in Fabry-Perot Emission Spectrometer," *Rev. Sci. Instr.* **46**, No. 6, June 1975, 719-725.
- L. L. Perini, "Economical Scheme for Estimating Orbital Lifetimes," *J. Spacecraft and Rockets* **12**, No. 6, June 1975, 323-324.

ADDRESSES

Principal recent addresses made by APL staff members to groups and organizations outside the Laboratory.

- D. M. Silver, "Molecular Applications of Many-Body Perturbation Theory," *International Symposium on Atomic, Molecular, and Solid-State Theory, Collision Phenomena and Computational Methods*, Sanibel Island, Florida, January 21, 1975.
- L. Monchick, "An Alternate Representation of Gas Transport Properties," *Washington Area Statistical Mechanics Symposium*, National Bureau of Standards, Gaithersburg, Md., January 22, 1975.
- E. P. Gray, "Some Further Studies of Radiofrequency Supplemented Mirror Confinement," *U.S.—Australian Workshop on Plasma Waves*, Sydney, Australia, February 13, 1975.
- V. O'Brien, "Modeling Blood Flow," *Bioengineering Seminar*, The Johns Hopkins University, Baltimore, February 24, 1975.
- The four following addresses were presented at the meeting of the *American Physical Society*, Denver, March 31-April 3, 1975:
- T. O. Poehler (APL), A. N. Bloch (The Johns Hopkins Univ.), et al., "Microwave Response of Quasi-One-Dimensional Conductors;"
- A. N. Bloch, D. O. Cowan (The Johns Hopkins Univ.), T. O. Poehler (APL), et al., "Low Temperature Metallic Behavior and Resistance Minimum in the New Organic Conductor HMTSF-TCNQ;"
- D. O. Cowan, A. N. Bloch (The Johns Hopkins Univ.), T. O. Poehler (APL), et al., "The Organic Metallic State;"
- R. E. Pyle (APL), A. N. Bloch (The Johns Hopkins Univ.), T. O. Poehler (APL), et al., "Conducting and Insulating Forms of the New Organic Transfer Salt HMTSF-TCNQ."
- N. A. Blum, "Spectroscopy from A to Z," Chesapeake Section of *American Association of Physics Teachers*, Goucher College, Baltimore, May 3, 1975.
- R. E. Hicks, "Hybrid Assembly and Packaging with Polyimides," *Capital Chapter Symposium, International Society for Hybrid Microelectronics*, Washington, D. C., May 7, 1975.
- F. J. Adrian, "Overhauser Mechanisms of Chemically Induced Nuclear Spin Polarization," *European Chemical Society on Chemically Induced Magnetic Polarization*, St. Pierre de Chartreuse, France, May 21-23, 1975.
- F. G. Satkiewicz, "Initial Energy Distributions of Secondary (+) Ions from the Sputtering of Non-metallic Solids with Ar^+ (3 KeV to 10 KeV)," *23rd Annual Conference on Mass Spectrometry*, Houston, May 28, 1975.
- R. L. McCally and R. A. Farrell, "Light Scattering from Cells in the Rabbit Cornea," *Ninth Annual Corneal Research Conference*, Boston, June 13-14, 1975.
- F. F. Mark, C. B. Bargerion, and M. H. Friedman, "Experimental Investigation of Laminar Flow in a Rectangular Cross Section Bifurcation," *ASME 1975 Biomechanics Symposium*, Troy, N.Y., June 23, 1975.
- L. W. Ehrlich, "Solving the Biharmonic on Irregular Regions," *SIAM Summer Meeting*, Lehigh University, Bethlehem, Pa., June 17-19, 1975.

HONORS AND AWARDS

G. W. Luke, Supervisor of the Advanced Weapons Systems Branch of the Fleet Systems Department has been awarded the Distinguished Public Service Award, highest such award the Navy bestows on civilians. He was honored for his technical contributions which, according to the citation, "immeasurably improved the defense posture and capability of Navy surface ships." Mr. Luke is AEGIS program manager.

M. M. Schaefer, senior editor in the Space Department, was named U.S. Delegate to the International Council and World Conference for Technical Communications to be held in Malmo, Sweden, in September 1975.

D. D. Zimmerman, Technical Staff member of the Engineering

Facilities Division, has been elected Senior Vice President of the International Society for Hybrid Microelectronics.

PATENTS

S. Kongelbeck—*Missile Connector*, Patent No. 3,883,209.

F. S. Billig, J. C. Pirkle, S. E. Grenleski, Jr.—*High Reactivity Fuels for Supersonic Combustion Ramjets*, Patent No. 3,883,376.

D. W. Rabenhorst—*Spoked Disc Flywheel*, Patent No. 3,884,093.

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E. L. Nooker—*Rod Warhead*, Patent No. 3,888,180.

R. E. Fischell—*Rechargeable Demand Inhibited Cardiac Pacer and Tissue Stimulator*, Patent No. 3,888,260.

APL COLLOQUIA

Apr. 4—"Kites and Boomerangs," by P. E. Garber, Smithsonian Institution.

Apr. 18—"Different Approaches to High Temperature Superconductivity," by B. T. Matthias, Univ. of California/San Diego.

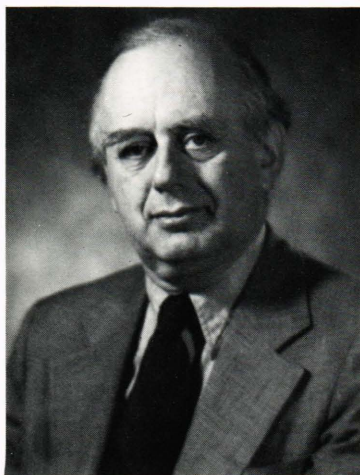
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May 23—"Tropospheric Effects on Satellite Range Measurements," by Helen S. Hopfield, Applied Physics Laboratory.

WITH THE AUTHORS



W. G. Berl received the Ph.D. degree in physical chemistry in 1941 from the Carnegie Institute of Technology where he served as research fellow and instructor for four years. A specialist in combustion, propulsion, fuels and propellants he was employed by APL in 1945. Dr. Berl

was a member of the APL Propulsion Panel from 1955 to 1965 during which period he was responsible for research and development in high-energy fuels. From 1963 to 1972 he was Supervisor of the Chemistry Research Group. Since 1972 he has been Co-Principal Investigator of the Fire Problems Project. Dr. Berl has been editor or associate editor of numerous publications including *Fire Research Abstracts and Reviews* (1958-64), *American Rocket Society Journal* (1960-62), *AIAA Journal* (1963-64), *Combustion and Flame* (1966-71), *AAAS Annual Meetings* (1967-71), and *Proceedings of the 10th and 11th International Symposia on Combustion* (1964, 1966), and is a member of the Editorial Board of *Combustion and Flame*. He is a Fellow of the New York Academy of Sciences and of the American Association for the Advancement of Science, and is the author of more than 30 technical papers.



R. A. Fristrom received the Ph.D. in chemistry from Stanford University in 1949 while he was a Research Fellow at Harvard (1948-51). A specialist in nonaqueous electrochemistry, microwave spectroscopy and combustion, he joined APL in 1951 to do research in flame structure

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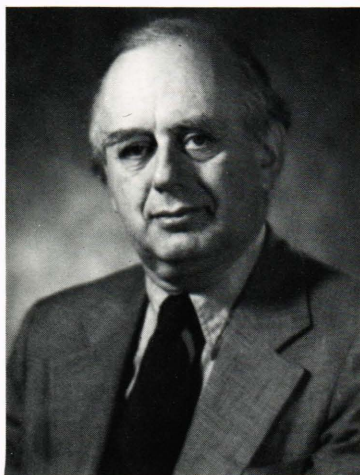
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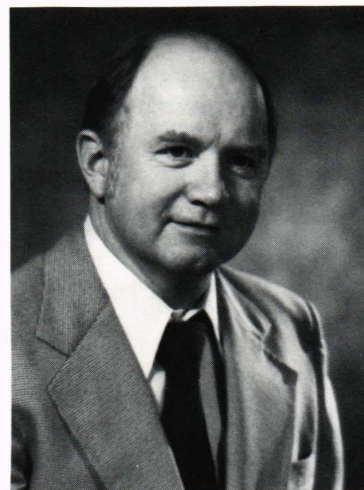


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and the microwave structure of free radicals. Since 1963, he has been conducting molecular beam studies of chemical kinetics. In 1970 he was Principal Investigator of the National Science Foundation's Fire Research Synthesis Program. He is now Principal Investigator of APL's Fire Problems Project. A member of numerous professional societies, working groups, and advisory committees, Dr. Fristrom has served as vice chairman of the 1965 Gordon Conference on Molecular Beams and Scattering Processes, editor of *Fire Research Abstracts and Reviews* (1965–present), chairman of the Ad Hoc Subcommittee on Chemical Kinetic Tables (1968–present), and chairman and organizer of the NAS/NRC Symposium on The Role of Chemistry in Fire (1971). He has received the Silver Medal of the Combustion Institute, The Hillebrand Award of the Chemical Society of Washington, The Humboldt Foundation's Senior Research Fellowship and their Award in Honor

of the 25th Anniversary of the Marshall Plan. Dr. Fristrom is the author of over 70 technical papers. His article "Radicals in Flames," was published in Volume 2 of the Digest (1963).

B. M. Halpin received his B.S. degree in mathematics from California State Polytechnic College and did graduate work in physics, mathematics and computer science at several universities. Except for working at General Electric (1953–54) as a technical trainee in various equipment-testing assignments, and at Hayes International Corp. (1965–66) in operations research on Air Force unguided missiles, Mr. Halpin has spent his professional career at APL. Starting in 1958 as an associate engineer he has participated in weapons systems analysis and worked on Project LAP with the Weapons Systems Evaluation Group (WSEG). Since 1966, he has been a mathematician involved in effectiveness evaluation of weapons sys-



tems. Concurrently, since 1970, Mr. Halpin has been heavily involved in systems analysis on fire department operations and fire problems involving fatalities. He is a member of several national professional societies and has written six papers on fire problems.