

Writing and Research and Development Awards

Each year the Applied Physics Laboratory honors members of its professional staff for meritorious writing and for accomplishments in independent research and development (IR&D) programs. The 17 November 1998 reception for the Principal Professional Staff marked the occasion of the 13th annual announcement of awards and prizes to APL staff for outstanding publications and signal achievements in science, technology, and education during the preceding year.

Thirty-six publications were submitted by eight technical departments to compete in the 1997 writing awards program; of these, nine papers won either an award or an honorable mention. Members of the Editorial Board of the *Johns Hopkins APL Technical Digest* judged the entries and based their selections of winning publications primarily on mastery of the subject matter, importance of the science and engineering, and clarity.

For many years, the Laboratory's IR&D activities were conducted under the able guidance of Robert W. Hart when he served as Chairman of the Research Center (now the Research and Technology Development Center), then as Assistant Director for Exploratory Development, and later as Assistant Director for Research and Exploratory Development. In recognition of his many contributions to the Laboratory, the R. W. Hart Prizes for Excellence in Independent Research and Development were established in 1988 to signify the importance of the IR&D program to the long-term future of APL.

Similar to the process for the writing awards, nominations for science and engineering projects considered to be outstanding were solicited from each APL Department. Members of the IR&D Advisory Council judged the projects and based their selections on the scientific and technological effect of the results and their importance to the work of the Laboratory. Prizes and honorable mention are given for both the best research project and the best development project. Two projects were recognized in the 1997 program.

The R. W. Hart Prize for research was awarded to James D. Franson and Todd B. Pittman for their novel approach in obtaining large interactions between individual photons, demonstrating that a useful quantum computer that can implement a large number of bits is potentially realizable. Such a computer would aid in solving complex mathematical problems and would efficiently factorize large integers, rendering conventional cryptography insecure. The R. W. Hart Prize in development was awarded to Binh Q. Le, Ark L. Lew, Richard H. Maurer, and Elbert Nhan of the Space Department and Jennifer A. Davis, Jean S. Deboy, Jay R. Dettmer, David M. Lee, S. John Lehtonen, and Katherine J. Mach of the Technical Services Department for their collaborative contributions to chip-on-board technology in developing a space-qualified manufacturing process for flight electronic hardware miniaturization.

The recipients of the 1997 awards and prizes are listed on the following pages, along with the titles of their publications and projects.

Linda L. Maier-Tyler

AWARDS RECOGNIZING PUBLICATIONS
BY APL STAFF MEMBERS (1997)

OUTSTANDING FIRST PAPER IN A CLASSIFIED
OR UNCLASSIFIED PUBLICATION

Award

Michele M. Bierbaum and Donald D. Duncan, "A Holistic Approach to the Theater Ballistic Missile Defense Infrared Discrimination Problem," in *Proc. AIAA/BMDO Technology Readiness Conf.*, San Diego, CA (Aug 1997).

OUTSTANDING PAPER IN *THE JOHNS HOPKINS
APL TECHNICAL DIGEST*

Walter G. Berl Award

Denis J. Donohue, Hwar-Ching Ku, Donald R. Thompson, and John Sadowsky, "Direct Numerical Simulation of Electromagnetic Rough Surface and Sea Scattering by an Improved Banded Matrix Iterative Method," 18(2), 204–216 (1997).

Honorable Mention

George M. Murray, Amanda L. Jenkins, Anton Bzhelyansky,* and O. Manuel Uy, "Molecularly Imprinted Polymers for the Selective Sequestering and Sensing of Ions," 18(4), 464–472 (1997).

OUTSTANDING RESEARCH PAPER IN AN EXTERNALLY
REFEREED PUBLICATION

Award

James D. Franson, "Cooperative Enhancement of Optical Quantum Gates," *Physical Review Letters* 78(20), 3852–3855 (1997).

Jeng-Hwa Yee, Geoff Crowley,* Raymond G. Roble,* Wilbert R. Skinner,* Mark D. Burrage,* and Paul B. Hays,* "Global Simulations and Observations of O(¹S), O₂(¹Σ) and OH Mesospheric Nightglow Emissions," *Journal of Geophysical Research* 102(A9), 19,949–19,968 (1997).

Honorable Mention

Brian J. Anderson, Robert B. Decker, Nikolaos P. Paschalidis, and Theodore E. Sarris,* "Onset of Nonadiabatic Particle Motion in the Near-Earth Magnetotail," *Journal of Geophysical Research* 102(A8), 17,553–17,569 (1997).

OUTSTANDING DEVELOPMENT PAPER IN AN EXTERNALLY REFEREED PUBLICATION

Award

Fernando J. Pineda, Gert Cauwenberghs,* and R. Timothy Edwards,* "Bangs, Clicks, Snaps, Thuds and Whacks: An Architecture for Acoustic Transient Processing," *Advances in Neural Information Processing Systems* 9, 734–740 (1997).

Honorable Mention

James C. Spall and Daniel C. Chin, "Traffic-Responsive Signal Timing for System-Wide Traffic Control," *Transportation Research Part C* 5(3/4), 153–163 (1997).

SPECIAL PUBLICATIONS

Award

Jeffery W. Warren, Keith Peacock, Edward H. Darlington, Scott L. Murchie, Stephen F. Oden, John R. Hayes, James F. Bell III,* Stephen J. Krein,* and Andy Mastandrea,* "Near Infrared Spectrometer for the Near Earth Asteroid Rendezvous Mission," *Space Science Reviews* 82, 101–167 (1997).

*Non-APL staff

R. W. HART PRIZE HONORING EXCELLENCE IN INDEPENDENT
RESEARCH AND DEVELOPMENT (1997)

Prize Winner—Research

An Optical Approach to Quantum Computing

James D. Franson
Todd B. Pittman

Prize Winner—Development

Chip-On-Board Technology

Jennifer A. Davis
Jean S. Deboy
Jay R. Dettmer
Binh Q. Le
David M. Lee
S. John Lehtonen
Ark L. Lew
Katherine J. Mach
Richard H. Maurer
Elbert Nhan