Writing and Research and Development Awards

The emergence of the 21st century has seen a dramatic shift in national defense priorities resulting from the rise of terrorism and other unconventional threats. APL faces significant challenges in responding to the new national agenda while preserving its excellence in core areas such as conventional and strategic warfare and space research and exploration. Independent Research and Development (IR&D) is critical in supporting the Laboratory's resolve to foster new technologies and concepts to meet these challenges. Publications are not only a metric by which we can test this resolve, but also a significant means by which APL innovations are communicated to the world at large.

It is now particularly relevant for APL to encourage and reward both written and technical achievement. One way the Laboratory does this is through awards programs to honor staff who make signal contributions to science, engineering, and scholarship through outstanding publications and innovative work in IR&D projects. The awards for meritorious writing and the R. W. Hart Prizes are annual competitions that represent APL's best in publication and in advanced research and engineering for the previous year.

Since the establishment of the publications awards competition in 1985, the Editorial Board of the Johns Hopkins APL Technical Digest has been responsible for soliciting nominations from each department and evaluating them according to stringent criteria. Publications must conform to professional standards and are judged on significance and clarity, with considerably greater weight given to the former. Winners are recommended for either an award or honorable mention in six categories.

The entries for the 2000 publications competition were diverse and of especially high quality, most presenting ideas to the scientific and engineering community for the first time. Eight departments nominated 26 articles, 1 professional book, 1 special publication (for book editing), and 3 book chapters; of those, 7 won awards and 5 received honorable mention.

The Hart prizes were established in 1989 both to signify the importance of the IR&D program to the long-term future of the Laboratory and to reward achievement in high-quality innovative projects. The competition was named for Robert W. Hart, former Assistant Director for Research and Exploratory Development, to recognize his many contributions to these activities. Two prizes are given, one for research and the other for development. Department Heads recommend candidates, and the Science and Technology Council judges the nominations on the quality and importance of the work to APL.

Ten projects were nominated for the 2000 program; of these, three won prizes and one received honorable mention. The R. W. Hart Prize for Research was awarded to Fernando J. Pineda, Peter F. Scholl, Amy K. Karlson, Miquel D. Antoine, Jeffrey S. Lin, Bernard F. M. Collins, and Nancy E. Woods for their work involving novel approaches to microorganism identification using matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry. Honorable mention was given to James C. Spall, Daniel C. Chin, Stacy D. Hill, John L. Maryak, David R. Stark, David W. Hutchison, and Laszlo Gerencser for their contributions to stochastic optimization and control in extending the simultaneous perturbation stochastic approximation (SPSA) algorithm for optimization, and comparing SPSA to other leading optimization algorithms. Two projects received the Hart Prize for Development. Joseph S. Lombardo, Howard S. Burkom, Richard A. Wojcik, and Fernando J. Pineda won honors for their development of a prototype biosurveillance system that provides an automated alert of biological terrorist events using autonomous agents. Patrick A. Stadter, Eric A. Olsen, and Mark. S. Asher won for their work in improving relative navigation algorithms for formation flying.

The recipients of the writing awards and Hart prizes for 2000 were honored at the fall Principal Professional Staff reception held on 5 November 2001. Their photographs are displayed on the following pages, along with the titles of their publications and projects.

Linda L. Maier-Tyler

AWARDS RECOGNIZING PUBLICATIONS BY APL STAFF (2000)

Outstanding First Paper in a Classified or Unclassified Publication

Award

Louise M. Prockter
Senior Professional Staff
Ph.D., Brown Univ., 2000
Planetary Geology

Robert T. Pappalardo (non-APL staff)

for "Folds on Europa: Implications for Crustal Cycling and Accommodation of Extension," *Science* **289**, 941–943 (2000)

Outstanding Research Paper in the *Johns Hopkins APL Technical Digest*

Walter G. Berl Award

Donald R. Thompson
Principal Professional Staff
Ph.D., Univ. of Minnesota, 1968
Microwave Ocean Remote Sensing

Robert C. Beal
Principal Professional Staff
M.S., Univ. of Maryland, 1968
Remote Sensing and Marine Applications

for "Mapping High-Resolution Wind Fields Using Synthetic Aperture Radar," **21**(1), 58–67 (2000)

Outstanding Development Paper in the *Johns Hopkins APL Technical Digest*

Walter G. Berl Award

Ronald R. Luman
Principal Professional Staff
D.Sc., The George Washington Univ., 1998
Systems Engineering

for "Integrating Cost and Performance Models to Determine Requirements Allocation for Complex Systems," **21**(3), 408–425 (2000)

Outstanding Research Paper in an Externally Refereed Publication

Award

James C. Spall
Principal Professional Staff
Ph.D., Univ. of Virginia, 1983
Statistical Analysis and System Modeling

for "Adaptive Stochastic Approximation by the Simultaneous Perturbation Method," *IEEE Transactions on Automatic Control* **45**(10), 1839–1853 (Oct 2000)

Honorable Mention

James R. Kuttler
Principal Professional Staff
Ph.D., Univ. of Maryland, 1967
Radar Systems Analysis

Denis J. Donohue (former APL staff member)

for "Propagation Modeling Over Terrain Using the Parabolic Wave Equation," *IEEE Transactions on Antennas and Propagation* **48**(2), 260–277 (2000)

Outstanding Development Paper in an Externally Refereed Publication

Award

Brian J. Anderson
Principal Professional Staff
Ph.D., Univ. of Minnesota, 1987
Space Physics, Magnetospheres

Kazue Takahashi
Senior Professional Staff
Ph.D., UCLA, 1983
Magnetospheric Physics

Bruce A. Toth
Senior Professional Staff
M.S., Loyola College in MD, 1993
Software Engineering

for "Sensing Global Birkeland Currents with Iridium® Engineering Magnetometer Data,"
Geophysical Research Letters **27**(24), 4045–4048 (2000)

Honorable Mention

Michael E. Thomas
Principal Professional Staff
Ph.D., Ohio State Univ., 1979
Applied Spectroscopy,
Optical Propagation

Richard I. Joseph
Principal Professional Staff
Ph.D., Harvard Univ., 1962
Electromagnetic Theory

Milton J. Linevsky
Senior Professional Staff (ret.)
Ph.D., Penn State College, 1953
Spectroscopic Properties of Materials

Patrick S. Wayland (non-APL staff)

for "Multiphonon Extraordinary-Ray Absorption Coefficient for Sapphire,"
Infrared Physics & Technology **41**, 307–312 (2000)

Honorable Mention

Dexter G. Smith
Principal Professional Staff
D.Eng., Rensselaer Polytechnic Inst., 1984
Electrical and Biomedical Engineering

Harvey W. Ko
Principal Professional Staff
Ph.D., Drexel Univ., 1973
Electromagnetics, Biomedical Engineering

Willie R. Drummond
Senior Professional Staff
M.Admin.Sci., JHU, 1989
Aerosol Measurement

Jacqueline K. Telford
Principal Professional Staff
Ph.D., North Carolina State Univ., 1979
Statistics

Steven R. Potter (non-APL staff) Benjamin R. Lee (non-APL staff) Alan W. Partin (non-APL staff)

for "*In Vivo* Measurement of Tumor Conductiveness with the Magnetic Bioimpedance Method," *IEEE Transactions on Biomedical Engineering* **47**(10), 1403–1405 (2000)

Outstanding Professional Book

Award

Marty Hall
Principal Professional Staff
M.S., JHU, 1986
Java and Web Technology

for *Core Servlets and JavaServer Pages*, Sun Microsystems Press and Prentice Hall, 575 pp. (2000)

Special Publications

Award (for Book Editing)

Isaac N. Bankman
Principal Professional Staff
Ph.D., Technion Univ., 1985
Sensors, Modeling, and Algorithms

for *Handbook of Medical Imaging: Processing and Analysis*, Academic Press (2000)

Honorable Mention (for Book Chapter)

Harry K. Charles Jr.
Principal Professional Staff
Ph.D., JHU, 1972
Electronic Packaging

for "Thermal and Mechanical Stress Behavior in Electronic Packaging," Chapter 3, in
Electronic Packaging and Interconnection Handbook, C. A. Harper (ed.), McGraw-Hill, New York, pp. 3.1–3.51 (2000)

David M. Van Wie
Principal Professional Staff
Ph.D., Univ. of Maryland, 1986
Hypersonic Technologies

for "Scramjet Inlets," Chapter 7, in *Scramjet Propulsion: Progress in Astronautics and Aeronautics*,
Vol. 189, E. T. Curran and S. N. B. Murthy (eds.), AIAA, Reston, VA, pp. 445–509 (2000)

R. W. HART PRIZE

Excellence in Research

Prize

Fernando J. Pineda
Principal Professional Staff
Ph.D., Univ. of Maryland, 1986
Neural Networks, Bio-informatics, and Modeling

Peter F. Scholl
Senior Professional Staff
Ph.D., JHU, 1995
Sensor Science

Amy K. Karlson
Associate Professional Staff
M.S., JHU, 2000
Software Design and Development

Miquel D. Antoine
Senior Professional Staff
Ph.D., UMBC, 1998
Biological Mass Spectrometry Applications

Jeffrey S. Lin
Senior Professional Staff
M.S., JHU, 1989
Automated and Intelligent Systems

Bernard F. M. Collins
Senior Professional Staff
Ph.D., JHU, 1995
Mass Spectrometry Analysis

Nancy E. Woods
Senior Professional Staff
Ph.D., UCLA, 1982
Physics, Modeling, and Applications

for "Novel Approaches in Defense Bioinformatics"

Honorable Mention

James C. Spall
Principal Professional Staff
Ph.D., Univ. of Virginia, 1983
Statistical Analysis and System Modeling

Daniel C. Chin
Senior Professional Staff
M.S., Northern Illinois Univ., 1970
Mathematics and Systems Analysis

Stacy D. Hill
Senior Professional Staff
D.Sc., Washington Univ., 1983
Physics, Modeling, and Applications

John L. Maryak
Senior Professional Staff
Ph.D., Univ. of Maryland, 1972
System Test and Evaluation

David R. Stark
Senior Professional Staff
M.S., Univ. of Tennessee, 1988
Weapon System Analysis

David W. Hutchison
Associate Professional Staff
M.S., MIT, 1983
Systems Analysis and Evaluation

Laszlo Gerencser (non-APL staff)

for "Stochastic Optimization and Control"

Excellence in Development

Prize

Joseph S. Lombardo
Principal Professional Staff
M.S., JHU, 1974
Bio-information Systems

Howard S. Burkom
Senior Professional Staff
Ph.D., Univ. of Illinois, 1976
Biosurveillance

Richard A. Wojcik
Principal Professional Staff
M.S., JHU, 1985
Information Technology

Fernando J. Pineda
Principal Professional Staff
Ph.D., Univ. of Maryland, 1986
Neural Networks, Bio-informatics, and Modeling

for "Automated Alerting for Bioterrorism Using Autonomous Agents"

Patrick A. Stadter
Senior Professional Staff
Ph.D., The Pennsylvania State Univ., 1997
Distributed Spacecraft Systems
and Technologies

Eric A. Olsen
Senior Professional Staff
Ph.D., Stanford Univ., 2000
Guidance, Navigation, and Control

Mark S. Asher
Principal Professional Staff
M.S., Virginia Polytechnic Inst., 1982
Space Systems Applications

for "Improvement in Relative Navigation Algorithms for Formation Flying"