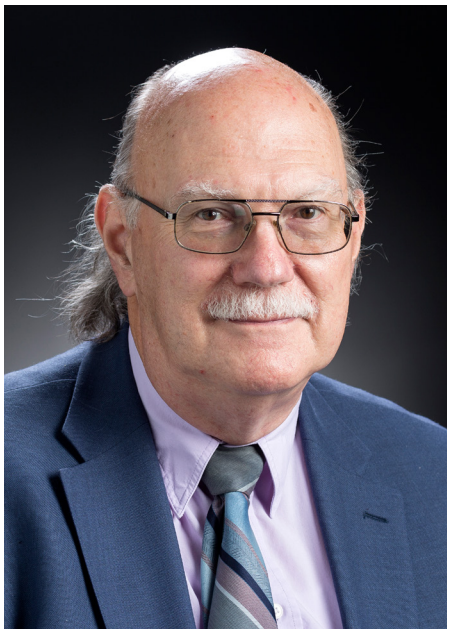

Harry K. Charles Jr. (1944–2025)

Dr. Harry K. Charles Jr., an APL Master Inventor, former department head, and deeply respected expert in electrical engineering and microelectronics, died on May 8, 2025, at the age of 80.

After earning his doctorate in electrical engineering at Johns Hopkins University in 1972, Harry began his career at APL in 1973 as a senior engineer in microelectronics. As an expert in the development and packaging of miniaturized electronic, electro-optical, and electromechanical devices, he created systems for use in a wide variety of challenging environments, including in space and underwater, and for an equally broad range of applications, including avionics and biomedicine.

Harry was recognized internationally for his work in interconnection, wire-bond testing, thin- and thick-film circuitry, multi-chip modules, and ultrathin and flexible laminate packaging technology. He published more than 200 technical papers on his work. His outstanding record of 17 issued patents and more than 50 invention disclosures was recognized with an APL Master Inventor Award in 2016. Harry was a member of APL's Principal Professional Staff and received an APL Lifetime Achievement Publication Award in 2012. He was also a Life Fellow of the International Microelectronics and Packaging Society. The citation for this honor expressed appreciation for Harry's community leadership in the field of electronics packaging technology.

Harry served in many leadership roles at APL, including section, group, and branch supervisor positions; a chief engineer position; and head of the Technology Services Department. From 2013 to the time of his retirement in 2024, he served as the editor in chief of the *Johns Hopkins APL Technical Digest*.

As a firm believer in lifelong learning, Harry was a dedicated educator. He served as the group supervisor of the APL Education Center from 2013 to 2024. In this position, he managed the Johns Hopkins University Whiting School of Engineering (WSE) master's degree program, Engineering for Professionals (EP). This program now serves more than 7,000 students across the world. He also served as chair of EP's Applied Physics Program and as the associate dean for non-residential graduate programs at the Johns Hopkins Whiting School of Engineering. In addition to his contributions to EP, Harry led the APL Strategic Education Program, which continues to grow and thrive.

Harry was more than just a manager when it came to education. He developed and taught a dozen courses in electrical engineering and applied physics for EP. These courses include:

- Introduction to Electronics and the Solid State, I
- Introduction to Electronics and the Solid State, II
- Introduction to Electronic Packaging
- Semiconductor Device Physics
- Introduction to Electronic Materials
- VLSI Technology and Applications
- Microelectronics Topics

- Solar Energy Technology and Applications
- Material Science
- Alternate Energy
- Solid State Physics
- Nanoelectronics

Enrollments in Harry's courses over the years exceeded 3,000. From 2008 to 2012, Harry taught classes in the Electrical Engineering Department at the United States Naval Academy and held the position of Office of Naval Research Distinguished Chair in Science and Technology. He developed and taught two new courses for electrical engineering majors and served as a mentor for Trident Scholars as well.

When the Doctor of Engineering Program was established at Johns Hopkins University, the pilot program was carried out at APL. Harry served as central coordinator for the program in its early years, even after the pilot program was completed. Once the program was well established, Harry turned the leadership over to a dedicated program director.

Harry was a nationally recognized expert on US postal stamps, and he had an extensive collection of rare stamps. He published many articles for postal journals and regularly attended national and international stamp conferences where he spoke and displayed items from his collection.

At the time of his retirement in 2024, many APL staff members had fond memories of working with Harry.

Allen Keeney, a chief engineer, noted, "When I started at the Lab 26 years ago, Harry was the department head, but he continued to be very involved with the work, which I admired and respected. He also made time to mentor a lowly new grad throughout his early years at the Lab and encouraged me to pursue both technical excellence and my management degree. I am extremely grateful to Harry for his time and efforts."

Mike Boyle, a group supervisor, recalled a very succinct quote from Harry's time as head of the Technology Services Department: "Remember, I have n+1 votes!"

Howard Feldmesser, a principal staff engineer, noted another classic quote from Harry: "It takes a big man to make a small circuit!"

Chris Ratto, a group supervisor, recalled, "I had the pleasure of serving on the committee led by Harry to review APL–Whiting School research assistantships. He was always a pleasure to work with and was dedicated to supporting graduate students whose research could have national impact. As you might imagine, we had quite a few 'out there' applicants with some pretty wild ideas. Harry usually reacted to these with equal parts dry humor and genuine curiosity, which made our hot wash discussions something I always looked forward to. He will be missed."

Hayley Beach, a program coordinator and e-learning technical specialist who worked with Harry in the Office of Education, expressed the thoughts of many in her words: "Harry inspired countless young professionals through his extensive experience and impressive academic background. As a mentor and supervisor, the greatest lesson he shared with me was to never stop learning—a message that continues to guide me. Harry fiercely believed in the power of education as he encouraged others to embrace challenges, pursue advanced degrees, and seize opportunities to grow. His legacy as a lifelong learner and educator will live on."

APL Director Dr. Ralph Semmel knew Harry well and respected him deeply. Ralph's reflections capture the feelings that many of us had for Harry: "Harry was a wonderful colleague, sought-after mentor, and selfless leader. At various times throughout my career at APL, I turned to Harry for sage advice. He cared deeply about the Lab and our staff, and he served as a model for all of us. He held a variety of positions ranging from research scientist to department head, and in his final role at the Lab, he helped us significantly strengthen ties with the university through his stellar leadership of the APL Education Office. We will miss him dearly."

Harry was preceded in passing by his wife of more than 50 years, Virginia Wall Charles. He is survived by his loving daughter, Heather Kay Charles, and two grandsons, Blake and Weston.

Harry's dedication to APL as a premier national research and engineering institution set a high standard of excellence, and everyone who knew and worked with Harry will remember him for his outstanding technical achievements and for exemplifying the APL core value of unquestionable integrity throughout his life.

Harry's family plans to establish a memorial engineering scholarship in his name. To inquire about contributing to this scholarship fund or to share additional thoughts and favorite memories of your time with Harry, email rememberingdrharrykcharlesjr@gmail.com.