Electrical and Electronics Engineers.

Das-Gupta formally retired in 1993, but was subsequently appointed honorary research fellow by UCNW (now called the University of Wales in Bangor). He continued and even increased his very fruitful research—in particular, his dedicated work with young talented scientists from all over the world. During the 1990s, he became one of the leading experts on polymer–ceramic composites and contributed often-quoted review articles to journals and books. His advanced materials characterization group at the university's school of informatics continues to study materials for high-energy storage, smart ferroelectric–polymer composite sensors, electrical and dielectric properties of chemically treated polymers, dielectric spectroscopy of polymers and ceramic–polymer composites, and AC-field aging of power cables in humid environments. Das-Gupta's unexpected death left much of this promising research only partly completed.

Das-Gupta consistently supported and encouraged students and young colleagues. For many years, he was involved in a European Socrates/Erasmus network and hosted, in his laboratory, students from all over Europe. His deep understanding of philosophy and culture and his sensitivity for others' feelings and thoughts were as important as his scientific excellence in making him a very successful teacher and promoter of students and scientists worldwide. Many of the students later had the privilege to become his friends and colleagues. Many of them will continue to promote science in research and teaching in his style, and will remember his generous and open personality with fondness.

Das-Gupta had the rare gift of combining scientific excellence and exactness with personal warmth, deep understanding, and a wonderful sense of humor. We all miss him and offer our sympathy to his family.

Reimund Gerhard-Multhaupt
University of Potsdam
Potsdam, Germany
Sidney B. Lang
Ben-Gurion University of the Negev
Beer-Sheva, Israel

John Myrick Dawson

John Myrick Dawson, who is considered the father of plasma-based accelerators and of computer simulation of plasmas, died in his sleep on 17 November 2001 in Santa Monica, California. He had been suffering from a kidney infection. John also was a professor of physics at UCLA.


John Myrick Dawson

John was born in Champaign, Illinois, on 30 September 1930. He received both his degrees in physics from the University of Maryland, College Park: a BS in 1952 and PhD in 1957. His thesis "Distortion of Atoms and Molecules in Dense Media" was prepared under the guidance of Zaka Slawsky.

On graduation, John joined the Princeton Plasma Physics Laboratory. Initially a research physicist, he rose to head the theoretical group from 1966 to 1973. He also spent two years (1969–71) at the Naval Research Laboratory in Washington, DC, where he started a plasma simulation group. He then joined UCLA in 1973 as a professor of physics and subsequently directed the institute for plasma and fusion research from 1989 to 1991.

John was a leading figure in the plasma physics community for more than four decades, with his contributions to science spanning all of plasma physics. He performed seminal work on magnetic fusion, inertial confinement fusion, space plasmas, plasma astrophysics, free-electron lasers, and basic plasma physics. He also proposed numerous controlled-fusion concepts. A visionary, he realized as early as the late 1950s the potential impact of simulations as a way to test both theories and large construction projects before they were built. He used simulations in 1959 to answer such fundamental questions as how large can a plasma wave become before breaking. During the late 1970s and 1980s, John was using simulations to test out new ideas such as plasma-based acceleration. By the 1990s, he was realizing his broader vision for simulations in such projects as the Numerical Tokamak (see Physics Today, March 1993, page 64). While others have made pioneering contributions to particle simulations, it was John who developed simulation into a third discipline of research, alongside theory and experiment, by showing how powerful a tool it could be.

In the late 1970s and 1980s, while at UCLA, John pioneered the field of plasma-based acceleration. He proposed letting particles surf on the plasma-wave wakes left behind by a laser or a particle beam as it moved through plasma. The fields in these wakes can be more than 1000 times higher than in conventional accelerators. He took great satisfaction in recent experimental successes of plasma-based accelerators and their potential for being greatly miniaturized in the future.

John mentored several generations of plasma physicists and touched countless others with his generously shared insight, bounty of new ideas, and encouragement. Tudor Johnston, a colleague and collaborator of John's from the Institut National de la Recherche Scientifique in Canada, remarked, "It was as if, among the cards lying face down on the table, he knew exactly which cards to choose to play the best hand. Many people with great talent cause discomfort to the less brilliant people around them. Not John, who had such a transparent and kindly nature that I've never met anyone who had a bad word to say of him." A true humanitarian, John believed that science was still the most noble of professions. He believed strongly in the importance of controlled nuclear-fusion research and was particularly proud of his invention of an isotope separation process that was used to detect cancer and, consequently, help save many lives.

John received the James Clerk Maxwell Prize for Plasma Physics in 1977 and the Aneesur Rahman Prize for Computational Physics in 1994; both are the highest honors bestowed by the American Physical Society's plasma physics and computational physics divisions, respectively. He was named California Scientist of the Year by the California Science Center in 1978.

John had successfully overcome life-threatening illnesses several times. Shortly before his death, he had been in improving health and had enjoyed attending APS's division of plasma physics meeting in Long Beach, California. Many attendees may have seen him there, running around in an electric chair, which he said "everyone should have." In conversation with him the night before his death, one of us (Katsouleas) found him to be upbeat about his recovery and tickled that one of his 20-year-old ideas (the surfatron) was in the news as an explanation for cosmic-ray acceleration from supernovae.

We remember John for his eternal optimism and his characteristic smile and chuckle. As two of his former students, we learned many lessons from him, and many of his favorite sayings still ring true and tell something about the man as well as his scientific philosophy. One is, "It is always easier to solve a problem if you know the answer before you start." John used his powerful intuition and the tool he pioneered—computer simulation. He loved new ideas and experimental observations. Chan Joshi, a collaborator and fellow UCLA professor, recounts John's favorite rejoinder to a perplexing observation: "I think we can simulate that!"

John was mentally sharp and active to the end, and he took great pleasure in discussing physics with colleagues, in the continued success of his former students and postdocs, and in the amazing progress being made in particle simulations of plasmas. John was loved by hundreds of colleagues, students, and friends, who created the John Dawson Memorial Fund through the UCLA Foundation. This fund aims to benefit students and young researchers in plasma physics anywhere in the US.

Tom Katsouleas
University of Southern California
Los Angeles
Warren B. Mori
University of California, Los Angeles

Christof Litwin

Christof Litwin, a theoretical physicist with interests ranging from field theory to plasma physics and astrophysics, died 4 October 2001 in Chicago, Illinois, from complications arising from surgery for oral cancer. Christof was a senior scientist in the University of Chicago's department of astronomy and astrophysics.

Born in Lodz, Poland, on 15 June 1949, Christof immigrated to Copenhagen, Denmark, in 1968, both to escape the anti-Semitism then prevalent in Poland and to pursue higher education. In 1972, he received his Part I degree (roughly equivalent to a bachelor's degree in the US) in mathematics and physics from the University of Copenhagen. In 1976, he received his *Cand. Scient.,* the Danish equivalent to a PhD, in theoretical physics from the Niels Bohr Institute for Astronomy, Physics, and Geophysics. His thesis, an early contribution to string theory, was entitled "Dual Strings and Membranes."

Christof Litwin

Christof worked on particle physics at SLAC from 1977 to 1980, but then switched fields as his interests evolved toward collective phenomena. He joined Cornell University in 1980 as a research associate. There, with Ravi Sudan, he investigated a range of plasma problems, including plasma turbulence and the stability of both the spheromak magnetic confinement configuration and tandem mirrors. Christof was named a NATO fellow in science (1977–79).

In 1984, Christof joined the University of Wisconsin–Madison as a research scientist in the department of engineering physics to work on tandem mirrors; Christof later extended his interests to include toroidal systems. At Wisconsin, he worked out the effect of the ponderomotive force on the macrostability of plasma. He will be remembered for linking macroscopic plasma behavior to microscopic turbulence, demonstrating theoretically that certain microinstabilities could spontaneously stabilize large-scale magnetohydrodynamic instabilities. He explained how ion cyclotron instabilities, driven by anisotropic ion temperatures, could arise in tokamak plasmas and stabilize the puzzling sawtooth instabilities seen on the world's largest tokamaks. Christof also hypothesized that alpha particles in a magnetic mirror plasma undergoing fusion could excite velocity–space instabilities that in turn could stabilize interchange instabilities.

Christof's work significantly influenced other experiments. For example, in 1993, at Wisconsin, he pointed out that the experimental effort for searching for a dynamo effect to drive current in a tokamak was flawed, and instead suggested a Landau-resonant current drive. He devised models to infer the location of the wave-driven current from experimental measurements of the loop voltage response and showed how lower hybrid waves could generate current to suppress magnetic turbulence in the reversed field pinch plasma configuration. As a result, the Wisconsin experimental efforts shifted to the directions Christof considered most promising.

Still at Wisconsin, Christof became a visiting associate professor in the department of nuclear physics at the Weizmann Institute of Science in Rehovot, Israel, from 1989 to 1991. His visit turned out to be critical in unexpected ways: There he met his wife-to-be and also made a transition to plasma astrophysics. After explaining fluctuations and transport in the magnetically insulated diode experiments carried out by Yizhak Maron, Christof worked out the consequences of laboratory-based transport theory for the solar corona. This theory sought to explain the corona's highly structured magnetized atmosphere. In 1990, Christof was awarded a *Dr. Scient.* at Copenhagen, a special degree recognition beyond the PhD, without an equivalent in the US.

In 1993, in a landmark paper in the *Astrophysical Journal,* Christof provided a general framework for treating transport in the corona. After moving in 1997 to the University of Chicago, Christof was in the midst of an extraordinarily productive phase of his research in plasma astrophysics, having made important contributions to understanding the stability of accretion columns on neutron stars, the penetration of accreted plasma into the magnetosphere of compact stars, and the acceleration of ultrahigh-energy cosmic rays due to cometary or asteroidal impacts in the magnetospheres of neutron stars, when his life was cut short.

While he was hospitalized in October 2001, Christof was actively engaged, as usual, in a wide variety of calculations, including treatment of magnetic stochasticity on Alfvèn wave propagation and current drive in laboratory plasmas, and new computations of the propagation of ultrahigh-energy cosmic rays in the intergalactic medium. He had even set up his computer in the hospital room, and was