SHUJI NAKAMURA received the 2006 Millennium Technology Prize for developing a new, revolutionary source of light – bright-blue, green, and white LEDs, and a blue laser. Dr. Nakamura is shown here with his blue laser.

Shuji Nakamura Wins the 2006 Millennium Technology Prize

The 2006 Millennium Technology Prize has been awarded to **SHUJI NAKAMURA**. Professor Nakamura has developed a new, revolutionary source of light – bright-blue, green, and white LEDs and a blue laser. The technology is used in several applications that improve the quality of human life. The world's largest technology prize, now being awarded by Finland's Millennium Prize Foundation for the second time, has a value of one million euros.

The Millennium Technology Prize is awarded every second year for a technological innovation that significantly improves the quality of human life. The intention is to encourage human-centered technological development by rewarding both innovations and research and development work that are aimed at improving quality of life and sustainable development. Finnish organizations, industry, and the Finnish government founded and fund the prize. The first Millennium Technology Prize was awarded to Sir Tim Berners-Lee in June 2004 for his invention of the World Wide Web.

Professor Shuji Nakamura's innovation has launched a totally new sector in light-producing semiconductor research and development. His development also made possible the wide-scale industrial production of efficient, energy-saving LED lights and created the conditions for applications that improve the quality of human life.

LED lights have extremely long lives and consume far less energy than normal incandescent lamps. In industrialized countries, the opportunities for energy-saving LED lights are significant – it has been calculated that in the USA alone, replacing current lighting systems with systems based on LED lights could achieve very significant reductions in energy consumption in future decades. The new light sources are also well-suited to operation with solar power systems and are therefore ideal for use in remote areas of developing countries.

One of the most significant future applications for Shuji Nakamura's invention is the sterilization of drinking water, since the use of ultraviolet LEDs makes the water purification process both cheaper and more efficient. Systems based on this technology are expected to improve the lives and health of tens of millions of people.

Data storage and transfer using light generated by blue lasers brings significant benefits, for example, the amount of data stored on CDs or DVDs can be increased by some five times compared to current techniques.

Professor Nakamura was born in Japan in 1954. He has worked in the USA at the University of California, Santa Barbara since 2000, and his research work into new sources of light continues. For more information, visit the Millennium Prize website at www.millenniumprize.fi.

Subhash Singhal Honored with Schoenbein Medal

Fuel cell pioneer **SUBHASH SINGHAL**, a Battelle Fellow, and Director of Fuel Cells at the Department of Energy's Pacific Northwest National Laboratory, has received the Christian Friedrich Schoenbein Gold Medal for his outstanding contributions to solid oxide fuel cell technology. The biennial award is the highest honor presented by the European Fuel Cell Forum. The medal is named for the Swiss scientist who is credited with identifying the fundamental chemistry of fuel cells and, together with Sir William Robert Grove, for the creation of the fuel cell in 1839.

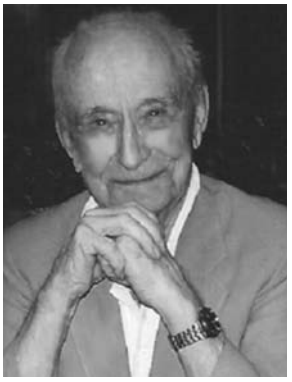
A member of the National Academy of Engineering, Singhal is a Fellow of four professional societies: ECS, American Ceramic Society, ASM International, and American Association for the Advancement of Science; and is a senior member of TMS, the Mineral, Metals & Materials Society. He also has served on numerous national and international advisory panels. Singhal has been very active in ECS. He is a past chair of the High Temperature Materials Division, currently chair of the ECS Publication Committee, and has been the lead organizer of the very successful Solid Oxide Fuel Cells Symposium.

Dr. Singhal joined PNNL in April 2000, after nearly 30 years at Siemens Westinghouse Power Corporation, where he led development of solid oxide fuel cell technology from a laboratory curiosity to fully integrated 200 kW power generation systems. At PNNL, Singhal provides senior technical, managerial and commercialization leadership to the laboratory's fuel cell program.

Singhal has authored more than 75 scientific publications; edited 13 books; received 13 patents; and delivered over 225 plenary, keynote, and other invited presentations worldwide. He is an adjunct professor in the Department of Materials Science and Engineering at the University of Utah and serves on the Visiting Advisory Board of the Department of Materials Science and Engineering at the University of Florida.

The award was presented to Singhal by Professor John Kilner, chair of the Seventh European Solid Oxide Fuel Cell Forum, and Ulf Bossel, chair of the European Fuel Cell Forum, during the closing ceremony of the forum's July meeting in Lucerne, Switzerland.

In Memoriam



Ferdinand Anne Kröger

1915-2006

Ferdinand A. Kröger passed away on March 17, 2006 in Encinitas, California, survived by his former wife Elisabeth J. Kröger-Hofdijk, son Frank, daughter Catharine, granddaughter Solange, and grandsons Mathew and Robert.

Professor Kröger was born in Amsterdam in 1915; and in 1937, at the young age of 22, received his doctorate in physical chemistry from the University of Amsterdam. His early work was in luminescence in solids. In 1940, he reported the first observation of a series of emission peaks below the absorption edge that are spaced apart by a longitudinal phonon energy in the II-VI compounds. He summarized the early work in the book *Some Aspects of Luminescence of Solids* published in 1948 by Elsevier. In 1964, after research positions at Philips, in The Netherlands, and Mullard Research Laboratories in the UK, he moved to the USA with his family. He became a founding professor of the Materials Science Department at the University of Southern California. He directed doctoral dissertations of his students in II-VI compounds and oxides. Many of his students went on to occupy key positions in leading industrial research laboratories at ATT, IBM, 3M, and Aerojet Systems. Others took the entrepreneurial route establishing their own small companies.

Professor Kröger was a recipient of numerous awards that include USC Viterbi School of Engineering Research Award and the Chandon Gold Medal from the French Mineralogy Society. He was elected to the Royal Dutch Academy of Sciences. Professor Don Smyth of Lehigh University reflected that "Professor Kröger was one of the intellectual giants in the field of defect chemistry, as he built on the pioneering work of Carl Wagner and Walter Schottky that began in the early 1930s. One of his lasting contributions was his participation in the development and promotion of a systematic and logical scheme of defect notation known as Kröger-Vink notation, which is now universally used. It brought order to a chaotic mix of strange notations that had previously been used. He also promoted the use of the Brouwer approximation of charge neutrality to develop the graphical representation of defect concentrations as a function of the nonmetal/metal activity in compound crystals now known as Kröger-Vink diagrams. He summarized his work in his monumental monograph, *The Chemistry of Imperfect Crystals* (a wonderful title). I had the privilege of meeting Professor Kröger at a number of conferences and of discussing some of our own work with him. His approval was a matter of great pride to me. He leaves behind an enduring record of achievements."

The legacy of Professor Kröger's passion for understanding and correlating the physico-chemical properties of materials to their defects or imperfections as he called them, is of paramount importance in the industrial processing of materials in the development and manufacture of modern day optoelectronic and microelectronic devices.

This notice was prepared by Prof. Kröger's colleague, V. Swaminathan, and by Prof. Kröger's family, students, and other colleagues.

Errata

In the summer 2006 issue of Interface, in the "Denver, Colorado Meeting Highlights" article (p. 10), we regrettably misspelled the name of the Vittorio de Nora Award winner, Florian Mansfeld. Prof. Mansfeld provided the additional information about his career. We apologize to Dr. Mansfeld for the errors.

Dr. Mansfeld began his award address by recognizing his mentors and co-workers in the field of electrochemistry and corrosion science. After obtained his PhD in physical chemistry at the University of Munich (Germany), he joined Prof. H. H. Uhlig's corrosion lab at MIT in 1967. This marked the start of his career as a corrosion scientist. In 1969 he joined the NASA Electronic Research Center at Cambridge (Massachusetts), where he worked with S. Gilman and M. Salomon. He then started working at the North American Science Center (later called the Rockwell International Science Center) with scientists that had carved out distinguished careers of their own, such as K. Oldham, E. Parry, and G. Lauer. In 1978, he became manager of the Interface Phenomena Group. Dr. Mansfeld mentioned the extensive work he performed with his colleague M. Kendig in many areas of corrosion research, especially in the development of the electrochemical impedance spectroscopy (EIS) technique as a powerful tool in corrosion research. Finally, he mentioned important collaborations with B. Little and C. Breslin, and acknowledged the contributions of his many postdoctoral fellows and graduate students. In 1985 Dr. Mansfeld became a professor of materials science at USC.

In the summer 2006 issue of Interface, in the "Denver, Colorado Meeting Highlights" article (p. 9), in the bottom photo, the names of the people were transposed. The photo, and its correct caption, appear below.

The 2006 Henry B. Linford Award was presented to ***Derek Pletcher*** *(right) by ECS President* ***Bill Smyrl****. The award is given for excellence in teaching in subject areas of interest to ECS.*