

Winners of National Medals of Science, Technology Named

Leading scientists and others involved in research that reflects the nation's innovative spirit and helps maintain its economic competitive edge have been recognized with the 2004 National Medal of Science and the 2004 National Medal of Technology, the nation's highest honors for scientific achievement and technological innovation.

Award recipients were announced in November by President Bush and will receive their medals in a White House ceremony later this year.

The National Medal of Science, which is administered by NSF, recognizes researchers who have made major contributions in science, engineering, or mathematics during their careers. Including the winners for 2004, the award has gone to 417 scientists and engineers since it was established in 1959. Of the eight recipients in 2004, two are involved in physics-related work.

Robert N. Clayton received a medal "for his contributions to geochemistry and cosmochemistry that provided major insights into the evolution of the solar system through his discovery of non-mass-dependent isotope shifts in meteorites." He was also recognized "for being an exemplary role model as a mentor, teacher and advocate for rigorous science." Clayton is Enrico Fermi Distinguished Service Professor Emeritus at the University of Chicago.

Edwin N. Lightfoot won a medal "for his innovative research and leadership in transport phenomena focusing on biochemical and biomedical engineering with application to blood oxygenation, bioseparation techniques and diabetic responses." He is

Hilldale Professor Emeritus at the University of Wisconsin, Madison.

The National Medal of Technology, bestowed by the president since 1985, was mandated by Congress in 1980 to recognize significant contributions to the nation's economic strength and standard of living. Of the two individual recipients of medals in 2004, one does physics-related work; of the five companies receiving the 2004 medals, two are involved in physics-related work.

Roger Lee Easton of RoBarCo in Canaan, New Hampshire, received

the award "for extensive pioneering achievements in spacecraft tracking, navigation and timing technology that led to the development of the NAVSTAR—Global Positioning System (GPS)," accord-

ing to the US Department of Commerce.

IBM's microelectronics division, based in East Fishkill, New York, is being recognized "for over four decades of innovation in semiconductor technology, including the development and introduction of the DRAM cell, copper wiring, silicon on insulator (SOI) technology, and high speed silicon germanium devices."

Motorola, Inc of Schaumburg, Illinois, is receiving a medal "for over 75 years of technological achievement and leadership in the development of innovative electronic solutions, which have enabled portable and mobile communications to become the standard across society."

Mineral Physicists Win Balzan Prize

Two Carnegie Institution researchers who have spent decades analyzing the behavior and properties of minerals exposed to extreme conditions, especially high pressure, have been jointly awarded the Balzan Prize in mineral physics by the International Balzan Foundation. Four prizes awarded annually recognize achievements in science, art, the humanities, and social sciences. Since 1961, 106 scientists, institutions, and others



Hemley



Mao

have received the Balzan Prize, including Mother Teresa, Jean Piaget, and the Nobel Foundation.

Russell J. Hemley, a senior staff scientist at the institution's geophysical laboratory in Washington, DC, and director of the US Carnegie/Department of Energy Alliance Center (CDAC), and **Ho-kwang Mao**, a senior staff scientist at the institution's geophysical lab, won the award "for the impressive impact of their joint work leading to fundamental breakthroughs, theoretical and experimental, in the field of minerals submitted to extreme physical conditions," according to the foundation's citation.

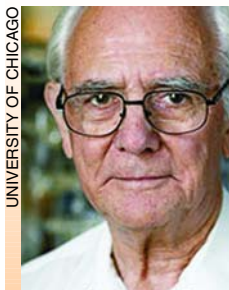
The foundation said the two "have operated as a highly effective team, characterized by twenty years of research contributions at the highest level. They have developed techniques which allow them to study the behaviour of a wide range of materials, such as hydrogen, the most abundant 'mineral' in the universe. Their results have deep implications for our understanding of nature."

Although the scientists' work has focused largely on researching the properties of materials at high temperatures, they also examine materials at pressures of up to 2.5 megabars. (See PHYSICS TODAY, August 1998, page 26.)

Hemley, who began his research in molecular spectroscopy and electronic structure theory, early on became interested in the effects of pressure in such studies; at Carnegie he began to apply and extend new chemical physics techniques in high-pressure diamond anvil cell experiments, according to the institution's website. Since then, his research has expanded to include high-pressure experimental and theoretical studies in fundamental chemistry and physics, Earth and planetary science, and materials science.



Easton



Clayton



Lightfoot