

US Naval Research Laboratory in Washington, DC; and Ekimov is principal scientist at Nanocrystal Lighting Corp in Elmsford, New York.

Donald R. Scifres received the John Tyndall Award, cosponsored with the IEEE (Institute of Electrical and Electronics Engineers)/Lasers and Electro-Optics Society, "for seminal contributions to semiconductor laser diode technology that powers the optical fiber networks and as an entrepreneur in creating one of the premier companies that brings to practice the semiconductor diode laser technology to serve the fiber optics industry." Scifres founded and is managing director of SDL Ventures, an investment firm focusing on technology startups, and is chairman of a subsidiary, SDL Capital, both based in Los Altos, California. Scifres received the award last March.

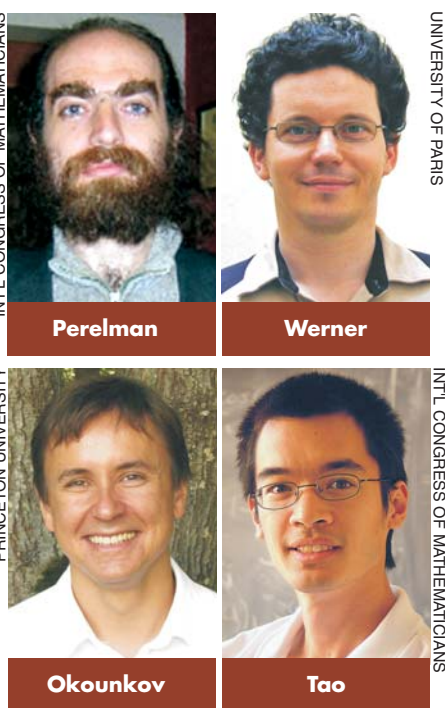
Fields Medals awarded to four

The 2006 recipients of the Fields Medal—considered by mathematicians around the world to be equivalent to the Nobel Prize—were named in August at the International Congress of Mathematicians during a ceremony in Madrid. The International Mathematical Union awards the honors every four years to mathematicians under 40.

For the first time in the prestigious prize's 40-year history, one of this year's recipients turned down the medal and \$9500 purse and declined to attend the August ceremony. **Grigori Perelman**, whose work may have resolved two outstanding problems in topology, the Poincaré conjecture and the Thurston geometrization conjecture, refused the prize after receiving a personal visit and invitation to the ceremony from Sir John Ball, IMU president. Perelman, who last December left his job of some years as a researcher at the Steklov Institute of Mathematics in St. Petersburg, Russia, had been named as a recipient of the medal "for his contributions to geometry and his revolutionary insights into the analytical and geometric structure of the Ricci flow," according to the award citation.

The other three recipients, who accepted their awards and attended the ceremony, are as follows.

Wendelin Werner, professor of mathematics at the Université de Paris-Sud and at the École Normale Supérieure, also in Paris, received the medal "for his contributions to the development of stochastic Loewner evolution, the geometry of two-dimensional Brownian motion,



and conformal field theory."

Andrei Okounkov, a mathematics professor at Princeton University, was named "for his contributions bridging probability, representation theory, and algebraic geometry."

Terence Tao, who won the medal "for his contributions to partial differential equations, combinatorics, harmonic analysis, and additive number theory," is a mathematics professor at UCLA.

obituaries

PHYSICS TODAY has changed the way it publishes obituaries. Some will continue to appear in print, but most will be available only online (see PHYSICS TODAY, October 2005, page 10). Subscribers can visit <http://www.physicstoday.org/obits> to notify the community about a colleague's death and submit obituaries up to 750 words, comments, or reminiscences. Each month, recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

Hershel Markovitz

Hershel Markovitz, emeritus professor of mechanics and polymer science in the department of chemistry at Carnegie Mellon University, died on 29 August 2006 in Jerusalem. He is

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Randolph A. Nanna, Publisher

known for his pioneering work on the linear viscoelasticity of polymer solu- tions, his later theoretical and experi- mental research on normal stress effects in such materials, and educational movies on polymer rheology, for which he was author and principal.

Born in McKeesport, Pennsylvania, on 11 October 1921, Hershel spent most of his life in Pittsburgh until he moved with his wife Marion to Jerusalem in 1987. He earned a BS in chemistry from the University of Pittsburgh in 1942 and a PhD in chemistry, with a dissertation on the viscosity of polyacrylic acid solu- tions, from Columbia University in New York in 1949. That same year he re- turned to Pittsburgh and joined the fel- lowship on synthetic rubber properties at the Mellon Institute of Industrial Re- search, where he began a long and ex- tremely successful career researching the rheology of polymers and their solu- tions. Among his early collaborators at the institute were Louis Zapas and Frank Padden Jr.

Hershel's early research helped him develop the strategies he pursued throughout his career: the construction of instruments for measuring dynam- ical mechanical properties and the de- velopment of the theory needed to properly interpret results obtained with those instruments. From 1954 to 1957, Hershel led the fellowship and began his seminal experimental and theoret- ical research on normal stress effects in what are known today as viscometric flows. It was also in this period that one of us (Casassa) joined the fellowship to research dilute polymer solutions.

The Mellon Institute was restruc- tured into independent and sponsored research divisions in 1957: Paul Flory was brought in as the director of re- search, Thomas Fox was put in charge of polymer research, Casassa was pro- moted and one of us (Coleman) was re- cruited to join Hershel as senior fellow, and several new fellows, including two of us (Plazek and Berry), were ap- pointed to the newly formed polymer group in the independent research di- vision. Around this time, Hershel and Casassa published their work on the second virial coefficient of polymer solu- tions and Hershel published papers on normal stress effects, all of which strongly influenced Coleman and Wal- ter Noll, then at the Carnegie Institute of Technology, who together developed a general theory of viscometric flows.

In the decade that followed, Hershel deepened his interest in normal stress effects while continuing his experimen- tal research, in collaboration with

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Hershel Markovitz

Plazek, on linear viscoelasticity, with emphasis on the frequency and tem- perature dependence of dynamic prop- erties. He was a visiting lecturer at the Johns Hopkins University in Baltimore, Maryland, in 1958–59 and a Fulbright fellow at the Weizmann Institute of Sci- ence in Rehovot, Israel, in 1964–65. His research with Coleman, initiated in 1963, revealed that when second-order fluids are considered to be slow-flow approximations to fluids with long- range but gradually fading memory, al- gebraic relations emerge between the intrinsically nonlinear normal stress ef- fects and certain parameters in the lin- ear theory of viscoelasticity, and those relations appear capable of experimen- tal verification. Hershel also collabo- rated with Coleman and Noll on the book *Viscometric Flows of Non-Newtonian Fluids, Theory and Experiment* (Springer- Verlag, 1966).

In 1967 Hershel accepted a profes- sorship, which offered him the oppor- tunity to create courses in rheology for the graduate program in polymer sci- ence, from the newly created Carnegie Mellon University, a merger of Mellon Institute and the Carnegie Institute of Technology. He taught the courses until

Recently posted death notices at <http://www.physicstoday.org/obits>:

Marvin H. Wilkening
13 March 1918 – 24 September 2006

Hans J. Coufal
17 January 1945 – 19 September 2006

Larry Spruch
1 January 1923 – 10 August 2006

his retirement in 1986, and the university recognized his excellent teaching skills in 1982 by presenting him with the Julius Ashkin Teaching Award. Through his scholarship and vitality, he produced publications on the history of rheology, several encyclopedia articles, and films still in use that illustrate fascinating implications of the normal stresses that occur in viscometric flows. The research he conducted while at Carnegie Mellon included experimental studies of linear viscoelastic properties of polymer solutions, polymer dispersions, and semicrystalline polysiloxane and theoretical studies of implications of the theory of materials with fading memory.

Hershel was active in scientific affairs, serving as the chairman of the American Physical Society's division of high polymer physics (1961–62) and president of the Society of Rheology (1969–71). He sat on the editorial boards and had editorial positions with the *Transactions of the Society of Rheology* (1967–69) and the *Journal of Polymer Science* (1966–88). In 1967 he was awarded the Bingham Medal from the Society of Rheology.

During his career Hershel published research papers with 26 different coauthors and worked informally with many more. All of us in the science community who interacted with Hershel felt great affection for him. His generosity with his time and knowledge was much appreciated by the many students he helped, and by those of us who had the wonderful opportunity to be his colleague and friend.

Guy C. Berry

Edward F. Casassa

*Carnegie Mellon University
Pittsburgh, Pennsylvania*

Bernard D. Coleman

*Rutgers University
New Brunswick, New Jersey*

Donald J. Plazek

*University of Pittsburgh
Pittsburgh, Pennsylvania*

Elizabeth Armstrong Wood

Elizabeth Armstrong Wood, first woman scientist at Bell Telephone Laboratories, died of a stroke on 23 March 2006 in Freehold, New Jersey.

Betty was born on 19 October 1912 in New York City and earned a BA degree in geology in 1933 from Barnard College. She then went to Bryn Mawr College, where she was awarded an MA in geology in 1934 and a PhD in geology in 1939. Her interest in crystallography



Elizabeth Armstrong Wood

was greatly encouraged at Bryn Mawr by Lindo Patterson, who was in the physics department. After working as an instructor in geology and mineralogy at Bryn Mawr and Barnard and as a research assistant at Columbia University, Betty joined the physics research department at Bell Telephone Laboratories in Murray Hill, New Jersey, in 1943; she maintained a research program there until she retired in October 1967.

Betty's scientific studies were in x-ray crystallography and involved new semiconducting, lasing, magnetic, and superconducting materials, with an emphasis on those displaying both ferromagnetic and piezoelectric properties. She also investigated the effects of oriented electric fields on a variety of materials. In those early days of crystal-structure determination, she contributed expertly to the development of methods for measuring and interpreting x-ray diffraction patterns.

Whether through discussions at lunch or in the corridor or through direct collaboration, Betty's interactions with other researchers at Bell Labs contributed immeasurably to the mutual advancement of their science. Her scientific advice was constantly sought, as acknowledged in the company's official history *A History of Engineering and Science in the Bell System: Physical Sciences* (1925–1980) (AT&T Bell Laboratories, 1983). She collaborated with many outstanding scientists who were among the most inventive minds at Bell Labs, including Richard Bozorth, Bernd Matthias, Robert Miller, Walter Bond, Lester Germer, Alan Holden, and Joseph Remeika. The AT&T historical