quantitatively the relationship between structure and properties of crystalline polymers by lattice-dynamical theory and by using data he has accumulated through structural analysis and spectroscopy.

Tadokoro obtained his doctorate from Osaka University in 1959. Since then he has continued his research activities there and was a professor in the department of polymer science when he retired this April. In addition to his extensive contributions to technical journals in both English and Japanese, Tadokoro is the author of the text *Structure of Crystalline Polymers*.

Recognized as one of the leading authorities on the relationship between the solid-state structure mechanical properties in polymeric solids, Takayanagi performed pioneering work in the area of dynamic mechanical analysis, now used to classify solid-state dispersion phenomena. He invented the "Rheovibron," a direct-reading viscoelastometer widely used as a tool for investigating the relation of properties to structure in polymers. He developed the Takayanagi model, a mechanical model to describe the viscoelasticity of two-phase polymeric systems. Takayanagi established the viscoelastic relaxation response of polymer crystals by measuring the dynamic viscoelasticities of single-crystal mats of polymers. One recent outgrowth of his extensive studies of the physical properties of solid-state polymers, is the possibility now being investigated of extruding polymers in the solid-state.

Takayanagi received his doctorate in engineering from Kyushu University in 1960, where he had obtained his bachelor's degree in 1944 and had been teaching since that time. From 1960 to the present he has been a professor in the department of applied chemistry at Kyushu University. In addition to his research contributions, Takayanagi has been honored for his contributions to education. He has also served the scientific community by organizing international conferences in his field and by serving on the editorial boards for several journals.

Whipple receives RAS Gold Medal

Fred Lawrence Whipple, Phillips Professor of Astronomy emeritus and a former director of the Smithsonian Astrophysical Observatory, has been awarded the Gold Medal of the Royal Astronomical Society in London. He was recognized by the Society "for his work and leadership in geophysics and astronomy."

Whipple has made many contributions to astronomy, including developing the first optical tracking system for artificial satellites using a network of Baker–Nunn cameras; a modified version of this network, enhanced by laser systems, is still used today to gather geodesic and geophysical data. His techniques for photographically measuring the speeds and decelerations of meteors, his methods for computing the orbits of comets and asteroids, and his theoretical model for describing the structure of comets, are considered scientific standards.

He came to Harvard University in 1931, after obtaining his PhD in astronomy from the University of California at Berkeley. At Harvard he served as chairman of the astronomy department from 1949 to 1956, as director of the Smithsonian Astrophysical Observatory from 1955 to 1973, and as Phillips Professor of Astronomy from 1970 until his retirement in 1977.

Under his leadership as director of the Observatory, the Mt. Hopkins installation was conceived and constructed. Whipple was instrumental in the development of this facility, including selecting the site in the Santa Rita Mountains and serving as a member of the planning group for the Multiple Mirror Telescope installed at Mt. Hopkins. In recognition of his leadership role the Mt. Hopkins facility was recently renamed in his honor "The Fred Lawrence Whipple Observatory."

Whipple still plays an active role on the senior scientific staff of the Observatory.

obituaries

Robert d'Escourt Atkinson

Robert d'Escourt Atkinson, professor emeritus of astronomy at Indiana University, died 28 October 1982 at the age of 84.

Atkinson was born in Wales and graduated from Oxford University in physics. In 1928, he received his PhD from Göttingen, working under James Franck. He was on the faculty at Rutgers University before returning to England in 1937 as Chief Assistant at the Royal Observatory, Greenwich. He remained at the Royal Observatory until his retirement in 1964, after