
Professor LeRoy Eyring Recipient of the Seventh Frank H. Spedding Award

Professor LeRoy Eyring was presented the Seventh Frank H. Spedding Award at a special plenary session at the 20th Rare Earth Research Conference in Monterey, California on September 13, 1993.

Based on the nomination letters submitted on his behalf, the Spedding Award Committee composed the following citation:

“The Seventh Frank H. Spedding Award for excellence in research in the science and technology of rare earths is hereby awarded to Professor LeRoy Eyring as a founder and lifetime contributor to research into the thermodynamics and structures of rare earth oxides and, more generally, the defect structures and chemistry of solid state phases of complex stoichiometry. Professor Eyring’s studies provided keys to understanding the occurrence of unusually wide-ranging stoichiometries in certain solid phases in terms of coherent intergrowth processes among stoichiometric compounds of closely spaced compositions. He has particularly studied the oxidation and reduction processes of model praseodymium and terbium oxide systems with oxidation states above the trivalent state. He has precisely characterized the complex behavior of their disordered and ordered intermediate phases via superb thermodynamic analyses and high resolution electron microscopy, and in so doing, developed experimental techniques that have general applications in investigations of the defect behavior of solids”.

The Spedding Award Committee wishes to express its sincere appreciation for the continuing support of the Spedding Award by Rhone-Poulenc Industries, and to Mr. Patrick Maestro of Rhone-Poulenc Recherches, who presented the Award to Professor Eyring in Monterey. The Award Session was followed by a lecture given by Professor Eyring, who outlined the history of some of his major accomplishments in the study of defect structures in rare earth oxides, particularly via the use of thermodynamic and electron microscopy techniques.

LeRoy Eyring was born December 26, 1919, in Pima, Arizona. He earned a B.S. with “high distinction” at the University of Arizona in 1943, followed by service in the United States Navy (1944–1946) and graduate study at the University of California, Berkeley, from which he received the Ph.D. in 1949. He was appointed Assistant and Associate Professor at the University of Iowa in the period 1949–1961.

Professor Eyring travelled in Europe under a National Science Foundation Postdoctoral Fellowship (1958), and to Australia with a Guggenheim Fellowship and Fulbright-Hays Award (1959–1961). Upon his return to the U.S., he assumed the Chairmanship of the Department of Chemistry at Arizona State University in 1961, after which he was named Regent’s Professor of Chemistry (1988) and Professor Emeritus (1990). He made major contributions to the establishment of the Solid State Science Center under NSF support during the period 1969–1972, and served as Director of the Center from 1974–1976.

Professor Eyring has authored over 175 scientific papers and book chapters, and has edited or co-edited 10 books, as well as the familiar 18-volume, *Handbook on the Chemistry and Physics of Rare Earths* with Karl Gschneidner, Jr. He has received other honors, including establishment of the *Eyring Lectures in Chemistry* at Arizona State University in 1988, dedication of Volume 156 of the *Journal of the Less-Common Metals* in 1989 to mark his 70th birthday, and the Frank H. Spedding Lectureship at Iowa State University in 1993, and many other invited lectureships. He is a member of the editorial board of the *Journal of Solid State Chemistry*, *Progress in Solid State Chemistry*, *High Temperature Science*, and was Chairman of the Solid State Chemistry Division of the American Chemical Society of Inorganic Chemistry in 1979.

Professor Eyring’s early work on oxides of Tb and Pr continues to be of relevance to current problems involving the role of oxygen defect structures in high temperature superconductors, and he has continued to pioneer the application of high resolution transmission electron microscopy to study the complex phase equilibria of “nonstoichiometric” oxides and other materials.



LeRoy Eyring

On behalf of the Spedding Award Committee, it gives me great pleasure to congratulate Professor LeRoy Eyring (alias, "Mr. Rare Earth Oxides" to many of his colleagues) on his superior contributions to solid state chemistry.

Professor Lance E. DeLong
(University of Kentucky)
Chair, Seventh Frank. H. Spedding Award Committee, 1993