

Presentation of the Mineralogical Society of America Award for 1986 to Antonio Castro Lasaga

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Antonio C. Lasaga is one of the most prominent young geochemists in the world today. In his specialty, the field of kinetics of geochemical processes, he is judged by many in the geosciences to be the leading authority. Indeed, he has published a series of outstanding papers in this field that will influence the development of the science for many years to come. These papers cover a wide variety of topics including diagenetic changes in sediments, chemical reactions between minerals and supercritical fluids, and the growth and dissolution of crystals in molten silicate magmas. Tony has also published a number of equally important papers in the field of mineralogy on electronic, dielectric, and ionic polarizabilities; point defects; diffusion and molecular modeling of structures; vibrational spectra; and physical properties of minerals and glasses. What may be even more surprising, he has also written several important papers in the field of chemical physics on the photodynamics of polyenes as it relates to the functioning of the human eye and on excitation operators and random phase approximations. Clearly Tony fulfills all the requirements of the Mineralogical Society of America Award regarding outstanding original work, youth, and current activity. But first, before we present him with the award, let me give you a brief account of this brilliant young man's life.

Tony was born in Havana, Cuba, in 1949, a week prior to Christmas Eve. His formal schooling began at the age of four when his parents entered him in a private school run by the Jesuits. According to his mother, "He was not too good in mathematics in the first grades but he was a great soccer player, so much so that his classmates chose him to be their team captain." However, as is well known, the political climate in Cuba changed in early 1959 when the Batista regime was overthrown by Castro who replaced it with a communist dictatorship. With the loss of individual rights and freedoms, many thousands of Cubans fled the island including Tony, who went to Reno, Nevada, with his parents where he quickly learned to speak English by selling and delivering the Reno *Evening Gazette*. The following year he moved with his parents to the East Coast where he graduated from St. Anthony's in Falls Church, Virginia, as their best academic student and from Gonzaga High School in Washington, D.C., as the class valedictorian. In fact, Tony did so well at St. Anthony's that he was advised by one of his teachers to

consider the Church as a vocation as "he would make a marvelous priest." Fortunately for our science, Tony elected to enter Princeton University in the fall of 1967 where he studied chemistry and won highest honors and received both the coveted Robert Thornton McCay Prize and the Sigma Xi Book Award. Not only did the class of 1971 consider him the most brilliant student in his graduating class, but one of his chemistry professors referred to him as "the most creative student at Princeton in the past 10 years." In the fall of 1971 Tony traveled north to Harvard University where he earned a master's degree in physics in 1973 and a Ph.D. in chemical physics in 1976. It was during this time that Tony formulated "his beautiful analysis of the mathematics of non-steady-state diagenesis . . . , and he solved the diffusion equation for the exchange of cations between neighboring crystals of silicate minerals during retrograde metamorphism." This outstanding work won Tony the 1979 F. W. Clarke Medal. By the way, Tony is the first scientist to win both the Clarke Medal and the MSA Award. Following a brief joint lectureship in the chemistry and geology departments at Harvard, Tony joined the geosciences faculty at the Pennsylvania State University in 1977 as a geochemist. Having made this important decision, Tony was now committed to a challenging career in the Earth sciences. Drawing upon his strengths in physics, chemistry, and mathematics, he set to work formulating and applying rigorous and sophisticated arguments in a theoretical interpretation of kinetics of water-rock reactions, geochemical cycles, and diffusion in sediments and rocks that culminated in much of the material in the MSA Reviews *Kinetics of Geochemical Processes*, a volume that stands as an elegant synthesis of much of his work. During this time, he also made several important and fundamental contributions in mineralogy and petrology. Following a leave at Yale University in 1982 as a visiting associate professor of geochemistry, Tony joined the Yale faculty where he is currently having success modeling the structures, the spectra, and the physical properties of both crystalline and vitreous silica using the tools of molecular mechanics. Mr. President, Members and Guests, it gives me great pleasure to present to you my good friend and colleague Tony Lasaga, the 1986 Mineralogical Society of America Award winner.