

Presentation of the Mineralogical Society of America Award for 1987 to Donald J. DePaolo

EDWARD STOLPER

Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California 91125, U.S.A.

It is a great pleasure to introduce Dr. Donald J. DePaolo for this year's Mineralogical Society of America Award. He is a close friend and in my opinion one of the outstanding Earth scientists of our generation, and I am pleased to have this opportunity. However, one of his most charming characteristics is his modesty, and I will try to follow his one request to me regarding this introduction, and that is that I be brief.

Anyone can look up Don's history: He did his undergraduate work at SUNY Binghamton, received his Ph.D. at Caltech, and then joined the faculty at UCLA, where he is currently professor of geology and geochemistry. In about six months, he will be moving to the faculty at U.C. Berkeley. What is not so easy to look up is an analysis of his contributions to science that explains his achievements and why it is so appropriate that he is being singled out today. I will try to convey such an explanation to you by describing only one of his many contributions.

Don was among the first to apply the Sm-Nd parent-daughter system to a study of terrestrial igneous rocks. Many things emerged from this work, but the one I want to emphasize was a model of the mantle as a two-reservoir system and the imaginative identification of the source region of depleted mid-ocean ridge basalts with the upper mantle and a primitive, undepleted reservoir with the lower mantle. The implications of this for the structure, dynamics, and energetics of the Earth are profound. In some of its details and perhaps even in some of its generalities, this model was certainly incomplete and perhaps even wrong (Don probably disagrees, but he is at least for the moment enjoined from speaking, and it would be very impolite for him to contradict me in his acceptance speech). But in my opinion, this does not matter. The model he proposed was, and still is, the starting point for all subsequent efforts to integrate petrological, geochemical, and geophysical constraints on mantle evo-

lution. He was able to generalize exquisitely from his data to issues that extended across much of Earth science and to do so with such clarity that his thinking on this subject has permanently impacted not only geochemists, but also geophysicists, petrologists, and mineral physicists.

This encapsulates why Don has emerged as such a force in our science. It is not just that he has incredibly high intellectual standards for both himself and others, or that his work is technically outstanding and innovative, or that he is such a good geologist and petrologist. It is that in all of his work—be it on mantle structure and evolution, on the growth of continents, the petrogenesis of basic intrusions, development and application of the K-Ca isotopic system to dating and elucidating petrogenesis, high-precision analysis of Sr isotopes in sediments, or spearheading a proposal to drill the oceanic crust in Hawaii—he has the breadth, imagination, and gumption to apply his work to the larger issues in the science. In part this reflects good taste in problems, but something more is involved. In my many interactions with Don, I have witnessed an unusual clarity of thinking when it comes to identifying the important questions and in translating the need to answer them into concrete actions.

I have not checked the roster of previous recipients, but it is clearly unusual for an isotope geochemist to receive the MSA Award. Because of this, I think that this year's award reflects especially highly on both our society and the recipient. On the society, because it accurately illustrates our vision of the breadth of the MSA's role in promoting the Earth sciences. On the recipient, because it recognizes the scope and impact of his pioneering isotopic studies into the evolution of our planet.

Ladies and gentlemen, Mr. President, I am proud to present my friend Donald J. DePaolo for the 1987 MSA Award.