

Acceptance of the Mineralogical Society of America Award for 2000

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Mr. President, members of the society, and guests:

Thank you so much, President Carlson, and Raymond for those kind words. At the start of the new millennium, I am enormously grateful to be the 50th recipient of the MSA award. On hearing that I had received this award, I did what anyone with a peculiar fascination with the literature might (or might not) do: I wandered to my library and read all of the previous 49 citations and acceptances of this award. This was both a humbling and interesting experience, particularly in identifying the commonalities and differences between myself and previous award winners. Of those 49, the vast majority thanked their parents, so I will begin by thanking mine, without whom (obviously) I wouldn't be here today. Also, an amazingly large number of previous awardees loved rocks and minerals from the moment they were born: for these the MSA Award seemed to represent a logical career step that was predetermined *in vivo*.

I see myself as having fortuitously arrived at this award through a bit of a random walk, so I will bother you briefly with the details of how I think I got here. I was born and raised in Delaware, a state economically most famous for chemical companies. Geologically, I was brought up on a coastal plain: an area where, when you threw a rock, it shattered—a state composed of solidified mud, overlain by duPonts, chicken farms and quick-and-easy means of incorporation. Rocks held little or no interest for me as I grew up, and I can't point to a hobby that relates even remotely to what I do today. When the time to go to the University rolled around, I decided that I would do what a good young academic brat from Delaware should do, and majored in chemistry. I went slightly up the road to Princeton University. I enjoyed chemistry but, truth-to-tell, wasn't across-the-board the finest student. To support my occasionally parentally unacceptable GPA (and my parents had very high standards), I discovered courses in the geology department for which my chemistry background left me unusually well prepared. So, I took a few geology classes and, with one notable exception, enjoyed them immensely. They were interesting, provocative, intellectually stimulating and, best of all, had no pre-meds. There was, however, one geology class that I really hated. This was, of course, Mineralogy. The less said about this the better... I walked away from that class re-motivated to continue in chemistry.

At the same time, I was working on my senior thesis in the chemistry laboratory of Don McClure, the great solid state spectroscopist: a gentleman who had pioneered the applications of



crystal field theory to oxide systems. I had an absolute blast working in his lab, and I still find myself (almost 20 years later) still using tricks that I learned in his lab to obtain spectra of difficult samples. Of course, I didn't recognize the slightest commonality between the infrared spectroscopy that I did for my junior and senior thesis work and mineralogy.

When it appeared that I had to make a choice between more schooling and gainful employment, I tentatively chose the former. However, I had little or no idea what I wanted to study as a graduate student. Reading graduate applications today, I still occasionally cringe at the memory of my applications and visits to programs ranging from chemistry to oceanography to earth sciences. Frank Spera and the late Dave Crerar at Princeton each mentioned to me that, given my background, I might consider expressing some interest in the field of geochemistry in my applications. And so I ultimately found my way to UC Berkeley's Geology and Geophysics Department, where I encountered a suite of memorable characters, including Raymond Jeanloz and Ian Carmichael. I had always thought that folks with ponytails were probably laid-back, mellow sorts, and that Brits were generally low key and unassuming. The only real recollection I have of my initial visit was of telling Raymond, following a rapid fire description of his research, something cringingly naïve like: "Well, this all sounds interesting, but it seems like mineralogy. And I don't like mineralogy. I like

geochemistry.” There was the tiniest of pauses (I later learned to interpret these pauses properly), and he uttered the type of line that all of us search for when recruiting students: “Well, what I do isn’t really mineralogy. It’s geochemistry in its broadest sense.” So, I went to UC Berkeley with the plan of studying jointly between Raymond and Ian. This proved difficult when I (and they) discovered that I actually did not have 48 hours in each day.

Nevertheless, I trundled through graduate school at Berkeley, working primarily with Raymond but still managing to do a couple projects with Ian and his group. Raymond kept me thinking about big-picture problems, while Ian never let me forget that ultimate truth lies in rocks. Somehow or other, I also seemed to be doing a lot of work on minerals during this period. Throughout my time at UCB, I benefited hugely my interactions with my fellow graduate students: these included Becky Lange, Don Snyder, Dion Heinz, George Wolf, Charles Meade, Lee Hirsch, Lars Stixrude, Victor Kress, and Carolina Lithgow-Bertelloni. And, in my last year of graduate school, in perhaps the only inspired decision of my career, I married one of my fellow graduate students, Elise Knittle. I surely would not be here today without her.

We were fortunate to both get positions at the University of California at Santa Cruz, where we have been for the last dozen years. We’ve jointly run our lab there, and she has been my main collaborator not only in a bunch of science, but also in our family of four children. As my Chairman, I suppose she’s also technically my boss. UC Santa Cruz has played the two-

career card with enormous success in Earth Sciences over the last decade, and it is a tribute to my colleagues at UCSC that they have been willing to creatively manage this most challenging of situations.

Most of the work in my career has been collaborative, and I owe a tremendous debt to both my collaborators and students. I’ve spent considerable time at UCSC doing work at the border of seismology, and I believe my seismologic colleagues think that I have learned less seismology than they had hoped, but perhaps more than they’d feared. Justin Revenaugh, Thorne Lay, Ed Garnero, Heidi Houston, and John Vidale have all shown remarkable patience with my muddling in their discipline. Rick Ryerson, Othmar Tobisch, Ken Collerson, and Jim Gill have always been willing to collaborate and publish papers with me on topics both geochemical and structural. I owe perhaps my greatest debt to my graduate students, however. The students I’ve worked with have, as students are supposed to do, pushed me in many diverse and serendipitous directions in my research. Dan Farber, Craig Lundstrom, Jessica Faust, Claire Closmann, Phillip Cervantes, Eli Morris, Murray Eiland, and Henry Scott have taken me on rides into areas spanning from the geochemistry of mid-ocean ridge basalts, to the band structure of semiconductors under pressure, to spectroscopy of archaeological ceramics. Lastly, my colleagues at UC Santa Cruz, too numerous to mention, have provided an intellectually stimulating, intensely collegial environment—and this has contributed in no small part to my receiving this award today.

Thank you again for this honor.