

Acceptance speech for the Leonard Medal of the Meteoritical Society, July 16, 2009

Lawrence GROSSMAN

Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago, 5734 South Ellis Avenue,
Chicago, Illinois 60637, USA
E-mail: yosi@uchicago.edu

(Received 04 August 2009; revision accepted 06 November 2009)

First, I want to thank Munir for the kind words, all those who took the time and effort to write letters nominating me for the Leonard Medal and, of course, the society's Leonard Medal Committee for awarding me this great honor. I also want to express my appreciation to all the members of the Meteoritical Society, just for being such a fascinating group of smart scientists that provided such a vibrant and enjoyable research forum for so many years.

It might seem strange to many of you that a kid who grew up on the city streets of Toronto, Canada, a country not particularly noted for its meteorite research, is standing before you today to receive the Leonard Medal. Let me try to convince you that it may not be so strange after all. I owe thanks to many institutions and people along the way whose advice and direction steered me toward this point in time.

To my parents (Fig. 1), who instilled in me the importance of learning, despite their having less than a high school education themselves; to the Toronto public school system of the 1950s and 1960s, where success was rewarded and failure was an option; to the Toronto public library system (Fig. 2), where a young person's extracurricular scientific interests could be satisfied; to the Royal Ontario Museum (Fig. 3), its Junior Field Naturalists, and the Walker Mineral Club, where a young mineral collector's imagination could run wild; to Bay Street (Fig. 4), where a young boy lacking transportation to mineral collecting localities could go on a field trip by subway, collecting rare minerals by walking from office to office of many of Canada's mining companies, headquartered in its skyscrapers; to Terry Seward (Fig. 5), a boyhood friend and fellow mineral collector, who steered me away from most Canadian universities whose geology programs were focused on the practical aspects of mineral exploration; and instead toward McMaster, my undergraduate university (Fig. 6), which was more oriented toward theoretical geochemistry; to my professors at McMaster,

especially Jim Crocket, Bob McNutt, and Henry Schwarcz (Fig. 7), who all stressed the importance of physical chemistry, and directed me toward American graduate schools for pursuit of my interests in geochemistry; to all those faculty (Bob Gordon, Phil Orville, Brian Skinner), post-docs (Tom Brown, Jack Corliss, Lou Fernandez, Jiba Ganguly, Amitai Katz, Dinkar Kharkar), and graduate students (Don and Sharon Baschinski, Gary Brass, Julius Dasch, John Grover, Mark Kritz, John Morse) at the Kline Geology Lab at Yale University (Fig. 8), who combined to create what became a completely mind-expanding experience during my Ph.D. studies; and especially to my thesis advisers there (Fig. 9): Karl Turekian, a chemical oceanographer with extremely broad scientific interests, who was the first to introduce me to meteorites and was bold enough to supervise a Ph.D. thesis on chondrites; and Syd Clark, who taught me that there is usually a simple way to calculate a good first approximation to almost anything. Condensation calculations have come a long, long way from the days when I rode the New York, New Haven, and Hartford Railway between Yale and the NASA Goddard Institute for Space Studies in Manhattan, carrying multiple boxes of computer punch cards.

I owe thanks to every Canadian university, each of which rejected my application for an assistant professorship in 1972, as my interest in meteorites probably would not have survived the scientific and funding priorities of the Canadian research scene; to Edward Anders, who politely listened to my expression of interest in a postdoctoral position in his lab at Chicago, and then gave me the biggest break of my career by suggesting that I apply instead for an assistant professorship at the same institution; to Joseph V. Smith (Fig. 10), who resurrected my appointment as assistant professor at Chicago just when all seemed lost; to the University of Chicago in general and the Department of the Geophysical Sciences (Fig. 11) and



Fig. 1. Mr. and Mrs. David Grossman, parents of Lawrence Grossman. Photo taken in 1968.

Enrico Fermi Institute in particular for providing a nurturing environment for a cosmochemist, starting at a time when this field was not yet considered “respectable” or worthy of pursuit almost anywhere else in the world.

Here, over the years, providing the intellectual ferment were Fred Anderson, Richard Becker, Julian Goldsmith, Richard Hinton, Munir Humayun, Ian Hutcheon, John Jamieson, Ole Kleppa, Jim Lattimer, Typhoon Lee, Roy Lewis, Alan Matthews, Tosh Mayeda, Carol Molini, Bob Newton, Dave Schramm, Ian Steele, Nathan Sugarman, Steve Sutton, Mark Thiemens, Tony Turkevich, and Peter Wyllie. You all recognize the fellow on the right in Fig. 12 as Bob Clayton, a terrific colleague who can always be counted on for fair criticism that is seldom far from the mark. To this day, I am still not sure whether Bob realizes how encouraging his exclamations of “good stuff” are, or how devastating his shaking of the head “nos” can be. He has had a big influence on the quality and style



Fig. 2. The Earls Court Branch of the Toronto public library system, where Lawrence Grossman spent much of his childhood. Courtesy of *Spacing* magazine.

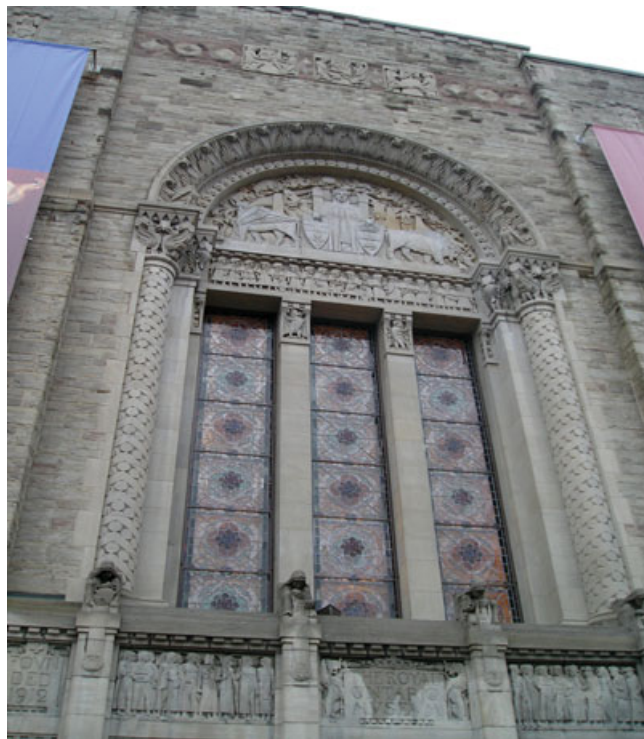


Fig. 3. Main entrance to the Royal Ontario Museum, Toronto, Canada. Courtesy of Wikimedia Commons.

of my work. It dawns on me that many of you here may not recognize the tall person in the middle. That is Edward Anders, a brilliant and creative scientist who pioneered much of what we do in cosmochemistry today. And unfortunately, many of you probably do not recognize the skinny guy with the dark hair on the left, either. That is me. All three of these people have now won the Leonard Medal. I suggest that the probability of winning the Leonard Medal is a lot



Fig. 4. The central business district of Toronto, Canada, around 1970, where many of Canada's mining companies had their head offices. Courtesy of Trainweb.com.



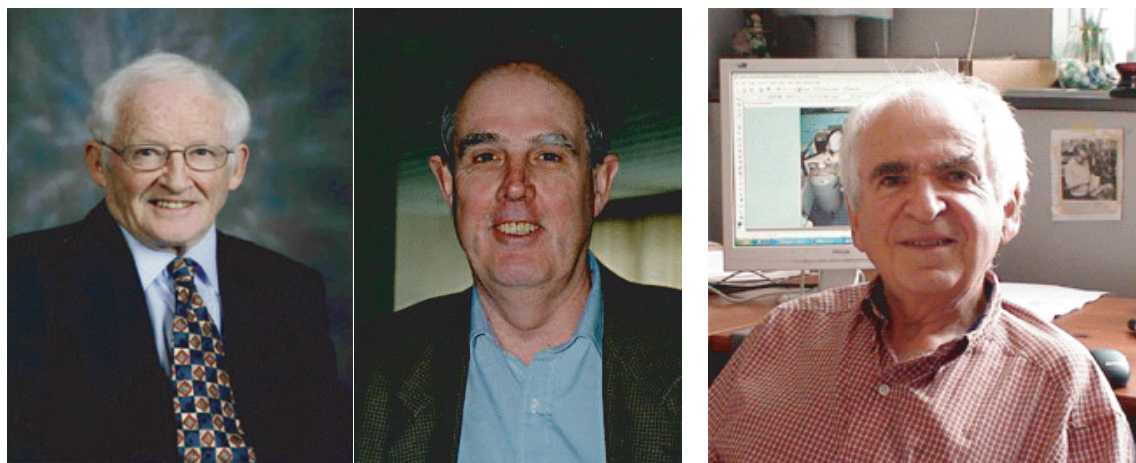
Terry M. Seward

Fig. 5. Terry M. Seward, professor of experimental geochemistry in the Department of Earth Sciences at ETH Zürich, 2009. Courtesy of T. M. Seward.



Hamilton Hall
McMaster University

Fig. 6. Hamilton Hall, the early 1960s home of the Geology Department at McMaster University, Hamilton, Ontario, Canada. Courtesy of Wikimedia Commons.



James H. Crocket

Robert H. McNutt

Henry P. Schwarcz

Fig. 7. Geochemistry faculty in the Department of Geology, McMaster University. Courtesy of Profs. Crocket, McNutt, and Schwarcz.



Fig. 8. Kline Geology Laboratory, home of the Department of Geology and Geophysics, Yale University, New Haven, CT. Courtesy of Yale University Office of Facilities.



Karl K. Turekian



Sydney P. Clark, Jr.

Fig. 9. Ph.D. thesis advisers of Lawrence Grossman. Courtesy of B. J. Skinner and K. K. Turekian.

higher when you grow up in an institution with people like Bob and Ed around you.

I owe thanks to Ed Olsen (Fig. 13), the Curator of Minerals and Meteorites at the Field Museum in the early 1970s, who had enough confidence in a young assistant professor to lend him kilogram-sized specimens of the carbonaceous chondrites, Allende and Murchison; to John Beckett (Fig. 14), the one Ph.D. student I have graduated, who, working largely by himself, did some pretty dangerous experiments that proved that CAIs crystallized in a gas of solar composition; to Glenn MacPherson (Fig. 15), who, as my postdoctoral research associate, convinced me that CAIs crystallized from melt droplets; to Tsuyoshi Tanaka, who figured out how to separate the

Murchison meteorite cleanly into a hydrous silicate fraction and a “jewel box” of sparkling and colorful anhydrous inclusions.

That’s Tanaka, second from the left in Fig. 16. I owe thanks to Shige Yoneda (Fig. 16), who figured out how to incorporate non-ideal, silicate liquid solutions into condensation calculations; to Steve Simon (Fig. 16), whose careful sample documentation and precise electron microprobe analyses have provided a solid underpinning to all of our petrographic interpretations of refractory inclusions since 1989; to Alexei Fedkin (Fig. 16), who worked tirelessly to tame the MELTS program so that it could be used to model chondrule melting and evaporation; to many other research associates who came to Chicago to work with me over the years, among them John Allen, Miriam



Joseph V. Smith
Univ. of Chicago

Fig. 10. Joseph V. Smith, crystallographer and mineralogist at the University of Chicago. Courtesy of the University of Chicago.



Fig. 11. The Henry Hinds Laboratory for the Geophysical Sciences at the University of Chicago. Courtesy of the University of Chicago.

Bar-Matthews, Andy Davis, Denton Ebel, Iwao Kawabe, Ruslan Mendybaev, and Paul Sylvester; to undergraduate students, Chris Palenik and Meredith



Fig. 12. Three future Leonard Medalists at the University of Chicago, around 1973. Courtesy of the University of Chicago.



Fig. 13. Edward Olsen, around 1978, Curator of Minerals and Meteorites, Field Museum of Natural History, Chicago.

Langstaff, and numerous high school interns from the Illinois Math and Science Academy, who were brave enough to volunteer in my laboratory; and to so many colleagues around the world with whom I have had the pleasure to work, most of whom I met at Meteoritical Society meetings.



Fig. 14. John R. Beckett, Ph.D. student of Lawrence Grossman. Courtesy of J. R. Beckett.



Fig. 15. Glenn J. MacPherson, postdoctoral research associate of Lawrence Grossman, around 1981.

Many thanks are due the National Aeronautics and Space Administration, which has provided generous funding for my research on extraterrestrial materials. The existence of such an organization should not be taken for granted, even in a modern western country. Were it not for this agency, I probably would have



Fig. 16. Lawrence Grossman and Robert N. Clayton, with present and former postdoctoral research associates of Grossman. Photo taken in September 2003.



Fig. 17. Wife, Karen, and children, Daniel and Sheryl, of Lawrence Grossman, 1998.

spent my career studying ore minerals in Canada, rather than chondrites in the USA.

And last but certainly not least, to my wife, Karen, and children, Sheryl and Dan, my biggest fans (Fig. 17), who so often discovered me staring off into space, deep in my own thoughts, instead of listening to whatever it was they were trying to tell me at the time. Thank you all.