

Acceptance of the Mineralogical Society of America Award for 2012

KARIM BENZERARA

Institut de Minéralogie et de Physique des Milieux Condensés (IMPCM), 4 place Jussieu, 75005 Paris, France

Thank you very much, Gordon, for these very kind words. I receive the MSA Award with a lot of pleasure and much pride. Checking the impressive list of the former recipients, I can only feel very humble and surprised but happy to be here. It means a lot to me. Considering the worldwide reach and breadth of MSA, this is a fantastic recognition and looking back to my childhood, the distance to here was clearly huge. I first came to the U.S.A. in 2003 for a post-doc in Stanford, California. Fun-nily enough, the first workshop I attended was the MSA short course on biomineralization in the Nappa Valley and I remember exciting and stimulating talks. At that time, I could not imagine that one day I would receive the MSA award. I also take it as a huge responsibility: an incentive to work harder so that some day I may contribute significantly, like the former recipients of the award, to our field of mineralogy.

To tell a few words about my background, I received a general background in science including Life and Earth sciences. When I was admitted at l'Ecole Normale Supérieure in Paris, I faced the dilemma of choosing between biology or geology. Because of the charisma of some teachers, in particular Laurent Jolivet, I chose geology. I had a lot of fun learning many things about geodynamics but after having prepared entrance exams to become a high school teacher in natural sciences, I met Francois Guyot, a geochemist at the Institut de Physique du Globe de Paris (IPGP) who convinced me to work under his supervision as a master student. This was how I got introduced to mineralogy at the Laboratoire de minéralogie et de cristallographie of Paris. I first studied the mineralogy of meteorites, in particular the Tatouine meteorite, a diogenite, under the co-supervision by Jean-Alix Barrat and Philippe Gillet. I learnt a lot about electron microscopy at that time with the help of Maurice Lesourd, a now-retired engineer from Angers and also Nicolas Menguy who had just arrived in Paris and trained me intensively on TEM and who has been a constant collaborator since then. Since the Tatouine meteorite had been colonized and altered by terrestrial microorganisms, the switch to biomineralogy was natural. I therefore started learning more deeply about microbiology and molecular biology by working in Cadarache under the supervision of Thierry Heulin and Virginie Chapon, who taught me a lot about molecular biology practicals. In 2003, I moved to Stanford University in Gordon Brown's group for a post-doc. There, I discovered another type of microscopy: soft X-ray scanning transmission X-ray microscopy. This coincided with the development of the new beamline 11.0.2 at the Advanced Light Source in Berkeley. I owe a lot to Tolek Tyliczszak for that. Discovering synchrotron likely marked the



end of a sane life in a sane body, but it stood as a unique and formative scientific experience in my early career. In Stanford, with Gordon and by meeting many great people, I received ideal conditions to develop my analytical skills and my culture in geobiology. I was hired by the CNRS on a permanent position in France in 2004, came back to Paris in 2005, and finally got promoted as a CNRS director of research two months ago.

There are many people I thank for this award. My mentors, who have been models and friends: Gordon and François. I had the chance to work in Gordon's group as a post-doc and this has been one of the most stimulating research experiences in my life. Gordon has been central in the start of my career and the trust he placed in me has pulled me up. François, my Ph.D. advisor, has always impressed me by his constant curiosity about everything and the impressive breadth of his scientific interests. Hopefully, this now partly inspires me. I also thank my high school and undergraduate teachers collectively. They are part of the equation that led me to science.

My early career would not have been as stimulating without the help of my closest collaborators who are also friends. Olivier Beyssac and I studied together at l'ENS more than 15 years ago. Olivier finished his Ph.D. one year before me and spent some time at Caltech when I was a post-doc in Stanford. This is when we started working together. Since then, we have (successfully in my opinion) co-advised several students: Sylvain Bernard, now a CNRS researcher in Paris and Matthieu Galvez, post-doc at the Carnegie. Purificacion Lopez-Garcia and David Moreira, micro-

biologists and molecular biologists in Paris have also been central to the development of my research activities. I first met them when I was finishing my Ph.D. We have been working together since then and we have co-advised several students, including Estelle Couradeau, now a post-doc in Arizona State University. I would like also to thank Guillaume Morin from IMPMC and Andreas Kappler and Martin Obst with whom we have shared an exciting collaboration to scrutinize the mechanisms of iron oxidation by bacteria.

There are few other people that I want to thank. Bernard Capelle, director of IMPMC for his constant support to everything I have done since I was hired in Paris and to all the members of IMPMC more generally: this is a great institute to develop studies at the interface between different fields. Céline Férard and Ferial Skouri-Panet, the two lab-assistants in my group and without whom clearly no experiment would be possible. I'd like also to thank Guillaume Fiquet and James Badro. They were the two previous French recipients of the MSA Award and members of my institute, when they received this award. They are also

friends and they have clearly been models for me. I also thank the people who nominated me and supported my nomination for this award: Gordon, François, James, and Georges Calas.

I have been lucky since my hiring at the CNRS in 2004 to have brilliant students and I owe much to them for this award. Let me mention those I have not named yet: Kevin Lepot who is now an assistant professor at University of Lille; Jennyfer Miot who will get a permanent position of assistant-professor at the Museum of Natural History in Paris in a few weeks; Julie Cosmidis who will defend her thesis in a few months. I hope that someday one among them can receive the same honor as the one I am receiving today.

Finally, I have a special thought for Emmanuelle. We have been engaged for 16 years. I am not used to telling her thank you, especially publicly like this. What I owe her is far beyond any thanks. Her love has been a constant and crucial balance that has allowed me to stand up here today. I would just like to say that right now I think of her. And thanks again to MSA for this great honor.