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Acceptance of the Mineralogical Society of America Award for 2003

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Mr President, Members of the society, and guests

Thank you very much for the kind words, Jay, and let me just say that it is a great honor and a great pleasure to be recipient of this year's MSA award. I am not at all confident about the extent to which I deserve this recognition. Be sure I am extremely honored to be added to the list of previous recipients.

Needless to say that there are many people to whom I owe my deepest thanks. I can only mention here few of them, and I will begin with two friends who came to see me receive this award, Jay Bass from Urbana-Champaign and Dan Farber from Livermore. Thank you for being here.

It is a strange and somehow random walk that led me here today. In my early years, I was indeed close to signing up for a school for cooks. My parents finally convinced me to follow a more serious and conventional track, which began at University of Lyon with a general program in Life and Earth sciences. After discovering how fish could breathe in water and the secrets of botanical classification, I enjoyed geology classes, that were assorted with mineralogy and rock physics. I was then convinced that field geology was the best job. Still, I went to University of Rennes in Brittany, to work for my undergraduate thesis on an experimental approach of faulting systems in brittle materials, which I thought was complementary to field observations. I felt more attracted by experiments than by beautiful landscapes, and I spent a year deforming sand packs to establish relationships between history of deformation and geometry of fractures.

I ultimately found my way one year after, when I met Philippe Gillet and François Guyot, who were able to make me change my direction and focus on planetary interiors. Since these days, I do a very special kind of cooking, by taking pieces of peridotite or iron alloys, bring them up to megabar pressures and a few thousands degrees to make the best possible Earth's interior. During my Ph.D. thesis, dedicated to the study of thermodynamic properties of upper mantle minerals, I could learn basic experimental techniques, including spectroscopy, diamond-anvil cells, and X-ray diffraction. Philippe and I could afford just one diamond-anvil cell, and a single pair of anvils I had to keep in good shape during my whole thesis. Don't blame me if the pressure range investigated in these early articles does exceed 20 GPa, but the diamonds were safe…I moved then in 1991 to the Max Planck Institut für Chemie in Mainz (Germany) to work as a post-doc in Reinhard Boehler's group. I learned there how to heat up a sample at high-pressure with infrared lasers and I discovered how powerful X-ray diffraction at a synchrotron source could be.

Late 1992, I was lucky to be hired by CNRS (the French National Research Center) and I moved back to Lyon at the Ecole Normale Supérieure (ENS) to work with Philippe Gillet, who was setting a high-pressure laboratory there. It was an exciting time for high-pressure research with the possibility to combine synchrotron radiation and state-of-the-art high-pressure techniques. I had a very fruitful collaboration with Denis Andrault from the Institut de Physique du Globe de Paris. We developed an X-ray diffraction experiment on laser-heated diamond-anvil cells on the high-pressure beamlines of ESRF (European Synchrotron Radiation Facility). This allowed us to explore the compression and structural properties in a wide range of pressures and temperatures for mantle or core related minerals. At Ecole Normale Supérieure de Lyon, I am very fortunate to have been part of a group of talented scientists, working in very diverse fields of research such as classical geology, geochemistry or geodynamics. I would like to express my gratitude to Yanick Ricard, Jan Matas, Bruno Reynard, Stéphane Guillot, Hervé Cardon, Gilles Montagnac, Isabelle Daniel, and late Jean-Michel Caron.

After seven years in Lyon, I moved to Paris in 1999. I am particularly proud to be recognized by the MSA award, which is one of the oldest and most full of tradition award, especially in my newly adopted laboratory, the Laboratoire de Minéralogie et Cristallographie de Paris (LMCP, University Pierre et Marie Curie). It is one of the oldest research laboratory in France, cre-

ated in 1809 by Napoléon, where some of the basis of modern crystallography has indeed been established, starting with the first chair of Mineralogy hold by René-Just Haüy.

I would like to thank my colleagues there, they are a remarkable group, where physicists, biologists, chemists and geophysicists have the opportunity to work together. I am lucky to work with François Guyot, who has always been a perfect guide in high-pressure geophysics, and James Badro, who is one of the most talented young scientists I met. The head of laboratory, Bernard Capelle, has given to us a great support in our attempt to build a high-pressure laboratory, where we focus on high-pressure petrology, high-pressure geochemistry, or elastic properties of lower mantle and core materials.

Most of the work in my career has been collaborative, and I owe a tremendous debt to my collaborators and students, at Institut de Physique du Globe de Paris, laboratoire de Physique de la Matière Condensée (University Pierre et Marie Curie) and ESRF in Grenoble.

In closing, I have to thank my wife Hélène, for her patience and love. She allows me to be away many weeks a year and she has to take care alone of our 2-year-old daughter Angèle. One day, Angèle might realize her dad goes in the field somewhere in between the Earth's mantle and core.

Thank you again for this honor.