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Presentation of the Mineralogical Society of America Award for 1990 to Russell J. Hemley

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President Robinson, members of the Mineralogical Society of America, and guests:

For many years, I have been attending MSA luncheons and the accompanying award presentations, but today it is a very special and exciting occasion for me to introduce Russell Julian Hemley, this year's recipient of the Mineralogical Society of America Award. Rus is an outstanding young scientist who has made important contributions to our understanding of minerals and other materials at ultra-high pressures through spectroscopic and X-ray experiments with the diamond-anvil cell and through theoretical interpretations of the experimental results. Rus was trained as a chemist and originally published a number of experimental and theoretical papers on subjects more related to chemistry than to mineralogy. However, his interests began to change during his graduate and postdoctoral years at Harvard, and subsequent postdoctoral work at the Geophysical Laboratory led him into high-pressure studies emphasizing equation-of-state and spectroscopic investigations of minerals.

I first met Rus at the MSA short course, Microscopic to Macroscopic, organized by Sue Kieffer and Alex Navrotsky at Washington College in May 1985. The next year Rus was invited to interview for faculty positions at several universities, including SUNY Stony Brook where I was a faculty member, and at about the same time I visited the Geophysical Lab to talk about their open position for a new Director. I accepted an offer from the Geophysical Lab and was fortunate to convince Rus to stay on as a staff member. I still feel a bit guilty about this and hope my colleagues at Stony Brook will forgive me for keeping Rus at the Lab.

Some of the most significant results of Rus's research include discovery of phase transitions in solid hydrogen at megabar pressures, pressure-induced amorphization transitions in silica minerals and ice, high-pressure Raman spectroscopy of amorphous and crystalline silicates, and lattice dynamics, phase transitions, and equation-of-state studies of $MgSiO_3$ and $CaSiO_3$ perovskites. Most important to a wide range of scientific disciplines is the discovery of the first experimental evidence for the metallization of hydrogen at multimegabar pressures. These experiments on hydrogen performed by two recipients of the MSA Award, Russell Hemley and David Mao, represent the realization of a goal pursued by physicists for more than 50 years. Recently, Professor Abrikosov, a famous Russian physicist who is the Director of the High Pressure Institute in Moscow, told me that the world of physics recognizes the team of Hemley and Mao as the preeminent leader in ultrahigh-pressure research. I think we as mineralogists can be very proud of their accomplishments.

Rus's experimental work is innovative, and I am certain he will continue to obtain exciting results in years to come that will have a profound influence on mineral physics, geophysics, and geochemistry. In addition to experimental expertise, he brings to his high-pressure studies a theoretical understanding necessary for interpretation of complex observed phenomena. This approach is essential if earth science research is to make a significant impact on the greater science community.

In addition to being an outstanding scientist, Rus contributes in many ways to the successful operation of the Geophysical Laboratory and is always willing to lend a hand whenever problems arise. As I have noted, he has become known throughout the world as a leader in high-pressure research—he receives many invitations to conferences and symposia and is an important participant in setting trends in the exciting and growing field of mineral physics. What more could one ask?

Mr. President, I present Russell J. Hemley.

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