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Presentation of the Mineralogical Society of America Dana Medal for 2009 to Ronald E. Cohen

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The Dana Medal recognizes outstanding scientific contributions in the mineralogical sciences by an individual in the midst of his or her career. There are interesting parallels between James D. Dana and this year's recipient. Both attended Ivy League schools and then went to work for the Navy, where both learned theoretical physics, and both were fired by an intense ambition to advance the science of mineralogy.

Ronald E. Cohen is being honored today for his success in realizing that ambition. With training in experimental petrology, field geology, and meteoritics, Ron moved into computational mineralogy, where he overturned the prevailing view that such work was of limited utility and lacked predictive capability, particularly for the deep Earth. His early ab initio models accurately predicted the elastic constants of $MgSiO_3$ silicate perovskite before they were measured. His later density functional calculations predicted the nature of the post-stishovite transition in silica that was confirmed in detail by subsequent experiments. His calculations for iron alloys and the core have guided the interpretation of both experiments and seismological data, and studies of other systems are both landmarks in mineral physics and benchmarks for theory.

If this were not enough, Ron wears a second hat as a materials physicist. His early papers on the band structure of high T_c superconductors are classics, and he is known in the field of oxide ferroelectrics as the one who explained how these important materials work. Perhaps more than anyone, he showed geoscientists that calculations in mineralogy could have the accuracy, quality, and impact of those done in physics, and he showed physicists that there is a world of problems and complexity in nature beyond simple crystals.

But Ron wears more than two hats (I should say yarmulkas) — with the breadth of his interests in science, music, art, and the world at large, he wears many more. As I recognized 30 years ago when he moved into the graduate school dorm room next door, not much escapes his curiosity and Talmudic questioning, his intense energy and hearty laugh. We look forward to many breakthroughs to come, in the mineral sciences and beyond. It's an honor and a pleasure to introduce the 2009 Dana Medal winner, Ronald E. Cohen.

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