

Newsnote

***Sandia Materials Scientists at the front of the debate on atomic-scale deformation processes in BCC (body centered cubic) metals***

Contributed by Brad Boyce, [blboyce@sandia.gov](mailto:blboyce@sandia.gov)

Sandia materials scientists are at the leading edge of a longstanding controversy over the atomic reshuffling mechanism by which deformation occurs in body centered cubic (BCC) metals such as tungsten, tantalum, niobium, molybdenum and most importantly, ferritic iron. Recently, members of Sandia's Materials Science and Engineering Center, Chris Weinberger, Brad Boyce, and Corbett Battaile, were asked to write a review article for *International Materials Reviews* on "Slip Planes in BCC Metals". This review article, to appear online this month (doi 10.1179/1743280412Y.0000000015), shows how previous efforts from both the modeling and experimentation communities have failed to paint a clear picture regarding the slip planes on which dislocations operate, a fundamental aspect of the deformation process. These Sandians, along with Sandia PostDocs Hojun Lim and Jay Carroll, recently gave 5 separate presentations at the International Symposium on Plasticity, including 3 keynote talks, describing various computational and experimental aspects of the atomic-scale and micro-scale deformation process in BCC metals, including the development of Sandia's newly developed BCC crystal plasticity finite element representation for microstructural deformation analysis. Sandia is a leading research institution in this topic area as we seek to develop state-of-the-art high fidelity computational models of BCC deformation that are painstakingly validated against detailed microscopic experiments.

