

10th International Workshop on Hydrogen in Fusion Reactor Materials

The California Division of Sandia National Laboratories hosted the 10th International Workshop on Hydrogen in Fusion Reactor Material on May 31 and June 1 as a satellite meeting of the 19th International Conference on Plasma Surface Interactions in San Diego. The meeting was held in Pleasanton, California, and organized by Sandian's Dean Buchenauer (chair), Rob Kolasinski, and Rion Causey. The biennial international workshop promotes understanding of retention and permeation of hydrogen isotopes in plasma facing and structural materials for fusion and includes informal discussions of work in progress. Forty-five attendees from nine countries (US, UK, Canada, France, Germany, Italy, Latvia, Russia, PRC) participated. Many toured the National Ignition Facility at the Lawrence Livermore National Laboratory after the workshop. The program had 30 talks covering the topics of hydrogen in ITER plasma facing materials (tungsten, carbon, and beryllium), mixed materials, modeling and fundamental studies, conditioning techniques, and permeation measurements, plus a summary discussion of the R&D needs for ITER and beyond chaired by R. Goldston (PPPL).

Topics in the session on tungsten included the effects of displacement damage, microstructure, and cracking on hydrogen retention, along with plans for tungsten coated PFCs for EAST. Talks on hydrogen retention in Torr Supra, JT-60, and JET focused on differences related to the graphite structure and operating temperatures, while retention measurements in mixed materials (Be_2C and WBe_{12}) were also presented. The effect of ELMS on retention in beryllium was simulated using simultaneous laser & plasma irradiation in PISCES. Other sessions covered fundamental studies and modeling (density function theory calculations of the beryllium-carbon system, studies of the importance of surface conditions, and implications of tritium retention for breeding in a fusion reactor), conditioning and boronization (current conditioning techniques being applied on HT-7 and EAST, boronization in T-11M, thermo-oxidation of carbon films with tungsten impurities, and recent DIII-D experience with thermo-oxidation for removal of deuterium from co-deposits), and work on plasma and gas driven permeation measurements.

The agenda and talks will be available on the workshop website (<http://www.sandia.gov/H-workshop/>). Contact Dean Buchenauer for the password (dabuche@sandia.gov).