

Bruker's Exhibitor Spotlight Sessions



Exhibitor Spotlight 5

***In Situ* Nanomechanical Testing of Superalloys at 1000°C using the Hysitron PI 88 SEM PicoIndenter**

Tuesday, August 4 | 3:00 PM to 3:30 PM

***In Situ* Nanomechanical Testing of Superalloys at 1000°C using the Hysitron PI 88 SEM PicoIndenter**

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Abstract

The Hysitron PI 88 SEM PicoIndenter is a comprehensive *in situ* nanomechanical test instrument for use inside your SEM and FIBSEM. Built upon Bruker's leading-edge capacitive transducer technology, the Hysitron PI 88 gives researchers an advanced instrument that delivers extraordinary performance and versatility. With regards to versatility, the modular design supports our full suite of testing techniques, now including high temperature, scratch testing, 5-axis sample positioning with rotation and tilt stage (RT stage), electrical characterization, dynamic fatigue testing, and an interchangeable extended range (500 mN, 150 μ m) transducer. In this demonstration, we will show a configuration combining the high temperature and RT stage capabilities of Hysitron PI 88. An integrated 1000°C high temperature stage and an active 1000°C tip heater will be used to conduct uniaxial compression of micro-pillars prepared from René N5 superalloy. This material is commonly used for turbine components which are expected to endure extreme combined temperatures and stresses. *In situ* SEM high temperature tests are particularly synergistic as both high resolution, real time deformation of the sample can be observed and the high-vacuum environment will limit oxidation of the sample. Limiting oxidation is especially important for high temperature testing of metals, and thus enables the measurement of the true mechanical properties of localized, microscale regions of the sample. As this is just one of the possible configurations and corresponding applications, a more general overview of the Hysitron PI 88 SEM PicoIndenter and its unique capabilities will also be presented.