MM 26 Hauptvortrag Cynthia Volkert

Zeit: Montag 09:45–10:15 Raum: TU H1058

Hauptvortrag

MM 26.1 Mo 09:45 TU H1058

Size effects in metal plasticity — •Cynthia A. Volkert — Forschungszentrum Karlsruhe, Karlsruhe, Germany

Size effects in the plasticity of metal crystals are well known. In many metal samples decreasing the crystal volume leads to a strengthening effect. However some recent observations show that weakening may also occur, particularly in small crystals that are unconstrained by a substrate or surface oxide. These issues are very important in the assessment of the performance and reliability of metal features used in micro-systems and microelectronic devices, and even in nanostructured components. A summary of the apparent origins for size effects will be presented, including aspects of dislocation nucleation and motion, strain gradients, and sample surface conditions. The various contributions will be used to interpret recent results from uniaxial compression tests on micron-sized metal samples.