1st Workshop for the Extreme Conditions Beamline at PETRA III



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Tayloring electronic properties by high pressure

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The combination of high pressures and high temperatures is a well-known strategy in target-oriented chemical syntheses to meet the stability fields of new compounds and, thus, to synthesize solids with novel and often unusual physical properties. Beside the potential for preparative chemistry, the state variable pressure can induce structural and electronic changes of condensed phases. Magnetic transitions and spin as well as charge ordering phenomena are associated with small energy changes which often require the simultaneous realization of low-temperatures in experimental investigations. Studies on phase transformations of selected elements and intermetallic compounds will illustrate the interplay between electronic and structural alterations as evidenced by x-ray diffraction experiments at third generation synchrotron sources.

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Session Classification: Examples for Powder and Single Crystal Diffraction at simultaneous high-pressure and high/low-temperatures