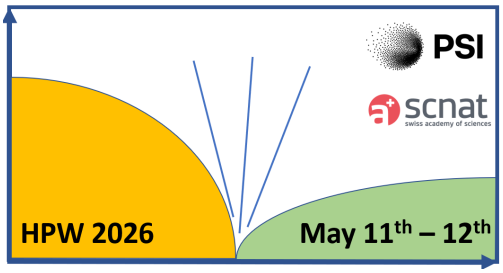

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Equilibrium p-T phase diagram of ZnO

Tuesday, 12 May 2026 17:00 (20 minutes)

Melting and solid-state phase transitions of wurtzite (w-ZnO) and rocksalt (rs-ZnO) polymorphs of zinc oxide have been studied at pressures to 8 GPa and temperatures to 2500 K using in situ synchrotron X-ray diffraction, electrical resistivity measurements, and quenching experiments.
The equilibrium p-T phase diagram of zinc oxide has been constructed based on experimental data and thermodynamic analysis. Calculations of phase equilibria have been performed using models of phenomenological thermodynamics with interaction parameters derived from our experimental data on ZnO melting at high pressures and high temperatures. The proposed phase diagram represents thermodynamic equilibria between crystalline phases and liquid, not influenced by kinetic phenomena, and explains all thermodynamic aspects of ZnO polymorphism.

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