

Interpretations of terrestrial exoplanet observations requires better knowledge of matter at extreme conditions, as planetary formation and subsequent evolution is fundamentally controlled by the properties of minerals at high pressure. In this lecture, I will discuss recent advances in experimental High Energy Density (HED) physics that allow for unprecedented experimental access to exoplanetary interiors. We will present recent and ongoing work on the MgO B1-B2 structural transition (400-600 GPa) and discuss these measurements in the context of mantle dynamics.