Competitive structural and electronic states under pressure

Shanti Deemyad, University of Utah

Application of high pressure has profound effects on both structural and electronic stabilities of a material. In the vicinity of such instabilities, new states of matter often appear which may compete or co-exist. Exploring materials near phase instabilities provides access to rich physics and opportunity to discover exotic new states of matter. I will present some of our recent studies on exploring competitive states of materials at extreme conditions and discuss two distinct examples of our recent studies on pressure-induced structural and electronic transitions in materials: the coexistence of vitreous and crystalline phases of H₂O at ambient temperature detected via complementary XRD and Raman studies¹ and interplay between the CDW and superconducting states in 2D material BaSbTe₂S₀.₉ under pressure.


See website for more information: https://www.danshimlab.info