

- Date & Time : **Friday 25th September 2026 10:00-11:30**
- Venue : Common Room, Information Science Bldg. 4F



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“Freestanding Crystalline Oxide Membranes”

The ability to create and manipulate materials in two-dimensional (2D) form has repeatedly had transformative impact on science and technology. In parallel with the exfoliation and stacking of intrinsically layered crystals, the atomic-scale thin film growth of complex materials has enabled the creation of artificial 2D heterostructures with novel functionality and emergent phenomena, as seen in perovskite oxides. We present a general method to create freestanding complex oxide membranes and heterostructures with millimeter-scale lateral dimensions and nanometer-scale thickness, using an epitaxial water-soluble buffer layer. This facilitates many new opportunities we are beginning to explore, including the topological melting transition of 2D crystalline order, integration with other materials families and synthesis techniques, and the application of extreme tensile strain and strain gradients. I will focus on the last point and show how we can manipulate correlated phase transitions directly via strain.