Our goal is to synthesize and characterise the electronic structure of novel 2D materials that possess exciting electronic properties for next generation electronics.

We utilise Angle-Resolved Photoelectron Spectroscopy (ARPES) to directly measure the Electronic Bandstructure.

We grow Topological Materials atomic layer by atomic layer via Molecular Beam Epitaxy.

We probe Atomic and Electronic Structure with Scanning Tunnelling Microscopy (STM).

We stack 2D semiconductors and metals together with a twist.

 ARPES on a designer heterostructure comprised of a 3D topological insulator sandwiched between 2D ferromagnets to create a Quantum anomalous Hall insulator. Advanced materials 34, 2107520 (2022).


Upper: Schematic of a graphene on black phosphorus heterostructure highlighting the induced Moiré pattern. Lower: ARPES used to visualize Landau Levels caused by the strain-induced pseudo-magnetic field.