

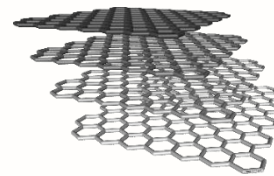


Research projects:

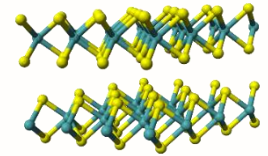
Since 2012, Dr. Chen's focus has been on the synthesis and integration of 2D materials to form heterostructures with unprecedented electronic and optoelectronic performance. He focuses on developing synthesis, characterization, and integration techniques of many "beyond graphene" materials. These material systems include 2D material systems such as hexagonal boron nitride (hBN), transition-metal dichalcogenides in the form of MX_2 (where M=transition metal such as Mo, W and X=S, Se), group-IIIa monochalcogenides (InSe and InS), and 2D oxides.

Topics of interest:

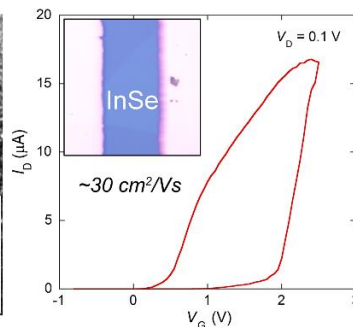
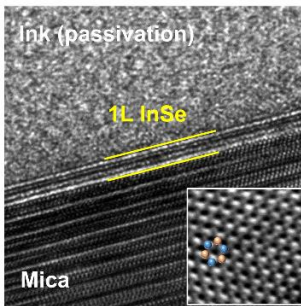
- Synthesis of 2D materials
- Integration of 2D materials with 3D materials
- Development of novel semiconductor materials



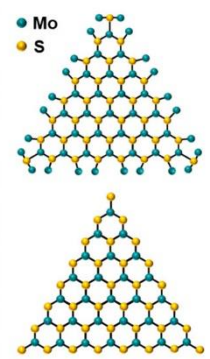
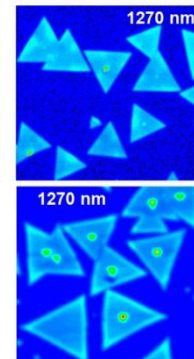
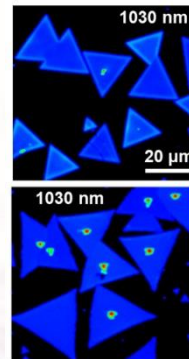
Graphene



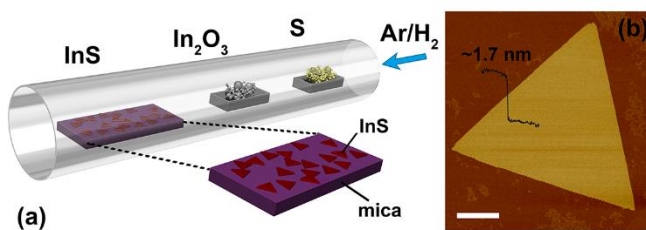
MoS₂



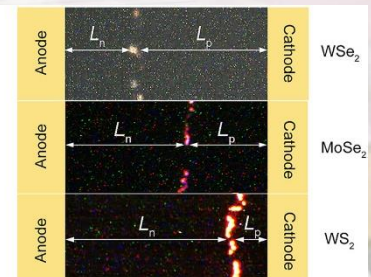
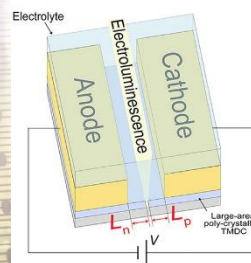
Synthesis of large-area InSe monolayers by chemical vapor deposition. (Small 2018, 14, 39, 1802351)



Atom-dependent edge-enhanced second-harmonic generation on MoS₂ monolayers. (Nano Lett. 2018, 18, 2, 793)



CVD growth of large-area InS atomic layers and device applications. (Nanoscale 2020, 12, 17, 9366)



Spatial control of dynamic p-i-n junctions in transition metal dichalcogenide light-emitting devices. (ACS Nano 2021, 15, 8, 12911)