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In-House Research 2020

Atomically thin half van der Waals materials via confinement heteroepitaxy

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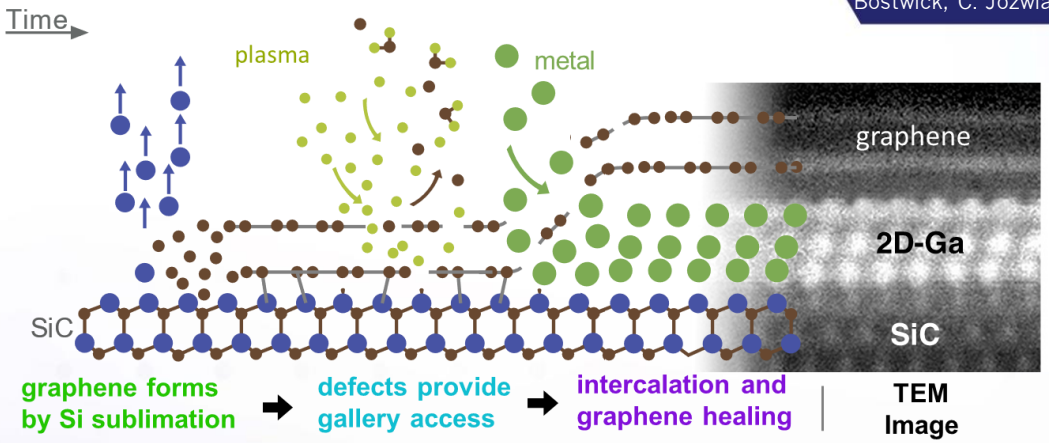
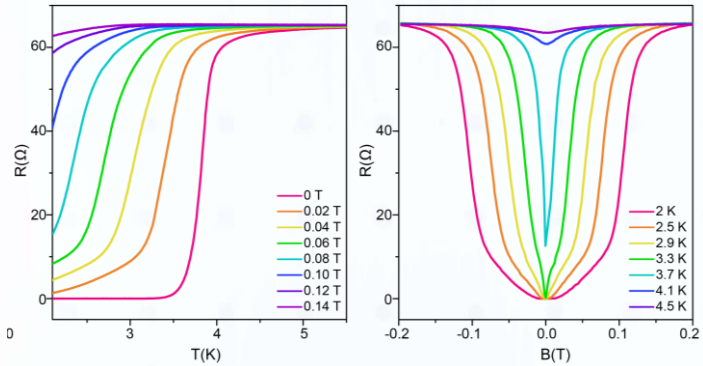
Confinement Heteroepitaxy





- Atomically-thin metals Ga, In, and Sn are stabilized at the interface of epitaxial graphene and SiC through confinement heteroepitaxy
- Metal atoms generated via thermal evaporation of metal powders migrate through defects in graphene layers and passivate the surface of SiC
- 2D Ga layers exhibit BCS-type superconductivity and enhanced T_c of ~4 K (compared to 2 K in bulk, α-Ga)
- The process of stabilizing 2D superconductors via CHet can be applied to elements beyond p-block metals, opening opportunities to study unconventional properties that enable exploration of new physics and devices.

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