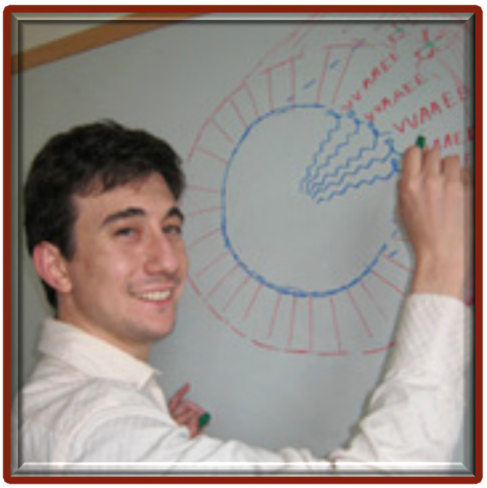
# Materials Chemistry Seminar

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## *Solid-state Materials at the Atomic Scale*

Similar to how carbon can be sculpted into low-dimensional allotropes such as fullerenes, nanotubes, graphene, and graphene nanoribbons, our major research premise is that the connectivity of atoms for *any* crystalline solid can be constrained along specific axes to produce single atom or polyhedron thick (<1 nm) dimensionally-reduced derivatives with transformative physical phenomena. I will discuss our efforts on the synthesis, properties, and applications of two classes of materials. First, we have created 2D Group IV graphane analogues. We have synthesized for the first time, mm-scale crystals of a hydrogen and organic-terminated germanium multilayered graphane analogue, or germananes, from the topochemical deintercalation of $CaGe_2$. These materials represent a new class of covalently terminated graphane analogues and has great potential for a wide range of optoelectronic and sensing applications. Second, we will describe our recent studies on the synthesis, properties, and applications of molecular-scale ribbon derivatives of the layered 2D transition metal dichalcogenides ($MX_2$) which feature atomically-precise widths, and organic-terminated edge-states

**Monday**

**Sept. 22**

**3:30 pm**

Host - Song Jin
262-1562