

# REN WISCONS

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10:30 AM – 11:30AM

Steele 006

## “Conformational Inversion in Heterotriangulenes for Ferroelectric Switching”

**Abstract:** The investigation of organic materials for practical information storage applications has long been precluded by the lack of organic ferroelectric systems that operate at or near room temperature. Ferroelectricity in organic crystals generally arises from collective rotation and/or displacement of molecules in the solid state in response to an applied electric field. The result of the solid-state rotation/displacement is a shift in charge distribution within the unit cell that can be exploited for information storage. However, such mechanisms are extremely sensitive to the details of crystal packing, which cannot yet be reliably predicted *in silico*. This presentation will discuss fundamental mechanistic investigations of a new class of organic ferroelectrics that takes advantage of conformational inversion of bowl-shaped heteroatom-centered triangulene compounds for ferroelectric switching. We predict that ferroelectric switching in the solid state will be strongly correlated with the energetics of molecular conformational inversion rather than unpredictable subtleties of crystal packing, allowing tunability of ferroelectric performance through molecular design principles.

**Bio:** Ren joined the faculty at Amherst College in 2021 as an Assistant Professor of Chemistry following her Arnold O. Beckman Postdoctoral Research Fellowship at Columbia University working with Colin Nuckolls. Ren received her PhD in Chemistry at the University of Michigan in Adam Matzger's Group. Her current research group at Amherst investigates electronic phenomena that arise at the intersection of organic chemistry, materials science, and crystallography with applications in next-generation technologies.