A FRIDAY (THURSDAY) SYNTHESIS SYMPOSIUM PRESENTATION:
Through-space Electronic Delocalization in Perylenediimide Helicenes

Speaker: Nate Schuster (Nuckolls Lab)

When: THURSDAY JUNE 16th, 2016 at 4:00 PM

Where: 501 NWC (stairway outside of NWC library)

Abstract:
Perylene-3,4,9,10-tetracarboxylic diimide (PDI) provides a wellspring of intensely absorbing, thermally robust materials with substantial electron affinities. Readily synthesized from commercially available dyes, these materials excel as n-type semiconductors in organic field effect transistors and organic photovoltaics (OPVs). To wit, some of the most efficient non-fullerene-based OPVs incorporate helical, oligomeric PDI nanoribbons from the Nuckolls lab. For this seminar, I will discuss the design, synthesis, and characterization of a new class of contorted nanoribbon – PDI helicenes. Like the related carbohelicenes, these PDI derivatives exhibit many fascinating chiral and chiroptical properties. Most interestingly, through-space interactions between the PDI subunits in one of these helicenes enhance charge delocalization within its distorted polyaromatic scaffold. Ongoing and future syntheses to extend these molecular motifs will also be discussed.