



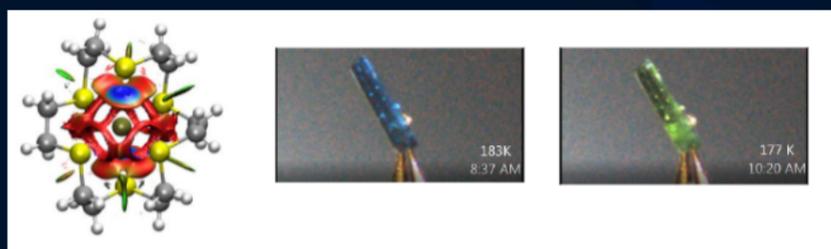
# CHEMISTRY SEMINAR

## The Name is Bond: Non-Covalent “Bond”: Non-Covalent Axial Interaction in $d^8$ Metal Complexes

3:15 pm  
March 13  
RNS 310



Square planar  $d^8$  transition metal complexes provide unique opportunities for reactivity and solid-state properties that are employed in catalysis, nanoscale devices, and crystal engineering amongst others. Open coordination sites provide sites for “weak” inter- and intramolecular interactions that can radically alter physical properties of  $d^8$  metal complexes in solution and/or the solid state. Macrocycles including the thiacycrown 1,3,7-trithiacyclononane (9S3) with facial coordination preferences are mismatched with  $d^8$  metals preference for square planar structures, leading to M...S axial interactions consistently longer than M-S bonds but shorter than van der Waals radii. Strategies to modulate these “weak” interactions will be presented, including counter ligands, metal-metal dative bonding, donor atom modifications, and macrocycle ring size. A variety of behaviors comparing solution and solid-state structures including persistent, hemilabile, and non-persistent axial interactions will be described. Recent developments including a temperature induced reversible single-crystal-to-single-crystal transformation with axial interaction changes accompanied by striking color changes and theoretical studies to elucidate these changes will be presented.



Daron Janzen is a Professor of Chemistry at St. Catherine University in St. Paul, Minnesota, where he has taught for 20 years. He completed his undergraduate and Ph.D. studies at the University of Minnesota in the lab of Kent Mann, followed by post-doctoral research at the University of Tennessee at Chattanooga with Greg Grant. He has also worked in the lab of Sally Brooker at the University of Otago, New Zealand during a sabbatical in 2015. Professor Janzen’s research foci include coordination chemistry and organometallic chemistry, X-ray crystallography, green chemistry, organic materials chemistry, and undergraduate laboratory curriculum development. He setup a regional collaborative X-ray crystallography consortium at St. Catherine University and enjoys helping others apply crystallography in their research. He has published over 80 articles with undergraduate research students and collaborates with research groups in Brazil, Spain, Tunisia, and India. Daron insists he is not a crystallographer, but rather a structural chemist that employs tools including crystallography and spectroscopy to answer questions around systems with vivid colors and interesting inter- and intramolecular features.



**DARON JANZEN**