

Modulation of Axial Intra- and Intermolecular Interactions of d8 Metal Complexes

Daron E. Janzen

Department of Chemistry and Biochemistry

St. Catherine University (St. Paul, Minnesota, USA)

Jueves, 31 de marzo 2022
12:00h

Salón de Actos
Edificio de Matemáticas

CICLO CONFERENCIAS ISQCH 2022



Instituto de Síntesis Química y Catálisis Homogénea

Facultad de Ciencias, Universidad de Zaragoza - CSIC
C/ Pedro Cerbuna, 12. Zaragoza 50009. Spain



CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



Universidad
Zaragoza



Facultad de Ciencias
Universidad Zaragoza

MODULATION OF AXIAL INTRA- AND INTERMOLECULAR INTERACTIONS OF D8 METAL COMPLEXES

Daron E. Janzen
Department of Chemistry and Biochemistry
St. Catherine University (St. Paul, Minnesota, USA)

Square planar d8 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 d8 metal complexes. Macrocycles including the thiacycrown 1,3,7-trithiacyclononane (9S3) with facial coordination preferences are mismatched with d8 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 will be presented.

CV

<https://www.researchgate.net/profile/Daron-Janzen>



Daron Janzen is a Professor of Chemistry at St. Catherine University in St. Paul, Minnesota, USA. 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 75 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.