University of Oregon Dept. of Chemistry and Biochemistry

KLEMM Lecture Series

Prof. Paul J. Chirik

Princeton University

Edwards S. Sanford Professor of Chemistry

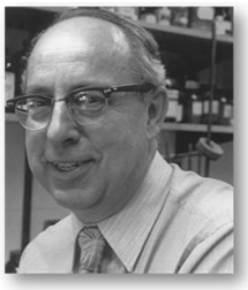
Friday, May 5, 2023

Seminar @ 3:00 pm, WIL 110

Catalysis with Earth Abundant Metals as an Enabling Tool for Chemical Synthesis

Transition metal catalysis has revolutionized chemical synthesis. Reactions such as metal-catalyzed cross coupling, asymmetric hydrogenation and C–H functionaliza-tion have changed the way chemists approach bond constructions and ultimately expand molecular space. Our group has been studying catalytic transformations with iron and cobalt that exploit the unique electronic structures available to these ele-ments that provide new reactivity or selectivity. My lecture will focus on the impact these catalysts have had on the pharmaceutical industry, specially in the context of single enantiomer drug synthesis and expanding molecular space. Additional em-phasis will be placed on the selective C–H bond functionalization reactions that operate based on electronically-driven site selectivity. Specifically, we have been able to tune the C–H activation step to operate under either kinetic or thermodynamic control of site selectivity and open new areas of molecular space inaccessible by more traditional methods that rely on directing groups. Correlations between M–C bond dissociation energies and C–H bond strengths have been particularly instruc-tive and will be highlighted throughout.

This lecture series recognizes outstanding research in organic chemistry or related fields. During his 50-year career at the UO, Leroy H. Klemm (1919 – 2003) made pioneering discoveries in organic chemistry.



Hosted by Amanda Cook