Chemistry Department Seminar

"When Nucleophiles Attack: Tales of Broken Symmetry"

by

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ABSTRACT

Asymmetric reactions comprise a class of extremely important chemical reactions that are of prime importance in natural product synthesis and pharmaceutical production. Surprisingly, few mechanistic methods exist that are especially designed to understand the symmetry breaking process that is inherent to asymmetric reactions. Our laboratory has designed three new mechanistic probes and one computational methodology that are particularly important for the study of asymmetric reactions. In this talk, I will explain the physical underpinnings of these methods and demonstrate how they have been used to understand asymmetric reductions and proline-catalyzed aldol reactions. I will also present some of our data on these systems and place these results in the context of asymmetric catalyst and reagent design.