



West Virginia University®

C. Eugene Bennett Department of Chemistry

Cross-Electrophile Coupling: Principles and New Reactions

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Cross-electrophile coupling is the broadly-defined union of two different electrophiles through transition-metal catalysis under reducing conditions. By avoiding pre-formed carbon nucleophiles, cross-electrophile coupling avoids the challenges of substrate availability and functional group compatibility associated with these organometallic reagents. Substitution of a second electrophile for the organometallic partner in cross-couplings offers the potential to dramatically increase the number and types of molecules that can be easily made because of the large number of commercially available carbon electrophiles (>1 million R-X vs. ~5 thousand R-B(OH)₂) and the low cost of all components. We have demonstrated reactions that couple organic halides with enones, aryl halides with alkyl halides, acid chlorides and thioesters with alkyl halides, and aryl halides with aryl triflates. Along the way, we have demonstrated their high functional-group compatibility and shed light on why certain reactions are cross-selective and others are not. This talk will introduce our current understanding of the origin of selectivity in cross-electrophile coupling reactions, introduce the use of cooperative catalysis, and show how these concepts can be used to further expand the scope of cross-electrophile coupling.

Date: Wed, Oct 25, 2017

Time: 4:30-5:30 pm

Location: 208 Clark Hall

Students, meet the speaker over coffee and cookies in the Bennett Conference room at 3:30 pm