Energy Efficient Catalysis: Developing New Classes of Palladium Catalyzed Coupling and Multicomponent Reactions

Transition metal catalysis has become the cornerstone of many efficient synthetic methodologies. In addition to their traditional use in coupling or bond forming reactions, there has been growing interest in exploiting the reactivity of transition metal catalysts to mediate a series of operations at once, allowing the build-up of complex compounds in a single operation (e.g. tandem, cascade or multicomponent reactions). This talk will describe our work in this topic, with the general goal of designing efficient synthetic routes of products directly from multiple simple building blocks. A key feature in these transformations is the use of palladium catalysis to generate products that are themselves reactive (e.g. acid chlorides, 1,3-dipoles, etc), and are therefore available for subsequent, spontaneous transformations. Overall, these provide catalytic routes to products that are straightforward to perform, and can be less waste/solvent intensive (Green) than classic syntheses.