

## Synthetic Applications of Green Chemistry: Iron as a Catalyst

John Sirois  
University of Rhode Island  
CHM642  
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**Abstract:** Transition metals such as palladium, iridium, rhodium and platinum have become essential synthetic tools in pharmaceutical and industrial practices. Unfortunately the high price of these catalysts as well as their significant toxicity suggests that alternative routes to our desired compounds are necessary. It is possible that the use of first row transition metals such as iron, copper, zinc or manganese could be used as replacements. Indeed over the last decade significant enhancement has been made in the field of iron catalysis in particular. The high abundance and drastically low cost of iron salts allows for the continued pursuit of iron catalyzed reactions that compete with or surpass previous methods. Classic organic processes such as hydrogenation, reductions, and Kumada-coupling reactions are introduced and their modern iron-catalyzed counterparts are compared.