

## Outer Sphere Mechanisms for Catalysis with Group 7 Complexes

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The discovery of new mechanisms is critical for the design of new catalysts. This is particularly relevant when applied to Green Chemistry applications. Here we describe our efforts over the years discovering new mechanisms and rationalizing the design of new catalysts. Processes described will include new applications with frustrated Lewis pairs, (FLPs), featuring transition metals, novel carbonylation reactions, and metal ligand cooperativity, (MLC), as applied to the hydrogenation of carbonyl substrates.