Nickel-Catalyzed anti-Markovnikov Hydroarylation of Unactivated Alkenes

Significance: Nakao, Hartwig and co-workers report a novel nickel-catalyzed undirected hydroarylation reaction between unactivated alkenes and unactivated arenes. The reaction proceeds in excellent yields with high selectivity for the anti-Markovnikov product. These products are distinct from those accessed through acid-catalyzed processes.

Comment: The authors characterized the catalytically relevant substrate bound nickel complexes and identified the reductive elimination step forming the C–C bond as the rate-limiting step. They also note that differences in the activity between catalysts with large/small carbenes are more dependent on the stabilizing intramolecular noncovalent interactions in the secondary coordination sphere, than steric hindrance.