Highly Enantioselective Addition of Allyltrimethylsilane to Aldehydes

Significance: List and co-workers report the first general, highly enantioselective, organocatalytic addition of allyltrimethylsilane to aldehydes (the Hosomi–Sakurai reaction). This transformation is enabled by newly developed highly confined imidodiphosphorimidates (IDPi). Various aromatic and aliphatic aldehydes are tolerated under the reaction conditions, affording the desired products in good to excellent yields and enantioselectivities (er ≤ 98:2).

Comment: The IDPi motif, which can be accessed by a single-flask synthesis from 3,3'-disubstituted BINOL derivatives, is a combination of the recently developed highly confined imidodiphosphates (Nature 2012, 483, 315) and highly acidic BINOL-derived phosphoramidimidates (Synlett 2016, 27, 156).