

Mixed oxygenase-desaturase activity in carboxylic acid-directed non-heme iron catalyzed C-H oxidations

Marinus A. Bigi, Sean A. Reed, and M. Christina White

We report that the small molecule non-heme iron catalyst Fe(PDP) is able to exploit carboxylate ligation from substrates to control reactivity, site-selectivity and even influence reaction pathways in aliphatic C–H oxidations. Moreover, carboxylic acid substrates divert the hydroxylation reactivity of Fe(PDP) toward dehydrogenations via a short-lived carbon-centered radical. Such substrate-dependent dual activity for aliphatic C–H bonds has previously only been observed in the realm of enzymatic catalysis.

