Enantioselective beta-arylation of alcohols via a multicatalytic relay

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Alcohols are omnipresent functional groups in many functional fine chemicals, such as pharmaceuticals and agrochemicals. Hence, methods enabling their regio- and stereoselective synthesis and diversification are highly sought after. [1] Inspired by the capacity of multicatalytic systems, [2] our group has recently developed a direct method for the challenging beta-regioselective arylation of alcohols.[3] However, the enantiocontrol of the reaction remained elusive, thereby limiting its utility in the practical synthesis of fine chemicals.

Here, I will present our studies on the development of an efficient protocol allowing for the direct enantioselective beta-arylation of alcohols. Mering the so-called dynamic kinetic resolution (DKR) strategy with the multicatalytic relay system enabled the formation of enantioenriched beta-arylated alcohols. The mild conditions allow for a broad substrate scope, high functional group tolerance, and high enantioselectivity of the transformations, establishing a robust reliable synthetic protocol. In a broader context, this study demonstrates the potential of leveraging multi-catalytic relays to execute the transformations that remain elusive with conventional catalytic strategies.

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