MERGING ELECTROSYNTHESIS WITH ASYMMETRIC ORGANOCATALYSIS

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Asymmetric catalysis plays an important role in modern organic chemistry providing methods for the synthesis of biologically active compounds and pharmaceuticals. Merging well-developed aminocatalysis with electrochemistry opens new horizons for asymmetric transformation beyond classical thermochemical activation. This approach is sustainable, since it employs harmless organocatalysts to induce chirality and electrons as traceless and green reagents avoiding the utilization of hazardous stoichiometric oxidants. We have developed iodine-mediated asymmetric functionalization of carbonyl compounds. The transformation is driven by the mild and controlled electrochemical generation of electrophilic iodine species in catalytic amounts, which allows to protect the organocatalyst from decomposition.