

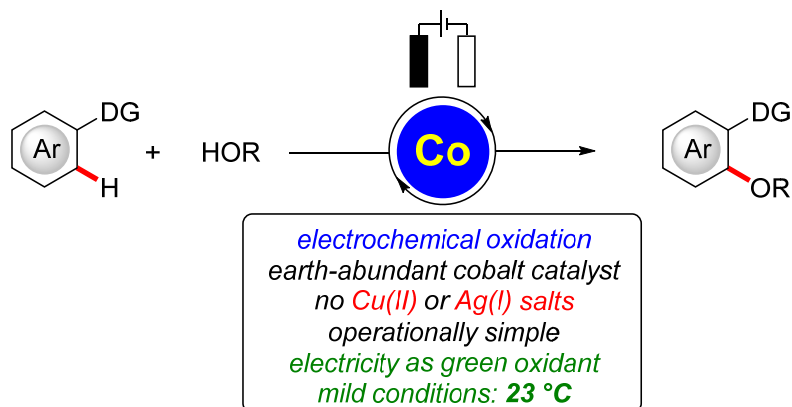
RESOURCE ECONOMY BY COBALTAELECTROCATALYSIS: MERGING ELECTROCHEMISTRY AND C–H ACTIVATION

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Earth-abundant and cost-efficient cobalt complexes have emerged as viable catalysts for high-valent, oxidative C–H transformations.^[1] Despite of major progress,^[2] these transformations largely suffer from the use of toxic, stoichiometric oxidants, such as copper(II) or silver(I) salts.^[3] At the same time, organic electrosynthesis has experienced a renaissance and has been recognized as a sustainable and versatile tool for molecular syntheses.^[4]

In spite of these indisputable advances, electrochemical organometallic C–H activation was thus far limited to precious palladium catalysts.^[5] In sharp contrast, we have developed the unprecedented electrochemical cobalt-catalyzed C–H oxygenation of diversely substituted benz- and acrylic amides.^[6] The robust method is characterized by exceedingly mild reaction conditions (23 °C) and a broad tolerance of valuable functional groups. Moreover, various alcohols could be used as the coupling partner and the synthetic utility of the C–H oxygenation was highlighted by a gram-scale reaction. The catalyst's mode of action was examined by detailed mechanistic studies.



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