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Direct β-Selective Hydrocarboxylation of Styrenes with CO_2 Enabled by Continuous Flow Photoredox Catalysis
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Category

Organo- and Biocatalysis

Key words

photoredox catalysis

continuous flow

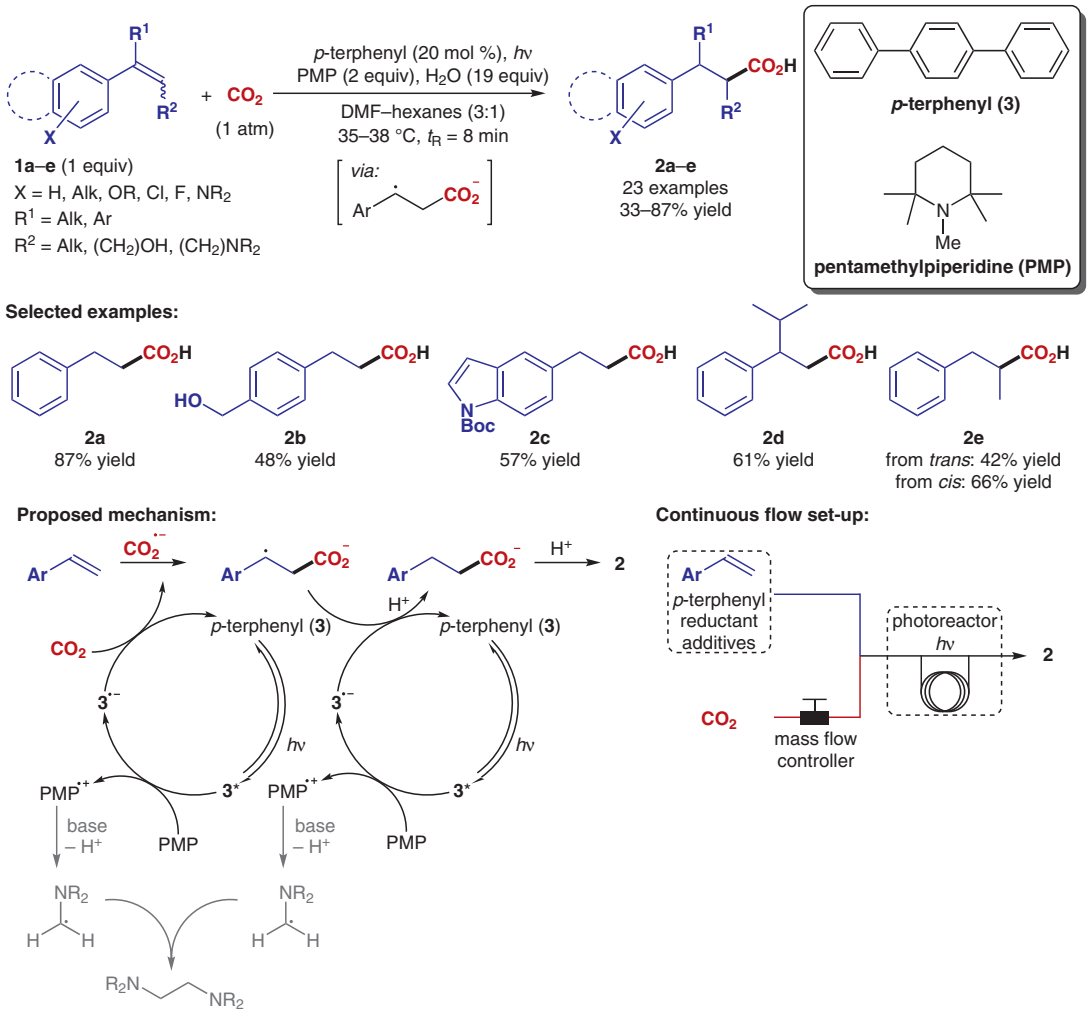
hydrocarboxylation

styrenes

phenylpropanoic acids

carbon dioxide

Photoredox-Catalyzed Hydrocarboxylation of Styrenes in Continuous Flow



Significance: Jamison and co-workers present a photoredox-catalyzed hydrocarboxylation of styrenes using CO_2 and pentamethylpiperidine (PMP). The reactions are performed in flow (t_R = 8 min) to provide the anti-Markovnikov adducts in moderate to good yields with high degrees of chemo- and regioselectivity. Functional group tolerance and preliminary mechanistic investigations are disclosed.

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Comment: This method offers a complementary approach to metal-catalyzed hydrocarboxylation reactions of styrenes, which often afford the corresponding Markovnikov adducts. Metal catalysis has recently been used to affect hydrocarboxylation reactions of simple olefins (M. Gaydou, T. Moragas, F. Juliá-Hernández, R. Martin *J. Am. Chem. Soc.* **2017**, *139*, 12161). A similar substrate expansion to simple alkyl olefins would bolster the synthetic capacity of this methodology.

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