Q. ZHU, D. G. NOCERA* (HARVARD UNIVERSITY, CAMBRIDGE, USA) Photocatalytic Hydromethylation and Hydroalkylation of Olefins Enabled by Titanium Dioxide Mediated Decarboxylation *J. Am. Chem. Soc.* **2020**, *142*, 17913–17918, DOI: 10.1021/jacs.0c08688.

Titania-Promoted Hydroalkylation of Electron-Deficient Olefins



Significance: Commercially available anatase TiO₂ nanoparticles promoted the hydroalkylation of alkenes bearing electron-withdrawing groups with carboxylic acids under 390 nm light irradiation to give the corresponding hydrocarbons in up to 91% yield (eq. 1). **Comment:** Mechanistic studies indicated that alkyl radicals were generated by decarboxylation of the carboxylic acids promoted by TiO_2 (eq. 2). The catalytic activity of TiO_2 was superior to that of various heterogeneous semiconducting photocatalysts such as ZnO, WO₃, or CdS.

Category

Polymer-Supported Synthesis

Key words

titanium dioxide catalysis

photocatalysis

hydroalkylation

alkenes

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