
A 3D Anionic Metal Covalent Organic Framework with soc Topology Built from an Octahedral TiIV Complex for Photocatalytic Reactions


Photochemical Meerwein Arylation By Using a Titanium(VI)-Based Covalent Organic Framework

Significance: A titanium (VI)-based three-dimensional covalent organic framework (Ti-COF), prepared according to Equation 1, catalyzed the Meerwein arylation of alkenes in MeCN–H₂O under white LED irradiation to afford the corresponding Meerwein addition products in ≤75% yield (eq. 2).

Comment: The Ti-COF catalyst was characterized by means of FTIR, ¹³C CP/MAS NMR, UV/Vis DRS, XPS, PXRD, TGA, N₂ adsorption/desorption isotherms, BET, SEM, TEM, HRTEM, STEM, EDX, and elemental analyses. In the Meerwein addition reaction of 4-nitrobenzenediazonium tetrafluoroborate and styrene, the catalyst was recovered and reused four times without significant loss of its catalytic activity.