

Photocatalyzed Oxidative Coupling of Primary Amines to Imines over WS₂ Nanosheets

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WS₂, a transition metal dichalcogenide (TMD) 2D material was successfully applied as a photocatalyst in the visible light-driven oxidative coupling of amines. Photoactive WS₂ nanosheets were prepared by a simple liquid exfoliation method. These monolayer nanosheets with height of 1 nm showed variable sizes ranging from 50 to 120 nm, according to the AFM and TEM images. Amines were oxidized to the corresponding imines with good conversions and selectivity by photocatalytic WS₂ nanosheets in the presence of oxygen as a terminal oxidant under visible light irradiations. WS₂ nanosheets were also successfully recycled with high selectivity.