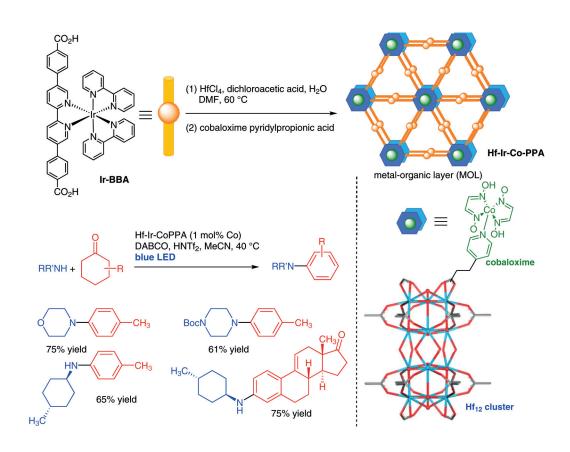
Y. FAN, H. ZHENG, S. LABALME, W. LIN\* (THE UNIVERSITY OF CHICAGO, USA) Molecular Engineering of Metal-Organic Layers for Sustainable Tandem and Synergistic Photocatalysis J. Am. Chem. Soc. 2023, 145, 4158-4165, DOI: 10.1021/jacs.2c12599.

## Photocatalytic Dehydrogenative Amination of Cyclohexanones



Significance: A metal organic layer (MOL) Hf-Ir composite was prepared from a photosensitizing Ir–BBA complex and HfCl₄ under solvothermal conditions. A cobaloxime unit was added to the resulting Hf-Ir MOL with a pyridylpropionate (PPA) tether to give Hf-Ir-CoPPA. The Hf-Ir-CoPPA promoted a dehydrogenative amination of cyclohexanones to give the corresponding N-alkyl anilines with photo irradiation by blue LED. The amination of a steroidal 3,17-diketone took place with excellent chemoselectivity to give the corresponding A-ring amination product exclusively.

Comment: ICP analysis of Hf-Ir-CoPPA revealed that the MOL composite had a Hf/Ir/Co ratio of 1.0/0.54/0.40. A 2D-monolayered double-decker structure of Hf-Ir-CoPPA was constructed with Hf<sub>12</sub> cluster units and bridging-ligand units Ir-BBA. Hf-Ir-CoPPA was recovered by centrifugation and reused 8 times without significant loss of its catalytic performance. Hf-Ir-CoPPA also catalyzed the Heck-type coupling of alkyl iodides with styrenes to give the corresponding  $\beta$ -substituted styrenes.

SYNFACTS Contributors: Yasuhiro Uozumi, Shintaro Okumura Synfacts 2023, 19(05), 0489 Published online: 14.04.2023 DOI: 10.1055/s-0042-1752659; Reg-No.: Y04623SF

## Category

**Polymer-Supported** Synthesis

## Key words

photpcatalysis metal-organic layer cobalt catalyst dehydrogenative amination

