

Cadmium–Aluminum Layered Double Hydroxide Microspheres for Photocatalytic CO₂ Reduction

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Microspheres for Photocatalytic CO₂ Reduction We report the synthesis of cadmium–aluminum layered double hydroxide (CdAl LDH) using the reaction-diffusion framework. As the hydroxide anions diffuse into an agar gel matrix containing the mixture of aluminum and cadmium salts at a given ratio, they react to give the LDH. The LDH self-assembles inside the pores of the gel matrix into a unique spherical porous shaped microstructure. The internal and external morphologies of the particles are studied by electron microscopy and tomography revealing interconnected channels and a high surface area. This material is shown to exhibit a promising performance in the photoreduction of carbon dioxide using solar light. Moreover, the palladium- decorated version shows a significant improvement in its reduction potential at room temperature.