

## La-incorporated Zinc-based MOF for Catalytic Glycerol Carboxylation

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In this work, Lanthanum-incorporated zinc-based metal organic framework (La/ZIF-8) catalysts have been prepared for catalytic conversion of glycerol and CO<sub>2</sub> to glycerol carbonate. La/ZIF-8 is a microporous material with a high specific area approximately 1100–1300 m<sup>2</sup>/g. X-ray diffraction, scanning electron microscopy, transmission electron microscopy, X-ray photoelectron spectroscopy has been used for characterization, showing the structure of metal organic framework nature in La/ZIF-8 catalyst remained. Lanthanum-incorporation provided a greater amount of electrons to the ZIF-8 system, strongly improved the catalytic conversion by strengthening its Lewis basicity. In summary, La/ZIF-8 catalyst showed high stability, high conversion, and selectivity to convert CO<sub>2</sub> with glycerol to produce glycerol carbonate, and exhibited a turnover frequency (TOF) of 4.2 h<sup>-1</sup>, and this value could maintain over 90 % after three times experiment.