

Highly Selective Production of Acrylic Acid from Glycerol through Two-step Pathway

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Glycerol has recently been considered as a new platform to produce C3 chemicals. As new pathway to produce acrylic acid, utilization of glycerol have attracted attention. In this work, glycerol was efficiently converted to 87 % yield of acrylic acid by two step pathway; glycerol was converted to allyl alcohol by formic acid-mediated deoxydehydration (DODH), then the allyl alcohol was oxidized into acrylic acid in a basic aqueous solution using Au/CeO₂ catalysts. The Au/CeO₂ catalysts enable the highly selective production of acrylic acid from glycerol-derived allyl alcohol. Different shapes of CeO₂ such as rods, octahedra, and cubes were prepared, and gold was deposited on the CeO₂ by deposition precipitation method. Gold on octahedra CeO₂ catalysts showed high yield of acrylic acid with stability.