

Metal oxide-supported gold catalysts for allyl alcohol oxidation

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Acrylic acid which is produced from propylene is raw material for various important polymers which used for adhesives, detergent, super absorbents, paper additives, textile, plastics and coating materials, etc. Glycerol which is byproduct of biodiesel production can be used for acrylic acid production. Conversions of glycerol to allyl alcohol and 3-hydroxypropionic acid (3-HPA) to acrylic acid were researched enough. If conversion of allyl alcohol to 3-HPA is completed, production of acrylic acid from glycerol will become new route. In preceding research, Carbon-supported gold catalyst is used for conversion of allyl alcohol to 3-HPA which is aerobic, liquid-phase oxidation of allyl alcohol at 50 °C and 3 bar oxygen. Carbon-supported gold catalyst had high conversion and yield of 3-HPA, but durability was not satisfactory. Therefore, research for catalyst with high durability is necessary. In this research, to improve durability of catalyst various metal oxides (Fe, Al, Ce, Ti) were explored as new support for gold catalyst and support effect and activity of metal oxide support was confirmed.