

Effect of CO₂ in ODH of Low Alkanes over TUD-1 type MO_x Catalysts

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Catalytic dehydrogenation technologies that are aimed for light olefins production are developed mainly for propane and isobutane dehydrogenation. The utilization of CO₂ as soft oxidant in ODH has its own advantages incomparable with other traditional oxidants like O₂, H₂O like improved product selectivities, enhanced catalytic stability by less coke formations and green process along with useful byproducts (CO). The catalytic systems developed so far based on the redox, acid-base bifunctional, acid catalysts and other are way far from commercialization. Present study is on the synthesis of 3D mesoporous TUD-1 type materials based TiO₂-ZrO₂ for the oxidative dehydrogenation of propane with conversions upto 50% and selectivity towards propylene more than 90% and 7% CO₂ conversion was observed. In case of, butane the conversions are higher up to 60% with an overall C4 olefin selectivity of 95% with 8% CO₂ conversion.