

Surface activation of mesoporous carbon with CO₂ using In-situ IR for Ethylbenzene Dehydrogenation

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The styrene that produced via ethylbenzene dehydrogenation can be used as precursor for polystyrene or monomer itself in industry. In detail, the monomer of styrene has been casted in many process to synthesize polymer such as SAN (Styrene AcryloNitrile copolymer) resin, ABS (Acrylonitrile Butadiene Styrene) resin, and styrene.

The catalyst for ethylbenzene dehydrogenation have been casted for mesoporous carbon which was synthesized by using glucose as carbon source and disk type silica as a hard template. The structure of mesoporous carbon is graphitic phase. Textural properties are 1040m₂/g of surface area and 3nm of averaging pore diameter.

Catalytic behavior of mesoporous carbon was exhibiting 30% of conversion with Ethyl benzene when CO₂ is used as soft oxidant at 500°C. CO and O₂ were exhausted while reaction is going on in reactor which is in fixed bed system.

CO₂ can interact with surface of mesoporous carbon during reaction. It was identified by In-situ IR method.