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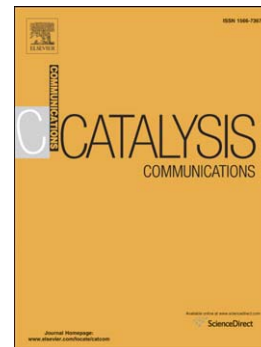
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Synchronized dehydrogenation-hydrogenation reactions over partially reduced MoO₂ based catalyst for simultaneous synthesis of styrene and aniline

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ABSTRACT

The coupling of ethylbenzene dehydrogenation with hydrogenation of nitrobenzene to produce styrene and aniline over a single MoO_x supported on TiO₂-Al₂O₃ catalyst was performed. The study determines the feasibility of in situ H₂ generation from dehydrogenation reaction and its direct utilisation in hydrogenation reaction. Consequently, this eliminates the additional supply of H₂ for hydrogenation of nitrobenzene. Alternatively, the heat liberated from the hydrogenation reaction can be utilized by endothermic dehydrogenation reaction. The active MoO₂ species could effectively catalyse both the reactions to yield styrene and aniline simultaneously.

Key words: Coupling; MoO₂; Ethylbenzene; Nitrobenzene; Styrene; Aniline.

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