

## Determination of active site in mesoporous oxides for catalytic furfural hydrogenation

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Determining the active site on the catalyst surface and describing the relevant reaction mechanism is crucial for the development of a better catalyst. Knowing what phase plays a crucial role in the activity and selectivity of the reaction is of paramount importance, especially as the phase can change easily in catalytic reactions at various temperature and pressure conditions. Catalytic hydrogenation is essential for the conversion of biomass derivatives into biofuels and high-value-added chemicals. Herein, we prepared mesoporous transition metal oxides (Co<sub>3</sub>O<sub>4</sub>, CuO, and CuCo) as a strong candidate for noble metal-free catalyst for furfural hydrogenation. The crystal structure, porosity, and oxidation state of mesoporous oxide catalysts were characterized to determine which active species played a crucial role in catalytic performance.