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## Preparation of nano-structured CuO/ZnO/Al<sub>2</sub>O<sub>3</sub> catalyst for the synthesis of methanol from syn gas

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In this work, the effect of surfactant on the properties of a CuO/ZnO/Al<sub>2</sub>O<sub>3</sub> (CZA) catalyst is studied for methanol synthesis by hydrogenation of carbon monoxide. CuO/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts were prepared by co-precipitation method with several surfactants: tetrapropylammonium hydroxide (TPAOH), cetyltrimethylammonium bromide (CTAB) and Sodium dodecylbenzenesulfonate (SDBS). Surface morphologies of synthesized catalysts were investigated by high-resolution scanning electron microscopy (HR-SEM), and porous structure of catalyst was examined by transmission electron microscopy (TEM). The specific surface area was measured by Brunauer–Emmett–Teller (BET) analysis with N<sub>2</sub> sorption at 77 K, and crystallinity of synthesized materials were investigated by X-ray diffraction (XRD). Their catalytic activities for methanol synthesis from syn gas (CO/H<sub>2</sub> = 1:2) were evaluated in a fixed bed reactor at 518 K and 45 bar. The CO conversion and the methanol yield were analyzed by using gas chromatography. The influence of surfactant was clearly observed, and it affects surface morphology (porosity and surface area) enhancing catalytic activity.

### Biography

Jaeyong Jang has completed his Bachelor's degree in 2014 and now been master degree candidate under Prof. Sung-Hyeon Baeck in Department of Chemistry and Chemical Engineering, Center for Design and Applications of Molecular Catalysts, Inha University from Korea.

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