

Methanol synthesis by partial oxidation of methane over perovskite catalysts

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Methanol was directly produced by the partial oxidation of methane with perovskite catalysts. The catalysts were prepared by a citrate method. In the preparation of the catalysts, Mo, Bi and V were substituted for B site, which are widely used as a partial oxidation catalyst, and transition metals were used for A site. Reactions were carried out in a differential fixed bed reactor at 450°C, 45 bar and CH₄/O₂ ratio of 5–10. The catalytic activities of the prepared catalysts were tested with changing calcination temperature, composition and feed ratio. The structure, surface area, adsorption and desorption capacity, particle size of the catalysts were characterized by XRD, BET, TPD and SEM.