Steam reforming of Methanol Using the Structured Cu-Zn/Al_2O_3/Al Catalyst Prepared Through the Anodic Oxidation of Aluminum

E. Linga Reddy, 이현찬, 김동현*
경북대학교 화학공학과
(dhkim@knu.ac.kr*)

Steam reforming of Methanol was investigated using the structured catalyst Cu-Zn/Al2O3/Al. The porous Al2O3 layer was synthesized on the aluminum plate through anodic oxidation in an oxalicacid (0.3M) solution. The thickness of Al2O3 layer can be adjusted by controlling the anodizing time and current density. Cu and Zn were loaded (in different molar concentrations) by electroless deposition method over the prepared ɣ-alumina support. The catalysts were characterized by surface area (BET), X-ray diffraction (XRD), scanning electron microscopy (SEM) techniques. The obtained Al2O3 had a specific surface area of 80 m2 /g, and it was observed that about 40-60 nm nanopores were well developed in the Al2O3 layer, making it fit to be used as a catalyst support. A fixed tubular reactor was designed and fabricated to evaluate the catalytic activity of Cu-Zn/Al2O3/Al on steam methanol reforming. Among the catalysts, Cu(0.06) Zn(0.06)/AAO catalyst showed 78% maximum methanol conversion at 350 C.