

### Valuable hydrocarbons from methane via catalytic & noncatalytic ways

하경수<sup>1,†</sup>, 정재권<sup>1</sup>, 김만중<sup>1</sup>, 김주찬<sup>1</sup>, 김집<sup>1,2</sup>

<sup>1</sup>서강대학교; <sup>2</sup>한국화학연구원

(philoseus@sogang.ac.kr<sup>†</sup>)

The direct synthesis of C2 chemical from methane was studied with and without catalysts having ordered mesopores in a dielectric barrier discharge plasma reactor. The reaction was carried out using ordered mesoporous materials and OMM-supported catalysts. The effects of active catalytic materials, textural property of support and size of particles on catalytic performance were investigated especially in terms of C2 chemical yields. Physisorption, X-ray diffraction, transmission electron microscopy, in situ FT-IR and thermogravimetric analysis were used to investigate the performance of the plasma bed. In the next step, aromatization reaction is carried out over a hierarchical zeolite catalyst from the C2 chemicals formed in the previous plasma bed. Likewise, the catalytic materials were characterized in various methods and the performance was investigated.