

Conversion of CH<sub>4</sub> and CO<sub>2</sub> to syngas by dielectric barrier discharge reactor

Nguyen Hoang Hai, 김교선\*

강원대학교

(kkyoseon@kangwon.ac.kr\*)

The conversion of methane and carbon dioxide was experimentally investigated in a dielectric barrier discharge reactor with zeolite particles. Several important parameters including the ratio of CH<sub>4</sub>/CO<sub>2</sub>, voltage, frequency applied to plasma reactor and total gas flow rate were investigated to convert two green-house gases (CH<sub>4</sub> and CO<sub>2</sub>) to syngas. The addition of zeolite particles were also investigated as the combination of catalyst and plasmas which has the wonderful performance of anti-carbon deposition. The feed and product gases are analyzed by a gas chromatography equipped with a pulsed discharge detector. The Carbonxen<sup>TM</sup> 1010 PLOT is used as GC column. In this analysis, the conversions of CH<sub>4</sub> and CO<sub>2</sub> with plasmas and zeolite catalyst were higher than those with plasmas only.