EuroSciCon

European Congress on

Advanced Chemistry

July 12-13, 2018
Paris, France

B P Da Costa et al., J Org Inorg Chem 2018, Volume: 4
DOI: 10.21767/2472-1123-C2-005

PLASMA-CATALYTIC HYBRID PROCESS FOR CO_2 METHANATION OVER NI/CEZR BASED CATALYSTS

B P Da Costa[1], Wang[1, 2], M Mikhail[1, 2], R Jalain[1], S Cavadias[2], M Tatoulian[2], S Ognier[2] and M E Galvez[1]

[1]Sorbonne Universite, Institut Jean le Rond d'Alembert, Saint-Cyr l'Ecole, France
[2]Institut de Recherche de Chimie Paris, UMR 8247 (CNRS – Chimie ParisTech), Paris, France

The future regulations in greenhouse gases emissions lead the society to find efficient processes for the stabilization of atmospheric CO_2. Among the different processes, such as reutilization as an alternative to its geological storage, the catalytic valorization of CO_2 methanation, i.e. CO_2 hydrogenation, stands as a promising and industrial-scale applicable technology. Although CO_2 conversion into methane is exothermic and thermodynamically favorable at ambient temperature, a catalyst and high temperatures (> 350°C) are needed in order to achieve acceptable methane yield. Though many different metals have been used to catalyze the methanation process, the catalysts mostly based on Group VIII metals, such as Ni and Ru mainly supported on porous supports, are the most developed catalytic systems. Ni-based catalysts have been widely investigated, because of their good compromise between activity and economics. In order to decrease the operating temperature for the methanation of CO_2, the association of a catalyst with non-thermal plasma have been recently proposed, with dielectric-barrier discharge plasma (DBD), producing a wide variety of active species such as electrons, ions and radicals, improving the CO/CO_2 methanation reaction. In this study, we evaluated the coupled plasma DBD – $Ni/CeZrO_2$ system in studying more particularly, the influence of plasma and other operating parameters.

Biography

B P Da Costa has completed his PhD from University Pierre et Marie Curie and Post-doctoral studies from UC Berkekey. He is now Full Professor at Sorbonne University, in Faculty of Science and Engineering. He has published more than 150 papers in reputed journals and has been serving as an Editorial Board Member of different journals in Chemistry and Chemical Engineering.

patrick.da_costa@sorbonne-universite.fr