

March 29-30, 2018 Edinburgh, Scotland

Arch Chem Res 2018, Volume 2 DOI: 10.21767/2572-4657-C1-003

## 9<sup>th</sup> Edition of International Conference on

## **Biofuels and Bioenergy**

## HYDROGENATION OF CARBON DIOXIDE USING AU CATALYSTS

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Cossil fuels are still the primary source of energy in the world, which makes the concentration of CO2 continuously increase. Appropriate measures need to be taken to decrease this tendency. CO2 can be hydrogenated to produce high added-value chemicals, such as methanol, methane and carbon monoxide.

In this work, gold nanoparticles were supported on different metal oxides (Al2O3, CeO2, Fe2O3, TiO2 and ZnO) by a deposition-precipitation method. The activity of these catalysts for CO2 hydrogenation was tested using an online gas chromatograph.

It was shown that the support had a critical influence on the process. Au/Al2O3 was nearly. Au/CeO2 and Au/ZnO were very selective to methanol production. Au/TiO2 and Au/Fe2O3, although showing higher CO2 conversion, produced mostly carbon monoxide and methane.

Au/CeO2 showed the best results for methanol formation, although CeO2 alone was inert. The high activity of Au/CeO2 can

be attributed to a synergistic effect between Au and CeO2.

Acknowledgements: General Secretariat of Research and Technology of Greece (13CAPITA-13-8A), for funding (Project "CO2 and H2O toward methanol synthesis at atmospheric pressure in co-ionic electrochemical membrane reactors", ERA-NET, 7th FP. SACC thanks Fundação para a Ciência e Tecnologia (FCT) for financial support through (IF/01381/2013/CP1160/ CT0007) Investigador FCT program, with financing from the European Social Fund and the Human Potential Operational Program. This work was financially supported by Project POCI-01-0145-FEDER-006984 – Associated Laboratory LSRE-LCM funded by FEDER funds through COMPETE2020 - Programa Operacional Competitividade e Internacionalização (POCI) – and by national funds through FCT. Authors are thankful to CEMUP for assistance with XPS and SEM analyses.

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