

CCST Seminar:

- › Monday, June 2, 2008
- › 11 A.M. (refreshments available at 10:45 a.m.)
- › 366 Colburn Laboratory

1st of 2
Seminars



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Prof. Lemonidou joined the Aristotle University of Thessaloniki in 1985, where she is currently the head of the Petrochemical Technology Laboratory. She is a collaborating faculty member at the Chemical Process Engineering Research Institute (CERTH/CPERI). She received her Ph.D. in chemical engineering at the Aristotle University of Thessaloniki in 1990. Her research interests include developments of nanostructured catalysts and heterogeneous catalytic reaction and engineering of gas and liquid hydrocarbons and biorenewable feedstocks transformations.

“Sustainable Hydrogen Production via Steam Reforming of Bio-oil Components”

Hydrogen produced from renewable energy sources can present significant environmental benefits as an alternative to fossil fuels or as a means for clean power generation via fuel cells. The aqueous fraction of bio-oil can be used as a source for hydrogen production, if reformed in the presence of active catalytic materials. Steam reforming of acetic acid, representative compound of bio-oil, is investigated in the presence of 5%Ni and 0.5%Rh supported on CeO₂-ZrO₂ catalysts. Both catalysts are very active in reforming, producing hydrogen with yields over 90% at temperature $\geq 650^{\circ}\text{C}$. Isotope ¹⁸O₂ temperature programmed exchange measurements showed that the mobility of CeO₂-ZrO₂ active oxygen is greatly influenced by the interphase of metal-support. Apart from catalyst development efforts are directed towards the application of the spouted bed reactor for the particular process. The effect of reaction temperature, steam to carbon ratio in the feed and space velocity is investigated for acetic acid and ethylene glycol demonstrating the suitability of this specific type of reactor for the reforming of the thermally unstable oxygenated components of the bio-oil.