

CCST Seminar:

- › Tuesday, June 3, 2008
- › 11 A.M. (refreshments available at 10:45 a.m.)
- › 366 Colburn Laboratory

2nd
Seminar



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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.

“Ethane oxidative dehydrogenation to ethylene over Ni-Nb-O catalysts”

Catalytic oxidative dehydrogenation (ODH) of ethane is an attractive alternative route for the production of ethylene. Ni-Nb-O mixed metal oxide catalysts have been proved as highly active and selective for ethane ODH, exhibiting an ethylene yield of 46% at 400°C for the catalyst with Nb/Ni ratio of 0.176 ($\text{Ni}_{0.85}\text{Nb}_{0.15}$). Detailed characterization of the materials shows that the key component for the excellent catalytic behavior is the Ni-Nb solid solution formed upon the introduction of niobium in NiO. Temperature-programmed isotopic $^{18}\text{O}_2$ exchange experiments demonstrate the different types of oxygen species present on the NiO catalyst surface depending on the presence or not of Nb oxide. The catalytic performance is kinetically modelled adopting the Mars van Krevelen mechanism for redox reactions.