

Zeolite/nano metal oxide composite catalyst for biomass pyrolysis**Ali Sinag**

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Nowadays energy and nanotechnology are both promising issues all over the world. Considerable attention has been paid to the nanosized metal oxides due to their unique properties and/or potential applications in several areas such as biomedical applications, optic and electronic, sorbents, sensors, catalysis. Only limited works are available on the conversion of biomass by using nanosized metal oxide catalysts.

Due to the financial, environmental and national problems of conventional fossil fuels, biomass is the only sustainable source of carbon that can be used to make renewable fuels and chemicals. Turkey has always been one of the major agricultural countries of the world. The importance of agriculture is increasing due to biomass energy being a major resource of Turkey. Much attention has been focused on new suitable biomass species which can provide high-energy outputs and have serious stocks for the sustainability. Among various agricultural residues, olive oil residue and hazelnut shell are coming into prominence due to their huge stocks.

ZSM-5 is an efficient catalyst to convert oxygenated organic compounds into hydrocarbons. The deoxygenation,

decarboxylation, and decarbonylation reactions of the bio-oil components, cracking, alkylation, isomerization, cyclization, oligomerization, and aromatization are catalyzed by acidic sites of the zeolite. H-ZSM-5 that is activated at 500°C has predominantly Brønsted acid sites; however, especially at higher temperatures, Lewis acid sites form, resulting in dehydroxylation reactions. Surface acidity of anatase TiO₂ is the Lewis type. The aim of this study is the investigation of the catalytic effect of ZMS-5/nano TiO₂ composites on the pyrolysis of model and real biomasses. With and without catalysts experiments were conducted to compare the catalytic effect of ZSM-5, nano TiO₂, Degussa P25 and bulk TiO₂

Speaker Biography

Ali Sinag has completed his PhD from Ankara University, Turkey. In 2001 he moved to the Technical University of Karlsruhe (Karlsruhe-Germany), working within the groups of Prof Dr Rainer Raimert with the scholarship of the German Academic Exchange Service (DAAD). In 2003 he joined Prof Dr Eckhard Dinjus's group (Karlsruhe Research Center, Germany) with the scholarship of Forschungszentrum Karlsruhe. He is professor of Ankara University, Turkey. He has over 50 publications that have been cited over 1300 times, 3 patents and his publication H-index is 21 and has been serving as a Vice Chair of Science Park of Ankara University.

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