

# ICOSECS 8

University of Belgrade  
Faculty of Technology and Metallurgy  
Belgrade, Serbia, June 27-29, 2013



8<sup>th</sup> International Conference  
of the Chemical Societies  
of the South-East European Countries

# BOOK OF ABSTRACTS

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**Activity of DPU-Ni/D hydrogenation catalysts prepared by urea method**

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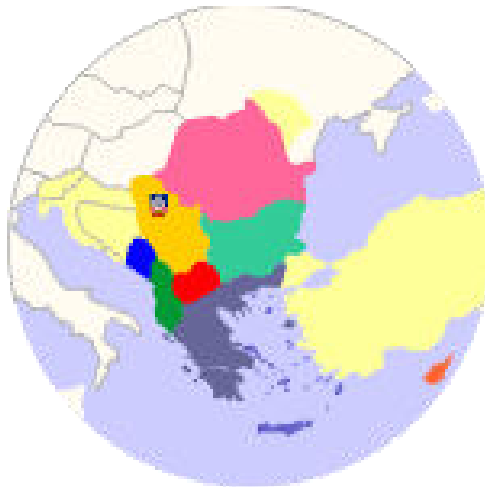
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**Improvement of pozzolanic mortars by application of  $\text{TiO}_2/\text{ZnAl}$  layered double hydroxide based protective coating**

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## Catalysis

## Activity of DPU-Ni/D hydrogenation catalysts prepared by urea method

Miroslav Stanković, Dalibor Marinković\*, Margarita Gabrovska\*\*, Dušan Jovanović

IHTM-CKHI, University of Belgrade, Njegoševa 12, Belgrade

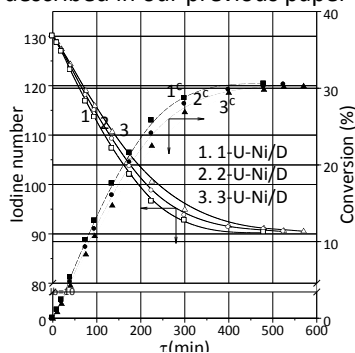
\*IHTM-CETE, University of Belgrade, Njegoševa 12, Belgrade

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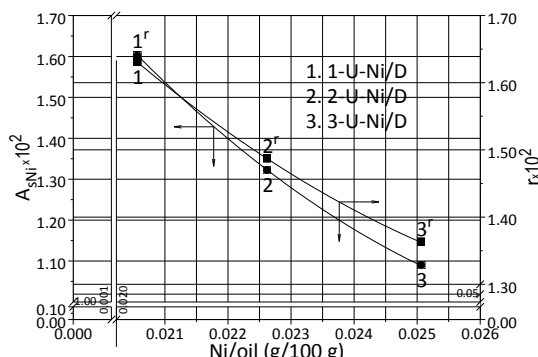
Nickel catalysts supported on diatomite (Ni/D) were prepared by deposition-precipitation urea (DPU) method [1]. The precipitation of Ni(II) phase onto diatomite surface was performed under various deposition-precipitation times. The catalyst precursors prepared with different nickel loading were then subjected through preparation steps including drying, reduction and passivation under the same conditions.

Characterization of textural, structural and reducible properties was carried out using following techniques: N<sub>2</sub>-physisorption, Hg-porosimetry, XRD, IR, TG-DTG and TPR.

The activity of DPU-Ni/D catalysts was tested in the reaction of hydrogenation of soybean oil. This reaction was performed in a three-phase slurry reactor, under conditions described in our previous paper [2].



**Fig. 1.** Iodine number and Conversion vs. hydrogenation time



**Fig. 2.** Specific activity ( $A_{sNi}$ ) and hydrogenation rate ( $r$ ) vs Ni loading

Figures 1 and 2 show the activities of the 1-U-Ni/D, 2-U-Ni/D and 3-U-Ni/D in catalytic test reaction of soybean oil hydrogenation. For hydrogenation reaction the highest activity was observed for the catalyst sample 1-U-Ni/D with the lowest nickel loading. The activity of catalyst samples increased in the following order: 1-U-Ni/D > 2-U-Ni/D > 3-U-Ni/D.

An observed trend of increasing activity with decrease of Ni loading is in good correlation with the results obtained by the characterization of the catalyst surface and, in particular, with reducible characteristics of prepared DPU-Ni/D catalyst samples.

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### References

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- [2] M. Stanković, M. Gabrovska, J. Krstić, P. Tzvetkov, M. Shopska, T Tsacheva, P. Banković, R. Edreva-Kardjjeva, D. Jovanović, *J. Mol. Catal. A: Chem.*, **297** (2009) 54-62.