



VABILO NA INŠTITUTSKO PREDAVANJE / INVITATION TO THE INSTITUTE LECTURE

Prof. dr. Patricia Haure

*Dpto. de Ingeniería Química/Div. Catalizadores y Superficies – INTEMA – CONICET /
Universidad Nacional de Mar del Plata,
Mar del Plata 7600, Argentina; phaure@fi.mdp.edu.ar*

četrtek / Thursday, 30. 07. 2015, ob / at 13:00

Velika predavalnica Kemijskega inštituta / Lecture Hall at the
National Institute of Chemistry; Hajdrihova 19, Ljubljana

Natural Diatomites: Efficient Green Catalyst for Fenton-like Oxidation of Orange II

Abstract:

Our group is involved in the development of new catalytic materials and treatment technologies for the decontamination of liquid effluents through Fenton-like processes. Particularly, we are interested in the use of natural, low cost materials such as diatomites or pumice as Fenton-like catalysts for oxidation of phenol and azo-compounds.

In this presentation, the Fenton-like oxidation of the anionic azo-dye Orange II (100-500 mg/L) is catalyzed using commercial grade diatomites (3.5 % Fe content) thermally treated.

Solid samples were thoroughly characterized by several techniques. Peroxidation experiments were performed varying the diatomite calcination temperature (500, 700 and 1000 °C), reaction temperature (50, 60, 70 and 80 °C), catalyst load (0.47, 0.94, 1.89 and 3.78 g), H₂O₂ concentration (11.0, 13.7 and 20.6 mmol/L) and dosing, pH value (2-4) and initial dye concentration (0.28, 0.57 and 1.43 mmol/L). The influence of NaCl and oxalic acid on the catalytic performance and stability was also addressed.

The best results were obtained at 70 °C, initial pH value equal to 3 and using the stoichiometric amount of H₂O₂, since complete decoloration, TOC reduction close to 67 % and negligible Fe leaching were achieved with samples calcined at 700 °C. The catalyst used in consecutive runs yielded similar performance in terms of decoloration and TOC reduction.

Overall, the performance of this natural material was comparable or even better than data reported in the literature using more complex and expensive catalysts and less concentrated solutions.

Vljudno vabljeni! / Kindly invited!