Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VII
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 17-19. September 2018.

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Oscillatory reaction as novel method in distinguishing bentonites

M. Marinković[1], J. Maksimović[1], N. Jović-Jovičić[2], S. Marinović[2], M. Ajduković[2], T. Mudrinić[2], M. Pagnacco[1]

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In the chemical oscillatory reaction the concentrations of the reactants decrease and products increase in stepwise form, while the concentrations of intermediates oscillate with time. In this paper, the influence of different bentonites on Briggs-Rauscher (BR) oscillatory reaction was investigated. In BR the oxidation of malonic acid in the presence of hydrogen peroxide and iodate in acidic medium, catalyzed by manganese ions occurs. The same mass (0.25 g) of bentonite from different deposits: Wyoming (SWy-2), Texas (STx-1b), Bogovina (B) and Mečji Do (MD) were added to the reaction solution consisting of 7 ml [$CH_2(COOH)_2$]=0.28 M, 5 ml [$MnSO_4$]=0.04 M, 5 ml [$HClO_4$]=0.15 M, 5 ml [KIO_3] =0.38 M, and 3 ml [H_2O_2]=9.80 M. The obtained results were compared with basic BR oscillogram without bentonite. According to the obtained results the effects of bentonite on an oscillatory dynamics can be divided into three groups. The first group consisted of SWy-2 that negligibly affected the duration of the BR oscillogram. In the second group were B and MD which quenched oscillatory behavior, while STx-1b in third group extended oscillatory period. The results revealed that BR oscillatory reaction could be used as novel method for distinguishing of bentonites.

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Electrochemical behavior of phenol and its derivatives on the electrodes based on inorgano/organo modified bentonite

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In this work glassy carbon electrode (GCE) was modified using previously prepared bentonites. Modification of bentonite was performed by replacing the exchangeable cations present in the natural bentonite with selected inorganic and organic cations, i.e. AlFeNi polyoxo cations and benzyltrimethylammonium (BTMA) cations, respectively. Obtained materials were denoted as AlFeNi-B and BTMA-B. GCE was modified by applying homogenous dispersion of either AlFe5Ni5-B or BTMA-B and 10 wt. % carbon black in the original Nafion® solution on the