Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VIII
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, 23-25. September 2019.

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with increasing the frequency was noticed for both untreated and treated samples, after 0.5 h as well as 2 and 7 days after plasma treatment. The changes in the value of dielectric loss tangent are small, but it can be noticed that the plasma effect on the cotton sample was maintained after 7 days, which is less noticeable for the samples made of polyethylene terephthalate and polypropylene. The SEM analysis of the cotton sample showed micro cracks on its surface as a result of plasma etching, while the polyethylene terephthalate fibers appeared darker and rough after the plasma treatment. The changes were more obvious on the samples treated 60 seconds compared to samples treated 30 seconds. There are no significant changes in the polypropylene sample surface morphology.

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Characterization of diatomsceous earth from Kolubara mining basin, Serbia

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Diatomaceous earth is of sedimentary origin consists mainly of accumulated skeletons formed as a protective covering of the diatoms. Usually, high absorption capacity of diatomaceous earth provides its wide use as heat insulation, filter, and absorbent material. Starting raw material, diatomaceous earth from surface coal mine Kolubara, Serbia, was characterized using X-ray fluoroscence (XRF), X-ray diffraction (XRD), scanning electron microscopy (SEM) were employed to the phases and microstructure of the diatomaceous earth. In addition, concentrations of activity of natural radionuclides ^{40}K, ^{226}Ra and ^{232}Th and anthropogenic radionuclide ^{137}Cs in diatomaceous earth were determined by gamma spectrometry with HPGe detector. It was found that the activity concentrations were in the range of 150-190 Bq / kg for ^{40}K, 5-12 Bq / kg for ^{226}Ra and 22-33 Bk / kg for ^{232}Th. In all samples, the concentration of anthropogenic radionuclide ^{137}Cs was below the detection limit. This research shows that this material is environmentally safe for further use.

P24
Characterisation of clay from Kolubara mining basin, Serbia

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During coal exploitation in the Kolubara mining basin, Serbia, clay is deposited as accompanying mineral. The aim of the present study is to analyze the activity concentrations of terrestrial (^{226}Ra, ^{232}Th and ^{40}K) and anthropogenic (^{137}Cs) radionuclides in clay collected from Kolubara mining using the high-resolution gamma spectrometer with HPGe detector and evaluate external ionizing radiation exposure in outdoor air. The total absorbed gamma dose was in the range of 39-44 nGy/h. In addition, inductively coupled plasma spectroscopy (ICP), X-ray diffraction (XRD), X-ray fluoroscence (XRF), Scanning electron microscopy (SEM) clay from Kolubara mining basin, Serbia, were used. Also, this study is indicative that clay from Kolubara mining is not a significant source of radiation and is suitable for potential use clay in advanced environmental protection area.