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Use of waste sludge from Ni/Cr plating as raw material for obtaining the inorganic pigments

Radojka Vujasin, Ljiljana Matović, Ksenija Kumrić, Marija Egerić, Mia Omerašević and Aleksandar Devečerski University of Belgrade, Serbia

H azardous industrial waste is the most common source of environmental pollution. Waters originating from unregulated landfills and places of inadequate disposal of this type of waste can pollute the sources of drinking water and affect the health of the population. As a starting material for the synthesis of inorganic pigments, galvanic waste sludge from Ni/Cr plating was used. Color of the obtained inorganic pigments vary from green through brown to black, which can be attributed to the existence of Cr and Fe chromophore ions, as dominant components in the composition of sludge. Black inorganic pigment mixed Fe/Cr oxide ($Cr_{1.3}Fe_{0.7}O_3$) was synthesized by adding Fe_2O_3 to the sludge and choosing the appropriate temperature of calcination (1000°C). Values of L*a*b* coordinates were 23.8, 1.6 and 0 were obtained respectively and are in accordance with the literature. XRD, SEM, PSD (particle size distribution) analysis was performed on the as received sludge and synthesized pigment. Black pigments can be considered as "inert", against the water leaching, which is quite opposite to the leaching stability of the dried sludge.

Biography

Radojka Vujasin has completed her PhD at the Faculty of Physical Chemistry, University of Belgrade, Serbia. She is employed at the Department of Materials Science, "Vinča" Institute of Nuclear Sciences, Serbia. She is working as a Researcher in the field of Materials Science dealing with the synthesis, characterization and modification of carbon materials and metal hydrides. She has experience in theoretical research using different computer programs based on density functional theory.

radojka.vujasin@vin.bg.ac.rs

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