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ADVANCED CERAMICS AND APPLICATION**

Organized by
**Serbian Ceramic Society
&
Institute of Technical Sciences of SASA**

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Evaluation of Fly Ash Physico-chemical Characteristics as Component for Eco-ceramic and Sintered Materials

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The aim of the presented study is to evaluate utilization potential of the fly ash which is the main residue from the coal combustion thermal-plants. Decades long high production of fly ash represents extreme hazard for the environment. The storage problem of this waste material is also alerting. Thus, recycling and reapplication of fly ash in construction materials industry is the only economic solution. The well-known examples of fly-ash reapplication as a component in cement, mortar, concrete, bricks and tiles are not enough in means of reusing extreme amounts of this waste material. Therefore, new applications in ash-based composites have to be developed: eco-ceramic materials and sintered materials for refractory performances. In this investigation, characterization of three different fly ash capacities was used as base for further fly ash utilization possibilities analysis. Accent was on the investigation of the fly ash mineralogical and chemical composition. Thermal stability of crystalline phases was investigated with DTA. Macro-performance was correlated with the microstructure of fly ash studied by means of XRD and SEM analysis. Furthermore, content of trace elements, physico-chemical characteristics and leaching toxicity tests were carried out. Comparing the properties of investigated fly ashes with standard values, it could be presumed that fly ash originating from Serbian power plants can be potentially useful for high value products - eco-ceramic and refractory/sintered materials manufacturing.

Key words: fly ash, microstructure, potential reusing, eco-ceramic, sintering.

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