



## **New ceramics incorporated with industrial by-products as pore formers for sorption of toxic chromium from aqueous media**

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The incorporation of secondary resources including various industrial wastes as pore-forming agents into clayey raw material mixtures for the development of tailored porous ceramic microstructures is currently of increasing interest.

In the present research, sintered ceramic compacts were developed incorporated with industrial solid by-products as pore formers, and then used as new sorbents for chromium removal from aqueous media.

The microstructures obtained were characterized through X-ray diffraction (XRD) analysis as well as scanning electron microscopy (SEM) coupled with energy dispersive X-ray spectrometry (EDX).

Sorption potential of chromium from synthetic solutions on the porous ceramics was studied by static adsorption experiments as a function of the pore-former percentage in the ceramic matrix as well as the initial heavy metal (chromium) concentration, solution pH and temperature. Kinetic studies were conducted and adsorption isotherms of chromium were determined using the Langmuir equation.

Preliminary experimental results concerning the adsorption characteristics of chromium on the ceramic materials produced appear encouraging for their possible beneficial use as new sorbents for the removal of toxic chromium from aqueous media.

**Keywords:** sorbents, ceramics, industrial solid by-products, pore former, chromium.

**Acknowledgements:** This research has been co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program ARCHIMEDES III: Investing in knowledge society through the European Social Fund.