ARSENIC(III) ADSORPTION FROM AQUEOUS SOLUTION BY USING FE(III)-LOADED XAD-8 RESIN IMPREGNATED WITH DEHPA

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Arsenic forms highly toxic chemicals thereby rising epidemiological problems to human health. The paper presents a novel support for arsenic (III) adsorption and its removal from aqueous solutions. The support is new solvent-impregnated resins (SIR) which is capable of selective adsorption and can be considered as an alternative adsorbent materials. SIR were obtained by impregnating Amberlite XAD-8 with di(2-ethylhexyl)phosphoric acid (DEHPA) as extractant and ethylic alcohol as solvent by dry impregnation method. In view of arsenic (III) adsorption the DEHPA-impregnated XAD-8 resin was loaded with Fe(III) ions. In order to establish the adsorption performance of the material, the influence of different physicochemical parameters (pH, contact time, ratio S:L and initial concentration of arsenic) was investigated. The maximum adsorption capacity of the material towards As(III) was determined through equilibrium studies using Langmuir and Freundlich isotherm models. The thermodynamic studies allowed us to determine thermodynamic parameters H0 and S0. The kinetic studies were performed using the pseudo-first order and pseudo-second order kinetic models.

Acknowledgements This work was partially supported by the strategic grant POSDRU/89/1.5/S/57649, Project ID 57649 (PERFORM-ERA), co-financed by the European Social Fund – Investing in People, within the Sectoral Operational Programme Human Resources Development 20072013.
The authors gratefully acknowledge financial support provided by the UEFISCSU, under Grant No. 694/19.01.2009, Code 927, "Integrated Concept about Depollution of Waters with Arsenic Content, through Adsorption on Oxide Materials, followed by Immobilization of the Resulted Waste in Crystalline Matrices".

Keywords: arsenic, adsorption, SIR