



“Gheorghe Asachi” Technical University of Iasi, Romania



STATISTICAL OPTIMIZATION OF CHROMIUM IONS ADSORPTION ON DEHPA-IMPREGNATED AMBERLITE XAD7

**Mihaela Ciopec^{1*}, Corneliu Mircea Davidescu¹, Adina Negrea¹, Ion Grozav²,
Lavinia Lupa¹, Cornelia Muntean¹, Petru Negrea¹, Adriana Popa³**

¹ „Politehnica” University of Timisoara, Faculty of Industrial Chemistry and Environmental Engineering, 2 Victoria Square,
300006 Timisoara, Romania

² „Politehnica” University of Timisoara, Faculty of Mechanics, 2 Victoria Square, 300006 Timisoara, Romania

³ Romanian Academy, Institute of Chemistry Timisoara of Romanian Academy, 24 Mihai Viteazul Blvd., 300223 Timisoara,
Romania

Abstract

Statistical thinking and statistical methods play an important role in planning, conducting, analyzing and interpreting data from experiments. When several variables influence a certain characteristic of a product, the best strategy is then to design an experiment so that valid, reliable and sound conclusions can be drawn effectively, efficiently and economically.

The present paper investigates the efficiency of chromium ions removal onto Amberlite XAD7 using the solvent impregnated resin (SIRs) method. The Amberlite XAD7 resin was impregnated with di-(2-ethylhexyl)-phosphoric acid (DEHPA) and ethylic alcohol as solvent by dynamic column impregnation method. The results showed that the maximum efficiency of chromium ions removal was reached after 60 min. At this moment, the efficiency of chromium ions removal was of ~90%. In this paper the design of experiments was used to study the performance of a chemical process. The process transforms the inputs into an output that has two observable responses (absorbability and efficiency). By analyzing the results of the second-order model, the process has been optimized.

Key words: Amberlite XAD7, chromium, design, di-(2-ethylhexyl)-phosphoric acid, SIRs

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* Author to whom all correspondence should be addressed: e-mail: mihaela.ciopec@chim.upt.ro; Phone/Fax: 004 0256 404192