

# BOOK of ABSTRACTS

## 25<sup>th</sup> Congress of Chemists and Technologists of Macedonia



19-22 9 2018  
OHRID, R MACEDONIA





**Сојуз на хемичарите и технолозите на Македонија**

**Society of Chemists and Technologists of Macedonia**

**25<sup>th</sup> Congress of SCTM  
with international participation**

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The 25<sup>th</sup> Congress of SCTM is a



recognized event.

**POL P-2**

**SILVER(I) ADSORPTION ON MAGNETIC MACROPOROUS CHELATING POLYMER**

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Environmental poisoning due to the emission of waste silver electrical and electronic industries, jewelry, photography and dentistry, in the last few decades has been of growing concern. The most effective methods for silver removal from aqueous media include electrolysis, precipitation, ion-exchange and adsorption. Highly crosslinked GMA-based polymers are chemically and mechanically stable materials containing reactive epoxy groups susceptible to undergoing functionalization, thus allowing the attachment of complexing agent selective for a specific metal ion.

In this presentation, macroporous chelating glycidyl methacrylate and ethylene glycol dimethacrylate copolymer functionalized with diethylene triamine (PGME-deta) was tested as Ag(I) sorbent from aqueous solutions. The sorption kinetics was studied in batch experimental mode and static conditions at room temperature and different initial Ag(I) concentration. The results were fitted to surface-reaction (pseudo-first and pseudo-second-order) and particle diffusion-based (intraparticle diffusion and Boyd's) kinetic models.

The pseudo-second-order model provided the best fit for the kinetic data, with a definite influence of pore diffusion. The maximum sorption capacity at pH 6 of 2.25 mmol g<sup>-1</sup> (240 mg g<sup>-1</sup>) was reached after 30 minutes. Equilibrium data were analyzed with Langmuir, Freundlich and Temkin adsorption isotherm models.

**Keywords:** Chelating polymer, silver(I) adsorption, kinetic models, adsorption isotherms.