PRESENTER INFORMATION

Name: Ljiljana

First name: Suručić (Surucic)

E-mail: ljiljana.surucic@med.unibl.org

Institute/ affiliation: Faculty of Medicine, University of Banja Luka

BIOGRAPHICAL SKETCH

Ljiljana Suručić completed her education at the University of Belgrade, where she worked for 10 years as a teaching assistant and researcher. Currently, she is employed at the Faculty of Medicine, University of Banja Luka, as an assistant professor of organic chemistry. Her research focuses on polymers, particularly the synthesis and characterization of polymers based on glycidyl methacrylate. She has explored the application of these polymers in the sorption of heavy metal ions and organic pollutants, as well as the mechanism of sorption processes using theoretical models. Recently, she has been investigating the potential use of waste biomaterials in adsorbing organic pollutants, primarily pesticides, from aqueous solutions.

TITLE

Synthesis, Functionalization, and Modeling of Crosslinked Macroporous Copolymers Based on Glycidyl Methacrylate for Heavy Metal Sorption in Aqueous Solutions

ABSTRACT

Crosslinked macroporous copolymers, based on glycidyl methacrylate and ethylene glycol dimethacrylate (PGME), can be synthesized via in-situ free-radical copolymerization, in the form of spherical micro-particles with highly active surfaces. The presence of reactive epoxy rings within the chemical structure of PGME enables the functionalization with different ligands by nucleophilic substitution processes. This characteristic renders PGME flexible macromolecules ideal for a diverse array of applications. Numerous studies have demonstrated that aminofunctionalized PGME exhibits a high affinity for the sorption of heavy metal ions in aqueous solutions (Maksin et al., 2012; A. Nastasović et al., 2009). The sorption mechanism of aminofunctionalized PGME has been extensively studied in order to elucidate the influence of system variables on sorption capacity. Additionally, molecular modeling techniques, including theoretical quantum-chemical computations, enhance the analysis of experimental data. These endeavors could lead to the development of a theoretical model capable of predicting the efficiency and selectivity of sorbents towards different ionic species in aqueous solutions under well-defined parameters (Nastasović, Marković, Suručić, & Onjia, 2022; Suručić, Nastasović, Onjia, Janjic, & Rakic, 2019; L. T. Suručić et al., 2019; Suručić et al., 2021).

References:

Maksin, D. D., Nastasović, A. B., Milutinović-Nikolić, A. D., Suručić, L. T., Sandić, Z. P., Hercigonja, R. V., & Onjia, A. E. (2012). Equilibrium and kinetics study on hexavalent chromium adsorption onto diethylene triamine grafted glycidyl methacrylate based copolymers. *Journal of hazardous materials, 209-210*, 99-110. doi: 10.1016/j.jhazmat.2011.12.079

Nastasović, A., Marković, B., Suručić, L., & Onjia, A. (2022). Methacrylate-Based Polymeric Sorbents for Recovery of Metals from Aqueous Solutions. *Metals, 12*(5), 814. doi: 10.3390/met12050814

Nastasović, A., Sandić, Z., Suručić, L., Maksin, D., Jakovljević, D., & Onjia, A. (2009). Kinetics of hexavalent chromium sorption on amino-functionalized macroporous glycidyl methacrylate copolymer. *Journal of hazardous materials, 171*(1-3), 153-159. doi: 10.1016/j.jhazmat.2009.05.116

Suručić, L., Nastasović, A., Onjia, A., Janjić, G., & Rakić, A. (2019). Design of amino-functionalized chelated macroporous copolymer [poly(GMA-EDGMA)] for the sorption of Cu (II) ions. *Journal of the Serbian Chemical Society, 84*(12), 1391-1404. doi: 10.2298/jsc190125031s

Suručić, L. T., Janjić, G. V., Rakić, A. A., Nastasović, A. B., Popović, A. R., Milčić, M. K., & Onjia, A. E. (2019). Theoretical modeling of sorption of metal ions on amino-functionalized macroporous copolymer in aqueous solution. *J Mol Model, 25*(6), 177. doi: 10.1007/s00894-019-4053-0

Suručić, L., Tadić, T., Janjić, G., Marković, B., Nastasović, A., & Onjia, A. (2021). Recovery of Vanadium (V) Oxyanions by a Magnetic Macroporous Copolymer Nanocomposite Sorbent. *Metals, 11*(11), 1777. doi: 10.3390/met11111777