



Determination of Antimicrobial Activity Of Copper Activated Macroporous GMA Based Copolymer

S. Bulatović,^{a,*} B. Marković,^a T. Tadić,^a A. Nastasović,^a M. Ilić,^a D. Randjelović^a and N. Nedić^b

^aUniversity of Belgrade, Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia

^bUniversity of Belgrade, Faculty of Chemistry, Belgrade, Serbia

*sandra.bulatovic@ihm.bg.ac.rs

Macroporous (glycidyl methacrylate) GMA-based composite was synthesized via suspension polymerization in the presence of 2 wt. % magnetic nanoparticles and functionalized with triethylenetetramine. Copper was immobilized on composite by contacting modified copolymer with 0.1 M solution of CuCl₂, at pH 5, and 25 °C. The obtained composite was characterized by mercury porosimetry, Fourier transform infrared spectroscopy (FTIR) analysis and atomic force microscopy (AFM). GMA-based composites, due to their properties (size, porosity, etc.), and the presence of reactive epoxy group, have found a variety of applications as sorbents, enzyme supports, in biomedical applications, for metal and organic compounds sorption.¹

The antimicrobial activity of the synthesized GMA/Cu copolymer against *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans* and *Aspergillus niger* as representatives for Gram-positive bacteria, Gram-negative bacteria, yeast and fungi were investigated in this study.² The copolymer displayed good antimicrobial activity against all analyzed microbes, which makes it a material that can be potentially used for biomedical (antibacterial and antifungal) applications.

Keywords: antimicrobial activity, copolymer, GMA, copper

Acknowledgement: This research has been financially supported by the Ministry of Science, Technological Development and Innovation of Republic of Serbia (Contract No: 451-03-47/2023-01/200026 and 451-03-47/2023-01/200168).

References:

1. Marković, B. M.; Spasojević, V. V.; Dapčević, A.; Vuković, Z. M.; Pavlović, V. B.; Randelović, D. V.; Nastasović, A. B., Characterization of glycidyl methacrylate based magnetic nanocomposites, *Hem. Ind.* **2019**, *73(1)*, 25-35. DOI: 10.2298/HEMIND181113006M
2. Nguyen, V. T.; Vu, V. T.; Nguyen, T. H.; Nguyen, T. A.; Tran, V. K.; Nguyen-Tri, P., Antibacterial Activity of TiO₂- and ZnO-Decorated with Silver Nanoparticles, *J. Compos. Sci.* **2019**, *3(2)*, 61. DOI: 10.3390/jcs3020061