

Abstract

ELECTROCHEMICAL BEHAVIOR OF COPPER IN PRESENCE OF OAK BARK MACERATE

DOI: 10.5937/EcoTER26632K

Student: Marina Karabašević¹

Mentors: Vesna Grekulović^{1*,a}, Milan Gorgievski^{1,b}

¹ University of Belgrade, Technical Faculty in Bor, Vojske Jugoslavije 12, 19210 Bor, SERBIA

^a <https://orcid.org/0000-0001-6871-4016>

^b <https://orcid.org/0000-0002-9899-719X>

Abstract

Possibility for using oak bark macerate as an ecological inhibitor of copper corrosion in a chloride media was investigated in this paper. Electrochemical behavior of copper in 0.5 mol/dm³ NaCl in the absence and in the presence of oak bark macerate in different concentrations was investigated by method of open circuit potential measurement and cyclic voltammetry method. Results of measuring the open circuit potential show that the values of the open circuit potential in the presence of oak bark macerate are more positive in relation to the value of the open circuit potential in the absence of oak bark macerate. Three current peaks appear on the anodic polarization curves, corresponding to the formation of copper chloride and copper oxide. Increasing oak bark macerate concentration leads to shifting of the current peaks potential to more positive values and current intensity value of current peaks decreases, which indicates the inhibitory effect of oak bark macerate.

Keywords: copper, electrochemical behavior, oak bark macerate

ACKNOWLEDGEMENT

The research presented in this paper was done with the financial support of the Ministry of Education, Science and Technological Development of the Republic of Serbia, within the funding of the scientific research work at the University of Belgrade, Technical Faculty in Bor, according to the contract with registration number 451-03-34/2026-03/200131.

REFERENCES

1. Abdullah, A. M., Al-Kharafi, F. M., Ateya, B. G. Scripta Mater. 2006, 54, 1673–1677.
2. Otmačić, H., Stupnišek-Lisac, E. Electrochim. Acta. 2003, 48, 985–991.
3. Pourbaix M, Atlas d'Equilibres Electrochimiques. Paris:Gauthier-Villars et Cie;1963.
4. Stević, Z., Rajčić-Vujasinović, M. Chem.Ind. 2007, 61, 1–6.

*vgrekulovic@tfbor.bg.ac.rs

5. Zdravković, M., Grekulović, V., Suljagić, J., *et al.* Prot.Met.Phys.Chem.Surf. 2024, 60, 544–553.
6. Zdravković, M., Vianello, R., Grekulović, V., *et al.* Results Eng. 2026, 29, 109812.
7. Zhang, D., Gao, L., Zhou, G. Appl.Surf.Sci. 2004, 225, 287–293.