



TwinPrebioEnz

International conference:

BIOCHEMICAL ENGINEERING & BIOTECHNOLOGY

For Young Scientists

BOOK of ABSTRACTS





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PINUS SYLVESTRIS ESSENTIAL OIL AS A GREEN CORROSION INHIBITOR FOR MILD STEEL IN 1M HCl SOLUTION

Andela R. Simović¹*, Jelica Novaković², Peđa Janačković², Jelena Bajat³

¹University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of Republic of Serbia, Belgrade, Serbia

²University of Belgrade, Faculty of Biology, Institute of Botany and Botanical Garden "Jevremovac", Belgrade, Serbia

³University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

With its superior mechanical and physical qualities, carbon steel finds extensive usage in several fields. Its primary flaw is that it easily corrodes, especially in acidic environments. Globally, scientists are researching green corrosion inhibitors, which are primarily defined as plant extracts and essential oils that are cheap, safe, non-toxic, and have a high corrosion inhibition efficiency.

The study of *Pinus Sylvestris* essential oil as a green corrosion inhibitor of steel in 1M HCl serves as the foundation for our investigation. Through hydrodistillation with a Clevenger-style device, the essential oil of fresh, dried *Pinus Sylvestris* needles was recovered. Different inhibitor doses and immersion periods in HCl were used to calculate the internal efficiency (IE). Utilizing Polarization Measurements and Electrochemical Impedance Spectroscopy (EIS), the oil's inhibitory effects were estimated.

Using electrochemical methods, it was determined that the optimal inhibitor concentration is 100 ppm. The effectiveness of the inhibition increases during the time of 1 to 4 hours of immersion. Also, this essential oil is a mixed corrosion inhibitor with dominant control of cathodic reaction.

Keywords: corrosion; green inhibitor; electrochemical methods; plants

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* Corresponding author, andjela.simovic111@gmail.com

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