

## THE EFFECT OF BIOSORBENT CONCENTRATION (CHAMOMILE TEA RESIDUES) ON LEAD REMOVAL FROM WATER SAMPLES

Kaltrina Jusufi <sup>a</sup>, Enju Wang <sup>b</sup>, Taha Fadlou Allah <sup>b</sup>, Ali A. Shohatee <sup>c</sup>, Sudhir Kumar Singh <sup>d</sup>,  
Makfire Sadiku <sup>a\*</sup>

<sup>a</sup>Department of Chemistry, Faculty of Natural Science and Mathematics, University of Prishtina "Hasan Prishtina", 31, "George Bush" str., Prishtina 10000, Kosovo

<sup>b</sup>Department of Chemistry, St. John's University, 8000, Utopia Pkwy, New York 11439, USA

<sup>c</sup>Department of Pharmaceutical Sciences, St. John's University, 8000, Utopia Pkwy, New York 11439, USA

<sup>d</sup>K. Banerjee Centre of Atmospheric and Ocean Studies, University of Allahabad, Prayagraj Rd., Uttar Pradesh 211002, India  
<sup>\*</sup>e-mail: makfire.sadiku@uni-pr.edu

**Abstract.** This study examines the potential use of a low-cost biosorbent - chamomile tea residues, as an alternative to traditional adsorbents for removing Pb<sup>2+</sup> ions from aqueous solutions. The inductively coupled plasma-optical emission spectrometry (ICP-OES) was used to measure the amount of metal before and after the removal, and a scanning electron microscope (SEM) was used to examine the morphology of the residues. To ascertain the optimal operational parameters for effective metal extraction from the aqueous solutions, a range of different concentration levels, as well as the addition of acid in the solutions, was explored. The results show that lead concentration is reduced under optimized conditions, achieving an impressive nearly 50% Pb<sup>2+</sup> ions removal with a mere just 0.05 g of the waste material. These findings depict chamomile tea residues as promising, affordable, and highly efficient biosorbent in lead removal for environmental remediation.

**Keywords:** environmental pollution, remediation, biosorption, agricultural waste.