**Abstract**

 The present study deals with the removal of Zn(II) and Cu(II) ions, both being prioritized pollutants of industrial effluents discharged from mining, metallurgical, electrical and electroplating into aqueous streams. Mussel Shell Powder (MSP), a novel sorbent is chosen for the removal of the selected divalent ions from aqueous solutions employing batch equilibration method. The excess alkaline nature of the collected MSP is reduced through neutralization by soaking it in 0. IN HCl for 4 hours. TMSP is characterized by Fourier Transform Infrared (FTIR), Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray Analysis (EDAX).Batch equilibration method experiments pertaining to the study of variable parameters viz., particle sizes and doses of the adsorbent material, agitation time between the sorbent and the sorbate species, temperature and pH factors of the medium conducted for systems indicate that the sorption capacity is dependent on the operating variables The results revealed that the maximum percentage removal is 98.1 % for Zn(II) and 86. 3% for Cu(II) indicative of the best sorption efficiency of the animal waste.