**ABSTRACT**

The study is designed to investigate the potential applicability of Nano sized Treated Goat Teeth (NTGT) as adsorbent for Ni(II) removal from metal laden solutions. The desized novel nanomaterial (NTGT) is characterized by AFM and TGA- DTA techniques. Batch Equilibration study is carried out for Ni(II)- NTGT system under varied influential parameters viz., dosage, agitation time intervals, optimized initial metal ion concentration (250 mg/L), pH (5.5) and temperature (303K). The results of the experiment registered a two fold increase in the removal of Ni(II) from aqueous media with one half amount of required dose and agitation time interval in comparison with that of the counterpart TGT. High performance of NTGT in trapping Ni(II) ions is extended to field trials by treating electroplating effluent samples collected from Coimbatore industrial belt, the results suggesting the derived NTGT as an efficient biosequestrant.