**Title**

**Adsorption of lead ions from waste water using nano**

**silica spheres synthesizedon calcium carboante templates**

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Objectives

1. Lead is the one of life threatening metal which find their way into watersources through some industries such as battery manufacturing ,textiles ,paints etc..
2. Main aim of this experiment was to remove the lead ions from water and make them lead free and thus useful for domestic uses .
3. Nano silica hollow sheres are to be synthesised and to use them to get lead adsorbed.
4. NSHS using X-Ray diffraction, the amorphous nature of silica is to be determined
5. Scanning electron microscopy was used to determine the morphology
6. 6.Thermogravimetric analysis was used to

determine the mass loss

1. Adsorption efficiency and relation with temparature and initial concentration of metal ion was to be determined .

**Conclusion**

1.Synthesized nano silica hollow spheres (NSHS) were verifified by the

three characterization techniques employed and it was used to remove lead ions from the waste water .

1. From experiment,we can say that temperature and initial metal concentration affect the adsorption of lead ions on (NSHS)
2. It was monolayer and physical adsorpas the relationship betwen

tween adsorption capacity at equilibrium and the corresponding sorbate

Concentration is best described by langmuir model

1. The optimum adsorption capacity of NSHS for Pb2þ ions was 266.89 mg/g.
2. Adsorption of lead ions on (NSHS) is inversly proportional to initial metal ion concentration
3. The removal of Pb2þ ions using NSHS is an endothermic adsorption

process characterised by a positive correlation between adsorption capacities, implying that it was a chemisorption adsorption process from

ΔH value.

1. ΔHo was a positive value,indicating an endothermic process
2. ΔGo value is negative indicating a spontaneous process
3. This study can be manifested in large scale industries .but we have to check the feasability of the same study with continous process rather than batch wise process so that it will give close resemblance to the large scale industries. Further we have to look into desorption and reusability of the (NSHS) inorder to make the process economical and thus encouraging industries to reduce water pollution by implementing such technologies.