

## Potential use of leaf biomass, *Araucaria heterophylla* for removal of Pb<sup>+2</sup>

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The present investigation attempted to analyze the biosorption behaviour of novel biosorbent, *Araucaria heterophylla* (green plant) biomass, for removal of Pb<sup>+2</sup> from solution against the function of initial metal ion concentration, pH, temperature, sorbent dosage and biomass particle size. The maximum biosorption was found to be 95.12% at pH 5 and biosorption capacity ( $q_e$ ) of Cd<sup>+2</sup> is 9.643 mg/g. The Langmuir and Freundlich equilibrium adsorption isotherms were studied and observed that Freundlich model is best fit than the Langmuir model with correlation co-efficient of 0.9927. Kinetic studies indicated that the biosorption process of Cd<sup>+2</sup> followed well pseudo second order model with R<sup>2</sup> 0.999. The process is exothermic and, spontaneous nature of the process. The chemical functional groups –OH, CH<sub>2</sub> stretching vibrations, C=O of alcohol, C=O of amide, P=O stretching vibrations, –CH, were involved in the process. The XRD pattern of the *A. heterophylla* was found to be mostly amorphous in nature. The SEM studies showed Pb<sup>+2</sup> biosorption on selective grains of the biosorbent. It was concluded that *A. heterophylla* leaf powder can be used as an effective, low cost, and environmentally friendly biosorbent for the removal of Pb<sup>+2</sup> from aqueous solution.

### Biography

Murthy has completed his Ph. D. at Imperial College, London and published nearly 100 research papers in reputed journals and conferences. He is currently vice-Principal of Andhra University College of Engineering (Autonomous), Visakhapatnam, India and chairman, faculty of chemical engineering Visakhapatnam, India. He joined as Asst. Professor in the 1979, department of Chemical Engineering, Andhra University and elevated to professor in 1994 and he has more than 30 years teaching and research experience. He guided Ph. D students and supervised projects for PG and post doctoral students. He worked as vice-President of Indian Institute of Chemical engineers during 2009. He is the organizing secretary for CHEMCON-2009 and joint organizing secretary of CHEMCON 1998. In addition to that he was conducted various national and international conferences.

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