

## Role of *Azadirachta indica* (neem) biomass in the removal of Ni(II) from aqueous solution

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### ABSTRACT

The removal of nickel(II) from aqueous solution by different *Azadirachta indica* (neem) biomass; neem leaves fresh (NLF), neem leaves activated (NLA), leaves ash (LA), neem bark fresh (NBF) and neem bark activated (NBA) were used for adsorption studies. Neem leaves and neem bark were activated by giving heat treatment and with the use of concentrated sulphuric acid. Batch adsorption technique was carried out as a function of contact time, pH of the solution, biosorbent dose, and metal concentration. The adsorption efficiencies were found to be pH dependent, which increase by increasing the pH of the solution in the range from 2 to 7. The equilibrium time was attained after 2 h and maximum removal was achieved at an adsorbent loading weight of 2 g. The decrease in the removal was attained by increasing metal concentration. Maximum biosorption capacity for Ni(II) was 95% at the pH of 7. FTIR spectroscopy confirmed neem biomass interaction responsible for Ni(II) adsorption. The equilibrium adsorption data were interpreted by using both Langmuir and Freundlich isotherms. The isotherm values fitted well with correlation coefficient ( $R^2$ ) values.

*Keywords:* *Azadirachta indica* (Neem); Ni(II); Langmuir isotherm; Freundlich isotherm

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