



Investigation on *Melia azedarach* biomass for arsenic remediation from contaminated water

Amna Sarwar^a, Qaisar Mahmood^{a,*}, Muhammad Bilal^a, Zulfiqar Ahmad Bhatti^a,
Arshid Pervez^a, Ahmad Nauman Shah Saqib^b, Abdur Rehman Khan^b, Sikander Sultan^c

^aDepartment of Environmental Sciences, COMSATS Institute of Information Technology, Abbottabad 22060, Pakistan
Tel. +92 992 383591; Fax: +92 992 383441; email: mahmoodzju@gmail.com

^bDepartment of Chemistry, COMSATS Institute of Information Technology, Abbottabad 22060, Pakistan

^cDepartment of Microbiology and Molecular Genetics, University of the Punjab, Quaid-i-Azam Campus, Lahore 54590, Pakistan

Received 9 April 2013; Accepted 3 October 2013

ABSTRACT

The arsenic removal efficiency of *Melia azedarach* biomass was investigated. The effects of pH, biosorbent dose, adsorbate concentration and temperature on the arsenic adsorption were investigated. Batch experiments were conducted using different amounts of biosorbent (2–10 g) at varying amounts of adsorbate (50–500 µg/L) at 20°C. The effect of pH (2–11) on adsorption process was also investigated. The data fit into isotherm models. The study revealed that As(III) and As(V) removal was >90% at an adsorbent dose of 10 g/L, adsorbate concentration of 100 µg/L under pH range of 7–8 for 30 min. Temperature does not significantly affect the As removal efficiency. The experimental data follow Freundlich isotherm. Arsenic adsorption on biomass is confirmed by using scanning electron microscope. This study is pioneer report on *Melia* biomass for arsenic removal, and it is concluded that being environmentally safe technology, *M. azedarach* biomass can be efficiently utilized for arsenic removal.

Keywords: Arsenic; Biomass; *Melia azedarach*; Biosorbent; Adsorption isotherms

*Corresponding author.