

**REMOVAL OF CHROMIUM (VI) AND LEAD (II) FROM AQUEOUS  
SOLUTION BY USING BAMBOO WASTE AS BIOSORBENT**

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**Final Year Project Report Submitted In  
Partial Fulfillment Of The Requirements for the  
Degree of Bachelor of Science (Hons.) Applied Chemistry  
in the Faculty of Applied Sciences  
University Teknologi Mara**

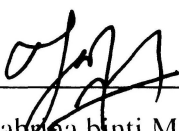
**APRIL 2009**

This Final Year Project Report entitled **“Removal of Chromium (VI) and Lead (II) from Aqueous Solution by using Bamboo Waste as Biosorbent”** was submitted by Azlinda binti Abu Bakar, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by



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## ACKNOWLEDGEMENTS

While the author gets to bask in the glory of having her name imprinted on the front cover, in reality a book is the collaborative effort of many individuals. I extend my sincere gratitude to those who contribute their time and knowledge to shaping and directing this work. I found that the process to be quite interesting and also came to realization that successful completion of such a project truly requires an effort.

Although it is not possible to mention everyone by name, I would like to express bouquets of appreciation to the following individuals. First of all, thanks to God, for giving me a wonderful chance to complete this project successfully and show me the way to get seek out from the difficulties that I have to faced.

Most importantly, to Puan Nurul Nadiah binti Mohd Firdaus Hum, my supervisor, thank you for sticking with me through the craziness, for giving me constant guidance, unmeasurable support and expertise in the development of this project.

Special thank to Encik Din, Encik Kadim, Puan Julia, Puan Haida, Encik Rahimi, Encik Ruzaini, Encik Zambri, and Encik Anuar, who willingly shared their time and knowledge, give miscellaneous ideas, comments and critiques, thank you for the greatest co-operation and commitment. Without you, my project will have no ends and cannot proceed fluently.

Special mention goes to my loving parents and my siblings, who inspire me and source of happiness. Thank you for always believing in me, teaching me to have faith in the change process, patience, constant love, provides unwavering support and encouragement for everything that I do.

And, finally my thanks to my outstanding friends, who graciously contribute some ideas and times for this project, shared knowledge and help me keep everything in the right path.

Lastly, again and again I would like to express my sincere thanks to everyone else who generously shared their times and knowledge. Your king help and co-operation is deeply appreciated. May God bless u.

Azlinda Abu Bakar

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## **ABSTRACT**

### **REMOVAL OF CHROMIUM (VI) AND LEAD (II) FROM AQUEOUS SOLUTION BY USING BAMBOO WASTE AS BIOSORBENT**

Presence of heavy metals in the aquatic systems has become a serious problem. As a result, there has been a great deal of attention given to new technologies for removal of heavy metal ions from contaminated waters. Biosorption is one such emerging technology which utilized naturally occurring waste materials to sequester heavy metals from industrial wastewater. The aim of the present study was to utilize the locally available agricultural waste materials for heavy metal removal from industrial wastewater. In this study, the removal of chromium(VI) and lead(II) was done by using bamboo waste. The effects of initial concentration, pH, adsorbent dose, and contact time were studied. The highest percentage removals for chromium and lead were 43% up to 51% and 92% up to 95% respectively. The adsorption of chromium and lead by bamboo waste increased at the higher initial concentration and higher adsorbent doses. Higher chromium adsorption was observed at lower pHs, and maximum chromium removal obtained at pH 2. In contrast, higher lead adsorption was observed at higher pHs, and maximum lead removal obtained at pH 6. The results of this study showed that adsorption of chromium by bamboo waste reached to optimum condition at 45 min. On the other hand, the adsorption of lead has no such significant change but the optimum contact time occurred at 30 min. The obtained results showed that the adsorption of chromium(VI) and lead(II) by bamboo waste follows Freundlich isotherm equation with a correlation coefficient equal to 0.9311 and 0.9398 respectively. The results indicate that bamboo waste can be employed as a low cost adsorbents in the removal of chromium(VI) and lead(II) from industrial wastewater.