

Exploitation of low cost adsorbent for purification of lead polluted water



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Exploitation of low cost adsorbent for purification of lead polluted water

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For the award of degree of

BS IN CHEMISTRY

**BY
TAYYAB SAJJAD**

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SESSION: 2013-2017

**DEPARTMENT OF CHEMISTRY
SCHOOL OF SCIENCE
UNIVERSITY OF MANAGEMENT AND TECHNOLOGY,
LAHORE, PAKISTAN**



*In the Name of Allah, the Most
Beneficent, the Most Merciful.
All the praises and thanks be to
Allah*

*“Read in the name of your Lord who created”
“Created man, out of a (mere) clot of congealed blood”
“Read, and your Lord is the most Generous”
“Who taught by the pen”
“Taught man that which he knew not.”
(Holy Qur’an 96:1-5)*

*“O my Lord! Increase me in knowledge.”
(Quran 20:114)*



DECLARATION

I TAYYAB SAJJAD S/OSAJJAD HUSSAINID: 13003067002

Session **2013-2017** hereby declare that the matter printed in the thesis titled **“EXPLOITATION OF LOW COST ADSORBENT FOR PURIFICATION OF LEAD POLLUTED WATER”** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research institution etc. in Pakistan or Abroad.

Dated: _____

(TAYYAB SAJJAD)



RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, **“EXPLOITATION OF LOW COST ADSORBENT FOR PURIFICATION OF LEAD POLLUTED WATER”** has been carried out and completed by **TAYYAB SAJJAD, ID:1300307002**. The quantum and the quality of the work contained in this thesis is adequate for the award of Degree of BS in Chemistry.

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Dr Sammia Shahid
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Dedication

I DEDICATE THIS EFFORT TO GENERAL RAHEEL
SHAREEF (GREAT LEADER OF PAKISTAN AND
PAKISTAN ARMY) & ALSO TO
MY FAMILY WHOSE COURAGE AND PRAYERS
ENABLE ME TO COMPLETE THIS WORK.



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ABSTRACT

Water is an essential component of our life. No plant, animal life should exist without water. Contamination in water is due to large number of pollutants present in it. When pollutants mixed in food it tends to be lethal across bio accumulation. Adsorption is an effective method for the purification of water from these toxic substances. Four different parameters such as effect of concentration on Pb (II) adsorption, effect of particle size on Pb(II) adsorption, effect of pH on Pb(II)adsorption and effect of temperature on Pb(II) adsorption were studied. Activated carbon having two different particle sizes 595 μ and 149.6 μ is used. Xylenol orange is used as complexing agent because lead forms stable complex with xylenol orange. Large surface area of activated carbon results in increasing initial lead ion concentration. When adsorbent particle size decreases density also decreases. Absorption capacity of lead is higher at pH10. Unadsorbed lead ions concentration were calculated by using UV-VIS spectrophotometer.



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Chapter No *01* *Introduction*



1.1 Importance of water

In this universe water is essential component of our life. Every living organism needs water for their life survival. No plant, animal life should exist without water. Water exhibits some chemical as well as physical properties. Presence of water is valuable for transportation, engineering, recreation and leisure.