DECLARATION

I **SAROOR AFAQ S/O ABDUL GHAFOOR ID: 13004067004** session 2013-2017 hereby declare that the matter printed in this thesis titled **REMOVAL OF LEAD IONS FROM WATER USING BIO MATERIALS** is my own work and has not been printed, published as research work, thesis or publication in any form in any university, research institution in Pakistan or abroad.

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, **"REMOVAL OF LEAD IONS FROM WATER USING BIO MATERIALS"** has been carried out and completed by **SAROOR AFAQ**, ID: 13004067004.The quantum and quality of the work contained in this thesis are adequate for the award of degree of BS in chemistry.

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DEDICATION

DEDICATE THIS WHOLE EFFORT TO HOLY PROPHET MUHAMMAD (PEASE BE UPON HIM) THE GREAT TEACHER & PERFORMER

MY FAMILY WHOSE COURAGE, PRAYERS AND SUPPORT ENABLE ME TO COMPLETE THIS WORK

SAROOR AFAQ

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May Allah bless all of them.

Abstract

The water which people drink or use must be clean and clear from germs, chemicals and a lot of other water pollutants. Waste water is routinely being discharged to outer environment from homes, agriculture runoff, industry and manufacturing process this water contain petrochemicals, phosphate, nitrate, and heavy metal like Cr, lead, Fe, Mg and loads of other hazardous materials. This water needs to be purify before its use. Pakistan is a developing country so we have limited source we need to find inexpensive materials and way of water purification .So my focus is on water purification by using cheap biomaterial as adsorbent. From bio materials we chose Gaozaban **(Borago Officinels)** as and adsorbent.

Waste Gaozaban and pure Gaozaban was used here in this study and we treated lead contaminated water through static (column) and dynamic (orbital shaker) method. After treating the titration method was used for the estimation of lead ion concentration removed from water.

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Introduction

1 Importance of water:

water is a transparent colorless and taste less liquid which is the main constituent of living organism .Water is 50 to 60% of our body ,it is stated by scientist that the early life started from water .Our planet contain about 71% of water in the form of oceans ,rivers, glaciers ,underground water and lakes .Even we have a large amount of water yet we can use just 2.5 to 2.75% of water which is usable .Every living thing on this planet needs water to survive otherwise there would be no life on earth . The water which people drink or use must be clean and clear from germs, chemicals and a lot of other water pollutants .