

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590018



PROJECT REPORT ON
"COMPARISON STUDY ON LEAD AND ARSENIC
REMOVAL USING GROUNDNUT SHELL AND TAMARIND
SEED BY ADSORPTION AND NANOSORPTION"

Submitted in partial fulfilment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING

Submitted By

Name	USN
JAGADEESH KRISHNA JOGI	4AL15CV037
MANJUNATHA K S	4AL15CV055
MANOJ KUMAR H M	4AL15CV056
MANU P	4AL15CV057

Under the Guidance of
Dr. H AJITH HEBBAR
ASSOCIATE PROFESSOR
DEPARTMENT OF CIVIL ENGINEERING



ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
SHOBHAVANA CAMPUS, MIJAR, MOODBIDRI – 574 225.

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ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(A Unit of Alva's Education Foundation®, Moodbidri)

"Shobhavana", Mijar, Moodbidri – 574 225, D.K.

DEPARTMENT OF CIVIL ENGINEERING

Certificate

This is to certify that following students

Name	USN
JAGADEESHA KRISHNA JOGI	4AL15CV037
MANJUNATHA K S	4AL15CV055
MANOJ KUMAR H M	4AL15CV056
MANU P	4AL15CV057

Has submitted Final report on "COMPARISION STUDY ON LEAD AND ARSENIC REMOVAL USING GROUNDNUT SHELL AND TAMARIND SEED BY ADSORPTION AND NANOSORPTION" for VIII Semester Bachelor of Engineering in Civil Engineering during the academic year 2018-19. The final report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.



Dr. H Ajith Hebbar

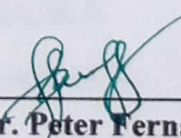
Project Guide



Dr. H Ajith Hebbar

HOD.D.

Dept. of Civil Engineering
Alva's Institute of Engg. & Technology
Mijar, Moodbidri - 574 225



Dr. Peter Fernandes

PRINCIPAL

Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225, D.K.

Name of the Examiners

Signature with Date

1.

2.

ABSTARCT

Toxic heavy metal contamination of industrial wastewater is an important environmental problem. Many industries such as electroplating, pigments, metallurgical processes, and mining and leather industries release various concentrations of heavy metals. Metal ions such as cadmium, nickel, chromium, copper, lead, zinc, manganese and iron are commonly detected in both natural and industrial effluents. An experimental investigation was carried out for the treatment of synthetic solution containing Lead an Arsenic using low cost adsorbents which is ground nut shells and tamarind seed. This work focuses on the utilization of activated carbon prepared from groundnut shell and tamarind shell for the removal of lead and arsenic from synthetic solution prepared. A laboratory scale setup was used to remove lead and arsenic from synthetic solution using Cu coated nanoparticle on activated carbon. The effects of temperature, contact time of lead and arsenic on the adsorption process have been investigated separately with respect to activated carbon and Cu coated nanoparticle. SEM and EDX analysis confirmed Cu nanoparticle successfully coated/decorated on activated carbon. AAS instrument was used to check the removal efficiencies of activated carbon and nanoparticle from synthetic solution and the batch adsorption studies were conducted to determine the adsorbent dose and pH.

Keywords: Lead, Arsenic, Groundnut shell, Tamarind seed, activated carbon, nano particle, Adsorption, Nanosorption.