

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541016389 A

(19) INDIA

(22) Date of filing of Application :25/02/2025

(43) Publication Date : 07/03/2025

(54) Title of the invention : Green Remediation of Aqueous Solutions using Plant Root Biosorbents: Investigating Adsorption Efficiency, Kinetics, and Sorption Isotherms for Sustainable Environmental Pollution Control

(51) International classification :C02F0001280000, C02F0003340000, C02F0003320000, C02F0101100000, B01J0020240000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

(71)Name of Applicant :

1)Dr M Aniskumar

Address of Applicant :V.S.B. Engineering College, Karur - 639111 -----

2)KEERTHIGA K

3)SHANMUGANANTHAN S

4)V.S.B.ENGINEERING COLLEGE

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

1)KEERTHIGA K

Address of Applicant :Department of Biotechnology V.S.B. Engineering College NH – 67 Covai Road, Karudayampalayam Post, KARUR -----

2)SHANMUGANANTHAN S

Address of Applicant :Department of chemical Engineering Annamalai university Chidambaram -----

3)Dr M Aniskumar

Address of Applicant :V.S.B. Engineering College, Karur - 639111 -----

(57) Abstract :

Abstract The increasing pollution of aquatic ecosystems by heavy metals and toxic contaminants necessitates the development of sustainable and efficient remediation strategies. This study explores the potential of plant root biosorbents as a green solution for the removal of pollutants from aqueous solutions. By investigating the adsorption efficiency, kinetics, and sorption isotherms, the research aims to evaluate the performance of various plant roots in absorbing contaminants from water. The adsorption capacity of different biosorbents was determined under various environmental conditions, and the kinetics of pollutant uptake were analyzed to understand the underlying mechanisms. The study also includes the development of sorption isotherms to model the interaction between plant roots and contaminants, providing insights into the efficiency and scalability of this approach for environmental pollution control. The findings indicate that plant root biosorbents offer a promising, eco-friendly alternative for the treatment of polluted water, contributing to sustainable environmental management and pollution mitigation. Keywords: Green remediation, aqueous solutions, plant root biosorbents, adsorption efficiency, kinetics, sorption isotherms, heavy metals, environmental pollution control, sustainable treatment, biosorption, pollutant uptake, eco-friendly, water purification, contamination removal, sustainable environmental management.

No. of Pages : 8 No. of Claims : 8