

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202331080987 A

(19) INDIA

(22) Date of filing of Application :29/11/2023

(43) Publication Date : 23/02/2024

(54) Title of the invention : AN ELECTROCHEMICAL REACTOR FOR CATHODIC RECOVERY OF COPPER FROM WASTEWATER

(51) International classification :C02F0001461000, H01M0010390000, C02F0001467000, A61L0002180000, A61L0002030000 (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)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Vipin Kumar Address of Applicant :Department of Environmental Science & Engg., Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 2)Nishant Pandey Address of Applicant :Department of Environmental Science & Engg., Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad – 826004, Jharkhand, India Dhanbad ----- 3)Ankur Singh Address of Applicant :Department of Environmental Science & Engg., Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad – 826004, Jharkhand, India Dhanbad -----
---	---

(57) Abstract :

This invention relates to an electrochemical reactor for cathodic recovery of copper from wastewater comprising, a cylindrical body including there within three chambers, two anodic chambers (1, 2) and a central cathodic chamber (3) sandwiched between the anodic chambers (1, 2); -anodic chamber (1) being separated from the cathodic chamber (3) by partition (4) and anodic chamber (2) being separated from the cathodic chamber (3) by partition (5); partition (4) being equipped with selectively permeable membrane (6) and partition (5) being equipped with selectively permeable membrane (7); the anodic chambers (1,2) are equipped with carbon brush electrodes (8, 9), which serve as the base for the development of electrogenic biofilm; the cathodic chamber (3) is equipped with a copper plate electrode (10), for the reductive reaction and accumulation of the reduced copper; the two anodic chambers (1,2) are interconnected by passage (11); an entry port (12) provided in the anodic chamber (1) for wastewater to enter the system and pass through passage (11) to the anodic chamber (2) and exit the system by exit port (13) provided in the anodic chamber (2); the anodes and cathode are connected through external wires (14) to a voltammeter (15), the connection being mediated by an external resistance load (16).

No. of Pages : 21 No. of Claims : 9