ROBUST LOW-COST AIR DIFFUSION CATHODES FOR WATER TREATMENT

Tech ID: 33139 / UC Case 2023-127-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Gas diffusion electrodes are used in electrochemical applications to produce value added chemicals such as H2O2. Carbon paper and carbon cloth are used as substrates in gas diffusion cathodes. However, carbon-based substrates are not mechanically sturdy as they can develop cracks under flexion. They are also expensive ($150 for a 310-micron thick carbon paper of 40cm X 40cm).

UC Berkeley researchers have created air-cathodes made with a non-reacting metal mesh as the supporting conducting substrate. The metal may be in the form of an alloy or coating, such as one metal on another, or a metal coating on a non-metal substrate. The metal air cathodes avoid the use of carbon paper altogether, are more cost effective, flexible yet strong and durable, and provide robust gas-diffusion cathodes for sustained production of H2O2 over long-periods of operation.

SUGGESTED USES

» removal of a toxic metalloid (e.g. arsenic), such as in Air-cathode Assisted Iron Electrocoagulation

» in-situ production of H2O2 from polluted water

ADVANTAGES

» ease of construction

» lower cost of conducting substrate

» mechanical robustness of the air-cathode without sacrificing functionality

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OTHER INFORMATION

CATEGORIZED AS

» **Environment**

» Remediation

» **Security and Defense**

» Other

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