

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

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- [Modified Bauxite for Phosphate Recovery and Recycling](#)
- [High Performance Iron Electrocoagulation Systems for Removing Water Contaminants](#)

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OTHER INFORMATION

CATEGORIZED AS

- » **Environment**
- » Remediation
- » **Security and Defense**
- » Other

RELATED CASES

2023-127-0

