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Microporous Layer/Catalyst Layer Integration For Electrolyzers

Tech ID: 33662 / UC Case 2024-924-0

BRIEF DESCRIPTION

This invention combines the attributes of existing catalyst layer architectures to optimize reactions in solid polymer membrane electrolyzers.

FULL DESCRIPTION

Researchers at UCI have developed a technology that integrates the catalyst layer and microporous layer in electrolyzers, aiming for both high electrochemical surface area and electrical conductivity. The traditional catalyst-coated membrane architecture is enhanced by affixing needles to microporous layers that electrically tether the catalyst layer and the microporous layer, a process comparable to an internal electrochemical "welding".

SUGGESTED USES

- » Can be utilized in solid polymer membrane water electrolyzers, including proton exchange membrane water electrolyzers and anion exchange membrane water electrolyzers

ADVANTAGES

- » Combines the advantages of catalyst-coated membranes and porous transport electrodes
- » Increase in electrical conductivity in comparison to tradition setups
- » Potentially reduces the cost of operation of solid polymer membrane water electrolyzers
- » Allows for decrease in catalyst loadings while preserving electrical conductivity

PATENT STATUS

Patent Pending

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OTHER INFORMATION

CATEGORIZED AS

- » **Energy**
- » Other

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