In-situ Catalytic Conversion Layers Mitigating Sulfur Contamination in PEM Fuel Cells

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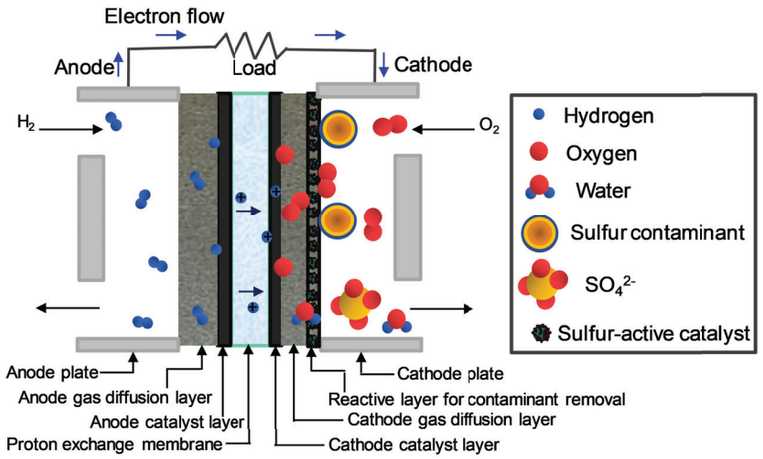
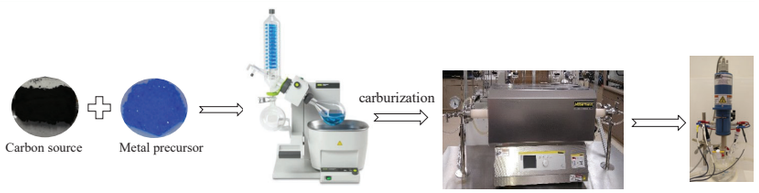
Objective / Significance

- In-situ catalytic conversion layer mitigating contamination.



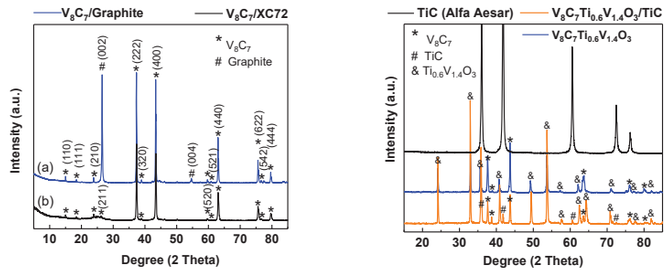
Approach



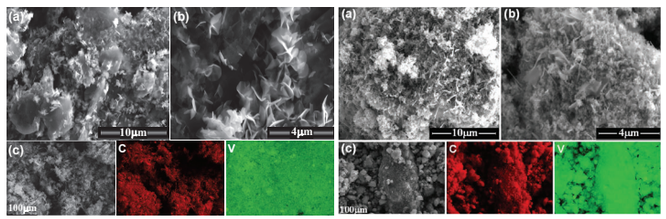
- Integrate contaminant-active catalysts based on carbides into MEAs.
- Carbides covert poisoning contaminants into harmless species before reaching Pt catalysts layer.

Progress / Achievement

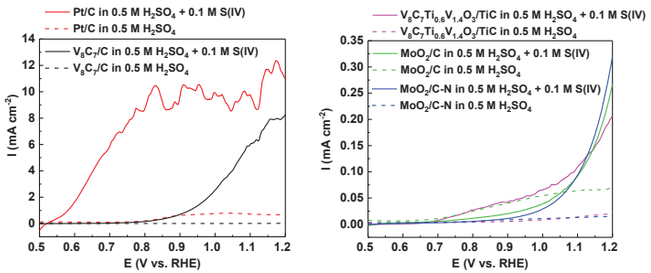
Crystal Structure



Morphology & Composition

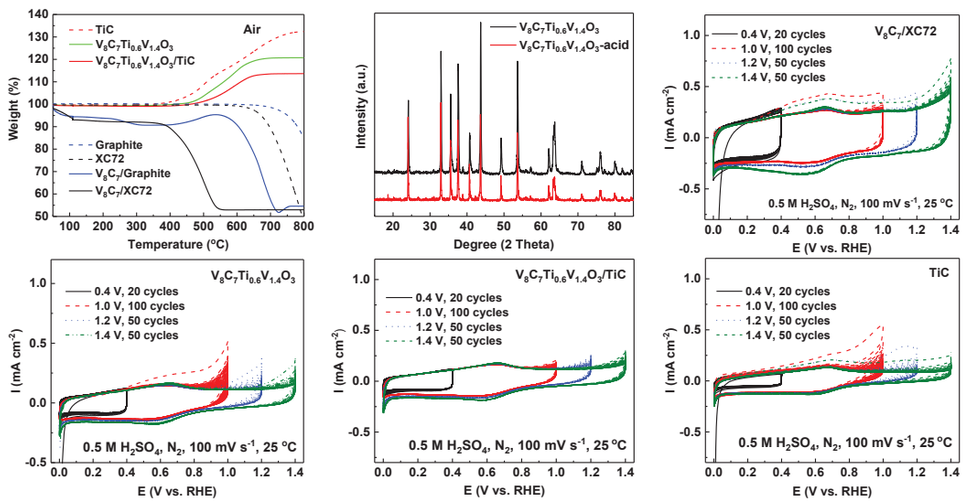


SO_2 Oxidation Activity



Progress / Achievement

Thermal & Chemical & Electrochemical Stability



Conclusions / Future Work

- Contaminant-active catalysts based on carbides were synthesized and have good thermal & chemical & electrochemical stability.
- Carbides exhibit catalytic activities toward the electrochemical oxidation of aqueous SO_2 generated in situ.
- Investigate SO_2 tolerance of fuel cells with in-situ catalytic conversion layers in future.

Acknowledgments

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