



Triple Conducting Cathode Material for Intermediate Temperature Protonic Ceramic Electrochemical Devices

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Summary: A novel perovskite-type multicomponent compound that displays high electrochemical performance at intermediate temperatures

Description: Oxygen reduction reaction kinetics is very low for intermediate temperature protonic ceramic electrochemical devices, which greatly hindered their practical application. This invention is of a novel perovskite-type multicomponent compound (that displays triple (oxygen ion, proton, and electron) conductivities under wet oxidizing atmospheres, resulting in high oxygen reduction reaction performance at intermediate temperature (300-750°C). This compound is a promising electrocatalytic cathode material for oxygen reduction in intermediate temperature proton ceramic electrochemical devices. The area specific resistance (ASR) of cathode material is lower than $0.15 \Omega \text{ cm}^2$ with gold as the current collector at 750°C in wet air, which is much better than current available cathode materials.

Main Advantages of this Invention

- Increased performance at intermediate temperature

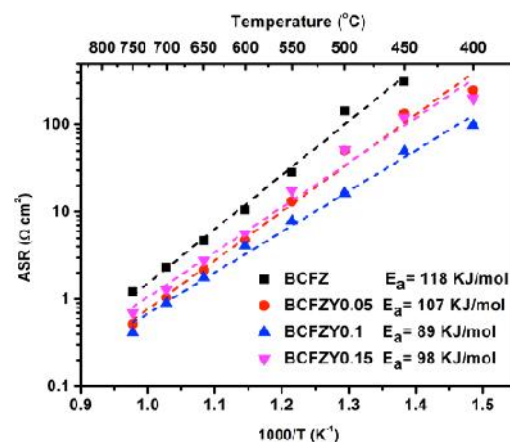
Potential Areas of Application

- Protonic ceramic electrochemical devices
- Alkaline fuel cells
- Air metal batteries

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Intellectual Property Status: US provisional patent 62/101,285.

Opportunity: We are seeking an exclusive or non-exclusive licensee for implementation of this technology.



Cathode ASR values for the BCFZY symmetric cell in an Arrhenius diagram.

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