**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 Ω cm² 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

**ID number:** 15016


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

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