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Binary Inorganic Salt Mixtures as High Conductivity Liquid Electrolytes for 100°C Fuel Cells

Fuel cells are considered to be a likely alternative to current fuel sources. All fuel cells require electrolytes for conducting current. There are several types of fuel cells and they all have electrolytes that determine how the fuel cell works. Phosphoric acid based fuel cells are typically used in stationary applications, and higher power mobile applications. However, these electrolytes are corrosive and require expensive platinum catalysts.

Researchers at Arizona State University have developed low-melting inorganic salt mixtures as electrolytes in fuel cells operating in the temperate range 100-200°C, with cell performance comparable to that of phosphoric acid fuel cells. The neutral or near-neutral electrolytes simplify cell construction, and allow for the use of cheaper catalyst materials. The performance of these new electrolytes is comparable to phosphoric acid fuel cells.

Potential Applications

- Automotive: Buses and Cars
- Back-up power generation
- Portable systems
- Electronics
- Plumbing

Benefits and Advantages

- Pressure conditions ? There is no longer a need for special pressure conditions in the fuel cell to achieve the expected output.
- Humidity ? No required special humidity conditions.
- Voltages ? This technology provides better voltages, particularly at low current densities.
- Simple cell construction - Electrolytes can be neutral.
- Performance comparable to phosphoric acid fuel cells
- Alternative catalysts to Pt may be possible to use.

