



## Colorado School of Mines Office for Technology Transfer

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### Acidic Ion Exchange Membrane

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**Description:** In this invention we report the synthesis of a copolymer of vinyl phosphonic acid (VPA) and vinyl zirconium phosphorous (VZP) acid has been achieved for the production of ion exchange membranes. Characterization of the membrane has been accomplished using a variety of methods including FTIR, CP MAS NMR and AFM. These methods show an amorphous membrane, with fairly uniform dispersion throughout the membrane with very high proton conductivity. The polymerization methodology allows for rapid production of the membrane and the VZP monomer. Ionic transport through the membrane is high, on the order of 0.1 S/cm, which has the potential for commercial viability for fuel cells and possibly batteries or other membrane applications

#### Potential Areas of Application

- Fuel Cells
- Batteries
- Water filtration
- Hydrogen production

#### Main Advantages of this Invention

- Uniformity
- High ionic transport
- Simplicity of manufacture

**Intellectual Property Status:** Patent filed 3/19/2010

**ID number:** US Patent application 61/315805

**Opportunity:** We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

#### Contact

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