

# Durable, Low-cost, Improved Fuel Cell Membranes (Topic 1)

## Arkema Inc.

- Funding

<b>DOE Cost Share</b>	<b>Recipient Cost Share</b>	<b>TOTAL</b>
\$6,277,680	\$1,569,420	\$7,847,100
80%	20%	100%

- **Project Description:** The objective of this collaborative effort is to develop low-cost, durable polymer electrolyte fuel cell membranes capable of operating under a wide range of conditions including low humidity and high temperature (with no external humidification and at 80-120°C). The novel approach of this project is based on the design of semi-interpenetrated networks (SIPN) of polyvinylidene fluoride (PVDF) and sulfonated polyelectrolytes. This approach departs from the conventional way of designing membranes by decoupling ion conductivity from the other membrane requirements. PVDF provides an exceptional combination of properties that make it ideally suited for a membrane matrix. It will be blended with polyelectrolytes, which will provide the proton conductivity for the membrane, to form the SIPN polymer blend.
- **Timeframe:** 3 years, starting in FY07

### Sub-Contractors

<b>Institutions</b>
HI Natural Energy Institute- U of HI
Johnson Matthey Fuel Cells
Oak Ridge National Laboratory
Virginia Polytechnic Institute