Alkaline Separator Materials Show Promise for LT Water Electrolysis

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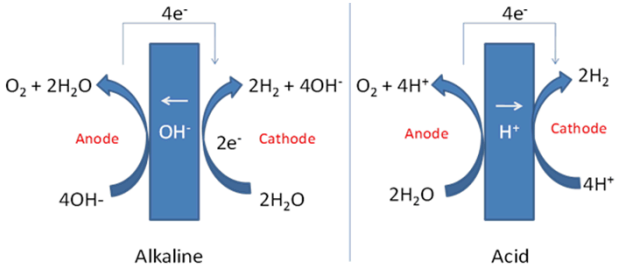
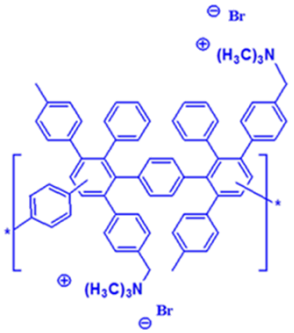
Background

- The cost of "traditional" water electrolysis in acidic conditions is driven by the separator material (Nafion) and the use of precious metal catalysts (Pt and Ir).
- The development of a stable hydrocarbon-based alkaline separator material for basic conditions would allow the use of non-precious metal catalysts and lead to lower system cost.



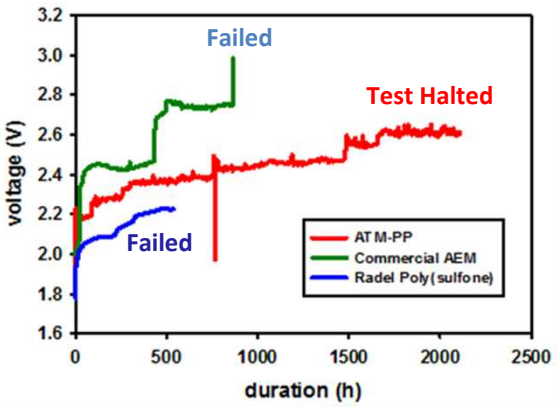
Research[1]

- Typically, anion exchange membranes are not designed for alkaline environments and can chemically and/or mechanically degrade
- Polymers (ATM-PP) developed at Sandia are stable under both high and low pH conditions



Tech-2-Market Activities[2]

- The new ATM-PP alkaline membrane showed excellent results during electrolysis system measurements by industrial partner Proton OnSite
  - 2000 hours of operation with no failures, test halted
  - Additional R&D work needs to be done to lower operating voltage



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2 Water electrolysis experiments funded by Advanced Research Program Agency-Energy (ARPA-E).