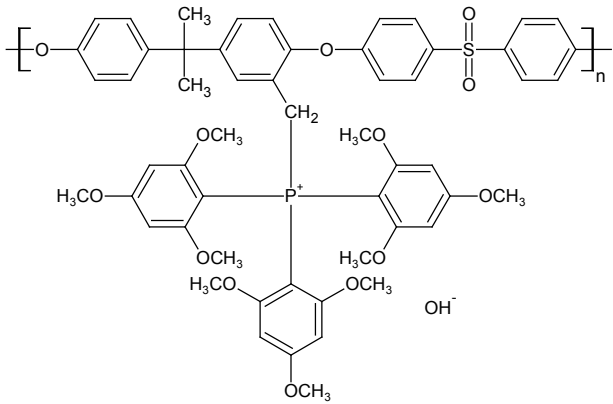


# Quaternary Phosphonium-Based Hydroxide Exchange Membranes

Yushan Yan/University of Delaware



## Phosphonium Polymer Electrolytes for Energy Storage/Conversion



TPQPOH

### Great properties:

- High OH<sup>-</sup> conductivity
- High alkaline stability
- Efficient electrode interface
- Chemical crosslinking
- Physical crosslinking

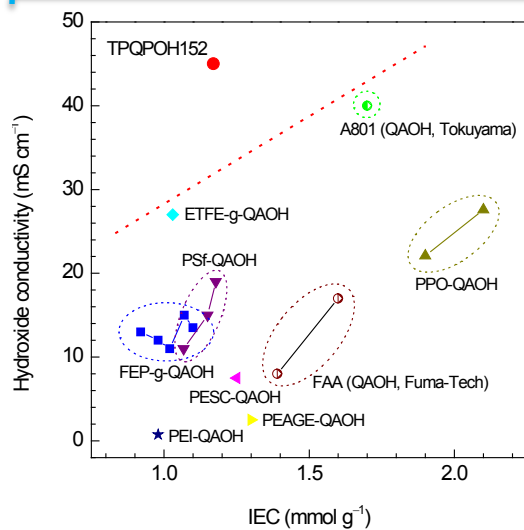


Fig 1. High OH<sup>-</sup> conductivity

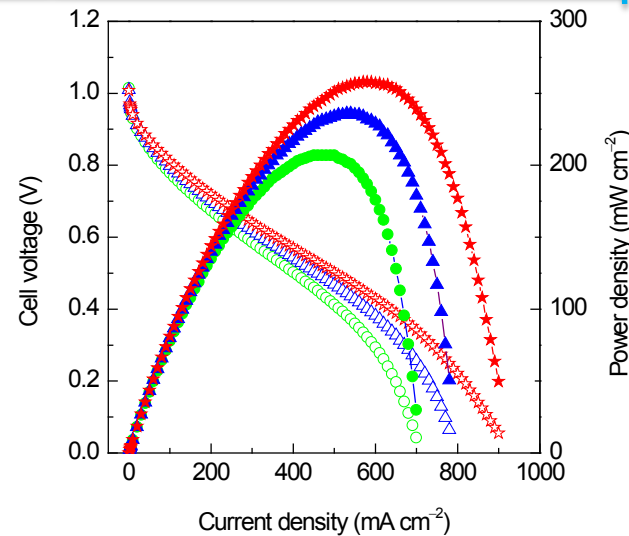
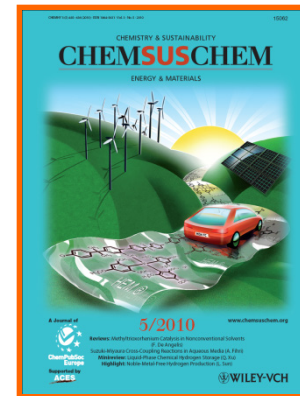


Fig 2. High HEMFC performance



UNIVERSITY of DELAWARE