FLORIDA SOLAR ENERGY CENTER

New solid polymer electrolytes based on phosphotungstic acid

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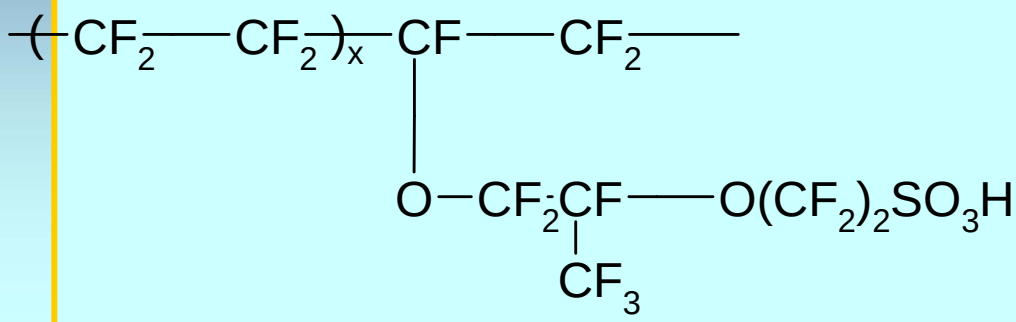
Topic 2 tasks on new membrane development

Task 1. Non-Nafion® based Poly[perfluorosulfonic acid] -phosphotungstic acid composite membrane and membrane electrode assembly, MEA, fabrication

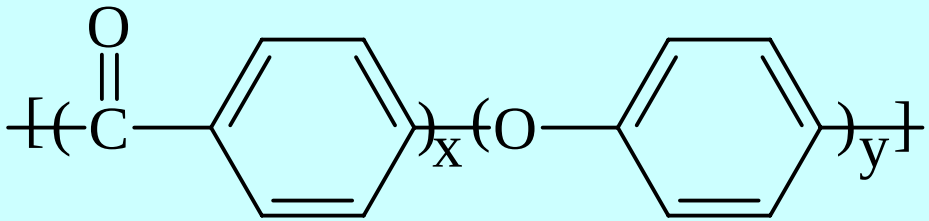
Task 2. Sulfonated poly(ether ketone ketone) or sulfonated poly(ether ether ketone) - Phosphotungstic Acid Composite Membrane and MEA, fabrication

Matrix polymers



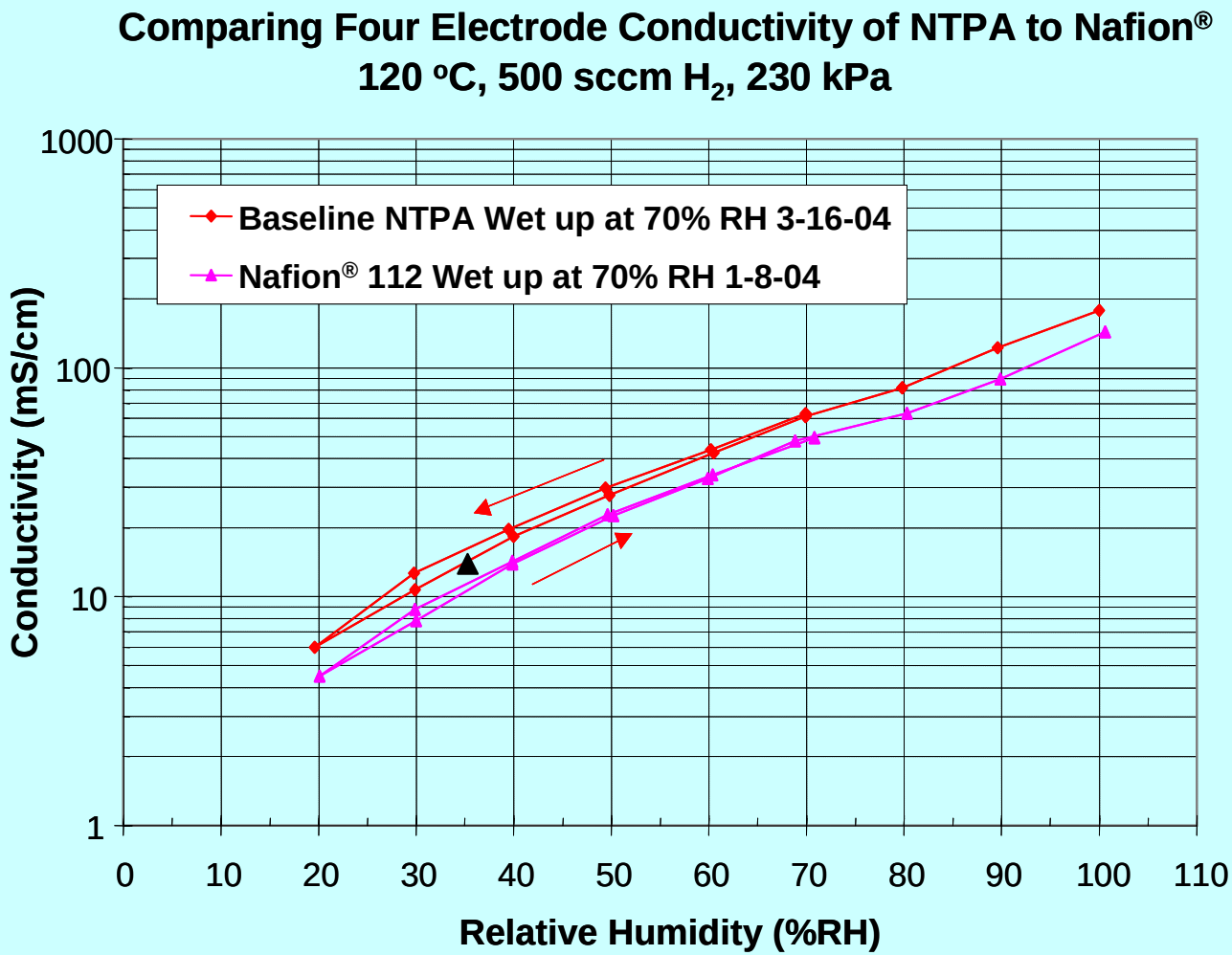
poly(perfluoroalkyl sulfonic acid)

Nafion

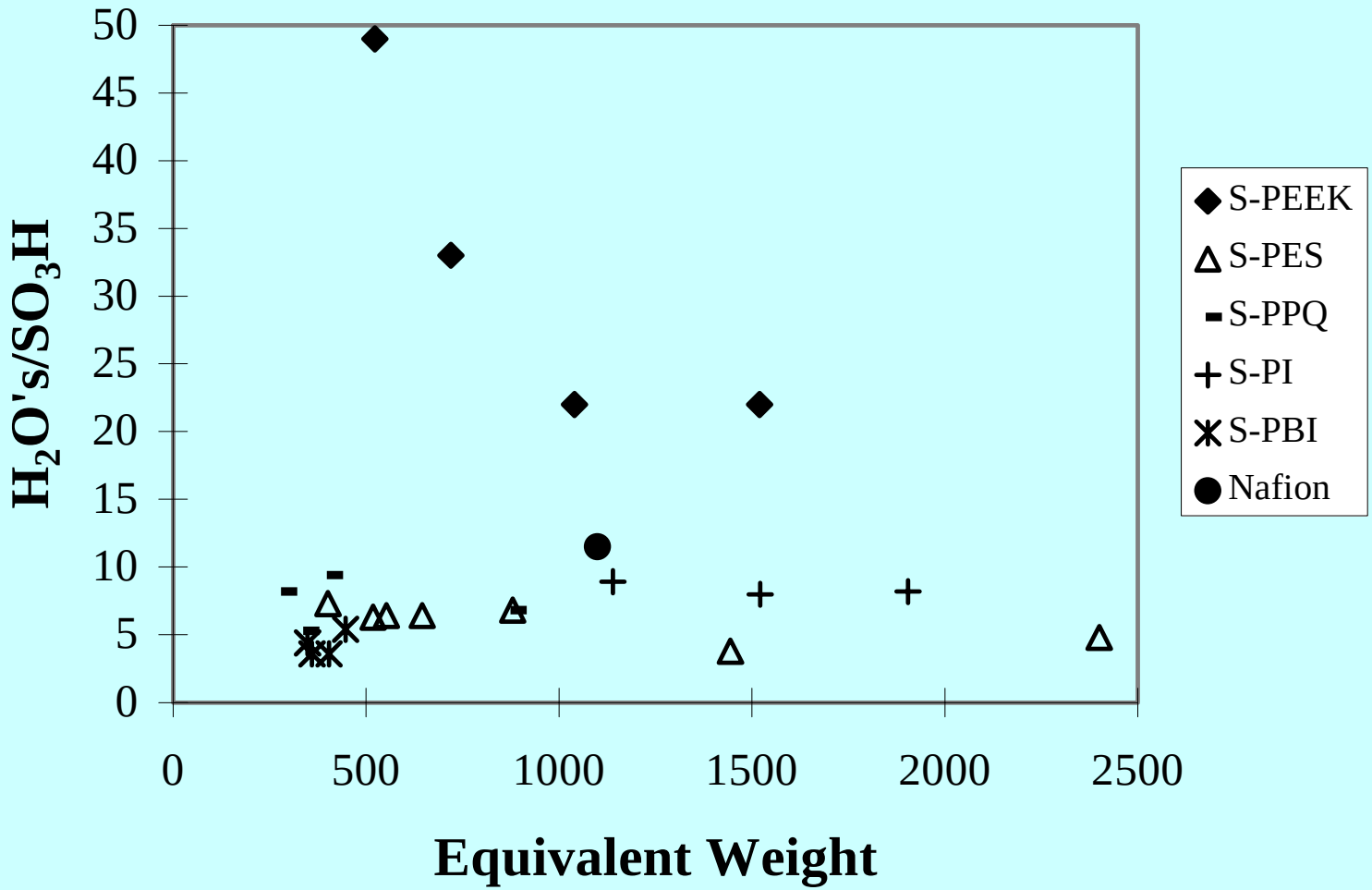


poly(aryletherketone)

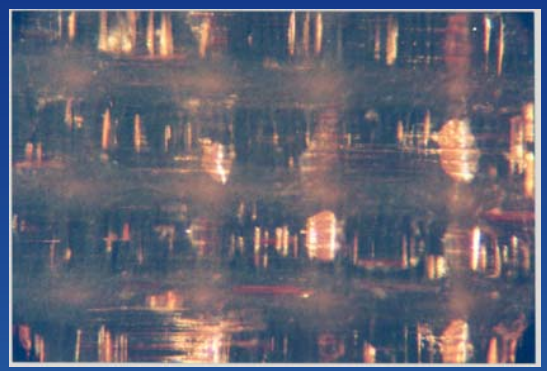
Previous work on NTPA composites



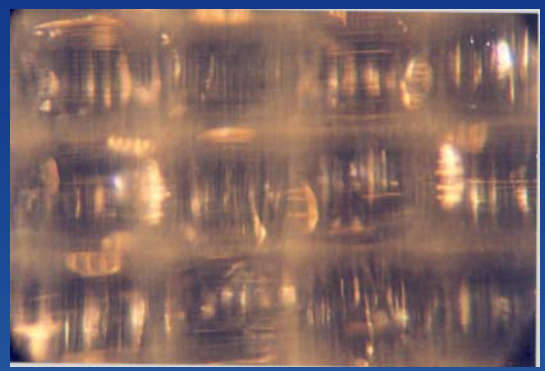
Water uptake vs EW for aromatic sulfonates



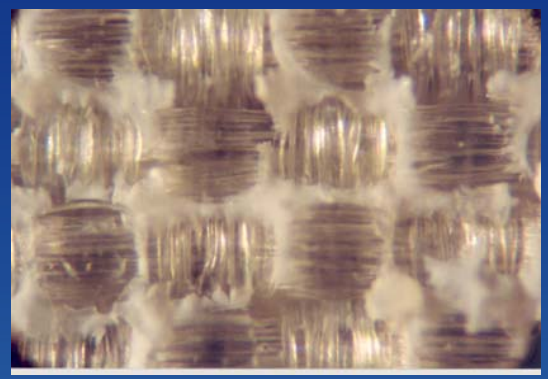
Testing for peroxide stability



Day 1



Day 3



Day 11

Neosepta® solid polymer electrolyte exposed to 3.5% H_2O_2 solution at 50 °C (100x magnification).