Washington University in St. Louis
Office of Technology Management

TRIBLOCK COPOLYMER BASED ANION EXCHANGE MEMBRANES (AEMS) AS SEPARATORS IN ELECTROCHEMICAL DEVICES

Parrondo, Javier, Ramani, Vijay, Wang, Zhongyang

Maland, Brett

T-017637

An advanced, tunable AEM has been developed with dramatically reduced cost and improved performance relative to industry leading AEMs. High ionic conductivity, chemical stability and enhanced mechanical performance have been shown. The technology includes tunable membrane compositions, mechanical reinforcement techniques, and high throughput production methods.

Applications: AEM separators for electrochemical applications like redox flow batteries, water desalination systems, fuel cells, and electrolyzers

Fields: Energy storage, energy conversion, water desalination

Stage of Development: Membranes have been produced at the extended lab scale (10 cm x 10 cm) with good reproducibility. A four-fold enhancement in storage capacity retention was shown in electrode-decoupled redox flow batteries relative to the benchmark commercial membrane. The membrane properties are also highly encouraging for desalination and other water-related applications. Next steps include further scale-up and additional application testing, which are ongoing – including roll-to-roll production.