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(54) **EPOXY-CROSSLINKED SULFONATED POLY (PHENYLENE) COPOLYMER PROTON EXCHANGE MEMBRANES**

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C08G 61/02 (2006.01)
C08G 75/00 (2006.01)

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(58) **Field of Classification Search** 528/98
See application file for complete search history.

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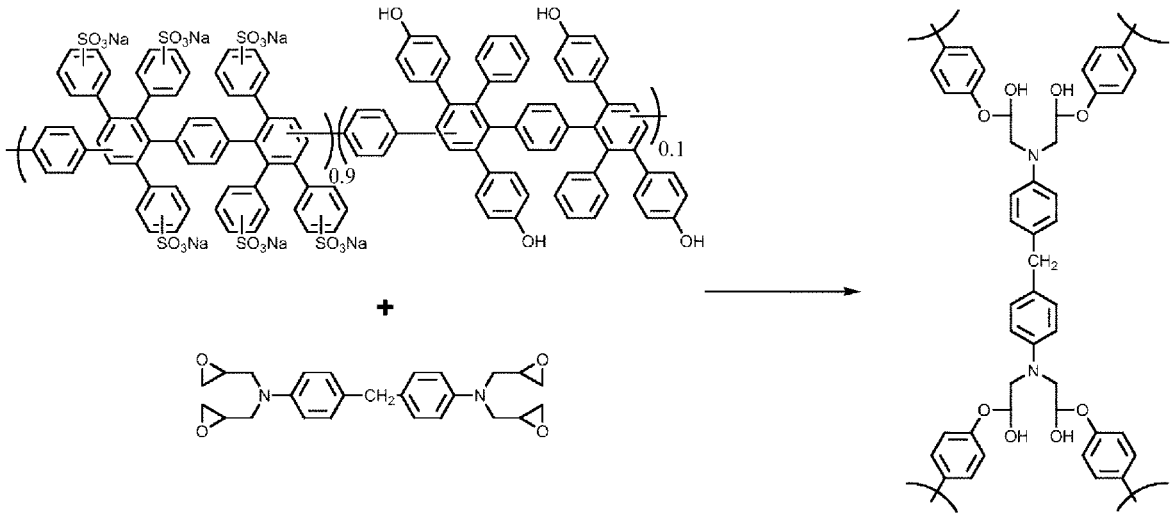
(57) **ABSTRACT**

An epoxy-crosslinked sulfonated poly(phenylene) copolymer composition used as proton exchange membranes, methods of making the same, and their use as proton exchange membranes (PEM) in hydrogen fuel cells, direct methanol fuel cell, in electrode casting solutions and electrodes, and in sulfur dioxide electrolyzers. These improved membranes are tougher, have higher temperature capability, and lower SO_2 crossover rates.

9 Claims, 12 Drawing Sheets