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# Proton Transfer in the Interface of Nafion and Sulfonated Polypyrrolone

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**Abstract:** The proton conductivity at the interface of Nafion and sulfonated polypyrrolone composite membrane decreases by 56% from 0.039 Scm<sup>-1</sup> to 0.017 Scm<sup>-1</sup>, due to phase separation after annealing this binary composite membrane at 140 °C, which is 10 °C above the glass transition temperature of Nafion polymer. After annealing the membrane, the change in the relative intensity of the lower angles of the X-ray diffraction (XRD) peaks located at ca. 11.9°, 17.5° and 19.7° indicates an increase of the low spacing region for the polymer chains of the composite membrane and atomic force microscopy (AFM) measurement depicts a morphological evolution from an uniform dispersion to a spherules

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