Supporting Information

The Effect of Perfluoroalkyl Chain Length on Proton Conduction in Fluoroalkylated Phosphonic, Phosphinic and Sulfonic acids

Mahesha B. Herath, Stephen E. Creager*, Alex Kitaygorodskiy, and Darryl D. DesMarteau

Department of Chemistry, Clemson University, Clemson, SC 29634-0973
The Arrhenius equations for conductivity and fluidity are given by equations 1 and 2 below:

\[ \sigma = \sigma_0 \exp\left(\frac{E_0^\sigma}{RT}\right) \] (1)

\[ \frac{1}{\eta} = \frac{1}{\eta_0} \exp\left(\frac{E_0^\eta}{RT}\right) \] (2)

In these equations, \( \sigma \) and \( \eta \) are the conductivity and viscosity respectively, \( \sigma_0 \) and \( \eta_0 \) are constants associated with conductivity and viscosity, \( E_0^\sigma \) and \( E_0^\eta \) are activation energies for conductivity and fluidity, \( R \) is the universal gas constant, and \( T \) is temperature in degrees Kelvin. Best-fit parameters obtained from linear fitting for the conductivity and fluidity Arrhenius plots are listed in Table 1S.
The Hammett acidities of the model acids were determined from the method described in reference [8].