

The Effect of Ionic Aggregation on the Yield Stress of Ethylene/Methacrylic Acid Ionomers

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Poster (2:20 PM)

Partial neutralization of ethylene/methacrylic acid copolymer (E/MAA) with a metal cation, such as sodium or zinc, results in remarkably tough, semicrystalline ionomer. This is the result of increased nanoscale heterogeneity: the formation of ion-poor and ion-rich domains within the amorphous phase. Since chains are tethered via electrostatic attraction to the ionic aggregates within these ion-rich domains, relaxation of the chains is hindered. The resulting vitrification of the amorphous phase leads to an increase in the yield stress, which we have determined via uniaxial tensile testing as a function of temperature, strain rate and ion content.