Real Interfacial Tension of
a Partially Miscible Polymer Blend

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Interfacial tension of immiscible polymer blends comes from the excess free energy. This is the result of the existence of interfacial region where the component molecules are mixed. Rheological measurements are available to estimate the interfacial tension since the relaxation time due to interfacial tension is characterized in the oscillatory shear flow. However, most of polymer blend is not immiscible but partially miscible. A certain part of polymer A is diffused into polymer B and vice versa. Interfacial tension does not occur between polymer A phase and B phase but occur between polymer A rich phase and polymer B rich phase. In this work, we propose a rheological method to estimate the interfacial tension of partially miscible polymer blend using the hybrid approach of double reptation theory and emulsion model.

PC-PMMA blend was used for the good model of partially miscible system in melt state. Rheometrics Mechanical Spectroscopy and Differential Scanning Calorimeter were used for the rheological and the thermal analysis, respectively.