



QUANTIFYING MIXING: A MEASURE OF INHOMOGENEITY IN MULTIPLE SCALES

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The quantification of mixing is still a difficult task, especially for a mixture with a microstructure. Such materials include composites and immiscible polymer blends, which are inhomogeneous in the scale of the smallest component and homogeneous in macroscopic scale. To characterize the quality of a mixture with the internal microstructure, we develop a statistical method of scale-dependent moment function. Based on the method, generic concepts to characterize the state of a mixture are introduced, inhomogeneity at an observation scale, the scale of segregation, the scale of a structure, and the scale of homogeneity. The proposed method is capable of quantification of a mixture with structures in multiple scales. Application of the method to characterize the systems with different microstructures are discussed.