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**Coalescence in Chaotic Flows***J.E. Perilla and S.C. Jana**Department of Polymer Engineering, University of Akron, Akron, OH 44325-0301*

The study showed that excellent mixing conditions prevailing in chaotic mixers also reduce droplet coalescence in the mixing of immiscible polymers. A combined approach of experiments and simplified modeling was used to understand the effects of the degree of chaotic mixing, shear rate, and viscosity ratio on coalescence rates. It was found experimentally that the extent of coalescence was substantially reduced when the bulk of the fluid in the mixer experienced chaotic mixing. In addition, coalescence was subdued at higher rates of shear and for higher viscosity ratio droplets. Pseudo-steady state droplet size distributions were reached faster with higher droplet volume fractions and for higher viscosity ratio droplets.