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## A MODEL AND MEASUREMENT TECHNIQUE FOR MICROMIXING IN COPOLYMERIZATION REACTORS

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**Abstract**—A new model is presented for copolymer composition distributions in a stirred tank reactor with unmixed feed streams. The new model is a variant which now explicitly considers the effects of backmixing on the popular, lamellar stretch model. It can also be regarded as an application to time-dependent slab geometries of the droplet diffusion model. An experimental technique based on gradient elution thin-layer chromatography was developed to measure the copolymer composition distribution in styrene-methyl methacrylate copolymers. Results for a laboratory-scale, stirred tank reactor showed good agreement with the statistical or Stockmeyer distribution, thus indicating a close approach to perfect mixing in this small vessel. An upper limit on the initial striation thickness was calculated to be 1 mm.