

IMPERFECT/INCOMPLETE MICROMIXING EFFECTS ON COPOLYMERIZATION IN A PREMIXED-FEED STIRRED TANK REACTOR

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Abstract—The effects of varying degrees of micromixing on overall conversion, average copolymer composition and copolymer composition distributions in a premixed feed-stirred tank reactor have been theoretically analyzed. The analysis is based on kinematical considerations from continuum mechanics and the Atiqullah–Nauman micromixing model. The calculated, macroscopic composition distributions widen with the increase in segregation number N_{seg} . However, the overall conversion and average copolymer composition remain relatively unaffected. The study also shows how the micromixing parameter, that is, the striation thickness s_0 , can be calculated from the measured- and model-predicted composition distributions, and N_{seg} .