Abstract Submitted
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Optimizing the Geometry of Patterned Polymer Separation Media DAVID HOAGLAND, Univ. of Massachusetts Amherst, HELMUT STREY, Stony Brook Univ. — A quantitative understanding of polymer transport in patterned polymer separation media would guide the design of media with optimized pattern geometries. For example, one might desire to know what confinement geometry best separates linear polymers by molecular weight as a driving field is applied to a polymer mixture. By asserting that transport is controlled by steric interactions with a periodic pore structure, and that the driving field is low enough for a linearity in the relationship between transport rate and field magnitude, we have derived a simple, general expression for polymer mobility as a function of parameters characterizing polymer and pattern. Our expression can be used to derive optimized separation geometries that can be produced by micro- or nano-lithography methods. Analysis will be discussed for several pattern geometries that exert periodic constriction on migrating polymers. Financial support: UMass MRSEC

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