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Electrophoretic Migration of Branched DNA in Polymer Solutions HENRY LAU, LYNDEN ARCHER, School of Chemical and Biomolecular Engineering, Cornell University — The electrophoretic migration of large, star-branched DNA molecules has previously been studied in both neutral polymer solutions and gels, and the results have provided insight into the local interactions between the analytes and the sieving matrix during electrophoresis (Electrophoresis, 2006, 27, 3128). This talk focuses on using rigid-rod DNA molecules of complex shapes as model analytes in studying the effects of analyte architecture on mobility in polymer solutions. Electrophoresis of a series of Y-shaped DNA molecules that mimick the shapes of antibodies, was performed in polymer solutions above the overlap concentration and at electric fields up to 300V/cm. The location of the branch point as well as the arm sizes are varied in order to examine their influence on mobility. Our results point to novel, topology-based fractionation strategies for separating biological molecules using capillary electrophoresis with polymer sieving media.

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