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Quantification of Complex Topologies in Macromolecular and Nanoscale Structures using Small-Angle Scattering SIDDHARTH PRADHAN, RAMANTH RAMACHANDRAN, DURGESH RAI, GREGORY BEAUCAGE, University of Cincinnati — Polymers are characterized by molecular weight distribution, tacticity, block copolymer content and branch content and chain topology. The branch structure and particularly the topology of branched chains has remained a difficult characterization problem. Recently we have developed a scaling model that can be coupled with small-angle scattering to measure the average branch length, number of branches and branch-on-branch structure in macromolecules of complex topology. This method has been extended to understand the structure of two dimensional structures and crumpling in these macromolecular systems. We have explored a wide range of materials in this regard. This poster will give an overview of the current uses for the scaling model for macromolecular topology. References pertaining to this poster can be found at http://www.eng.uc.edu/∼gbeaucag/BranchingPapers.html.

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