Universal features of complex n-block copolymers

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The study is dedicated to the conformational properties of complex polymer macromolecules in form of n subsequently connected chains (blocks), that are characterized by different lengths and distinct chemical structure. For different solvent conditions, the inter- or intrachain interactions of some blocks may vanish, causing the rich conformational behavior. We pay attention mainly to the universal conformational properties of such molecules. The continuous chain model is used to describe the system and we apply the direct polymer renormalization group approach to derive the analytical expressions for the scaling exponent $\gamma(n)$, governing the number of possible conformations of n-block copolymer, and analyze the effective linear size measures of individual blocks. The numerical simulations of the simplest $n = 2$-block copolymer chain are performed as well for better illustration of the conformational behavior of such molecules.