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Self-assembly of linear rod-coil block copolymers[1] LI-JIA AN, JI-ZHONG CHEN, ZHAO-YAN SUN, CHENG-XIANG ZHANG, Changchun Institute of Applied Chemistry, CAS — Rod-coil block copolymer systems have attracted a great deal of attention due to their rich phase behavior. The spontaneous ordering of coil-rod block copolymers is due to the mutual repulsion of the dissimilar blocks and the packing constrains imposed by the connectivity of each block, while the stiff rigid conformation of the rod segment imparts orientation organization. However, few reports investigate rod-coil block copolymers in three-dimension space. In this work, the self-assembly of linear rod-coil block copolymers is studied by applying self-consistent-field lattice techniques in three-dimension space. The stiffness influences on the self-assembly and the possible orientations of the rods in different structures are focused on for rod-coil diblock copolymers; the interfacial grafting density of the separating rod and coil segments is found exerting important influences on the phase behavior of symmetric coil-rod-coil triblock cpolymers; the influences of the intramolecular interactions between the two rods of the symmetric rod-coil-rod triblock copolymer chain on the self-assembly are studied.

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