

Star-shaped homo- and hybrid fullerene C₆₀-containing polymers and their supramolecular organization in aromatic solvents

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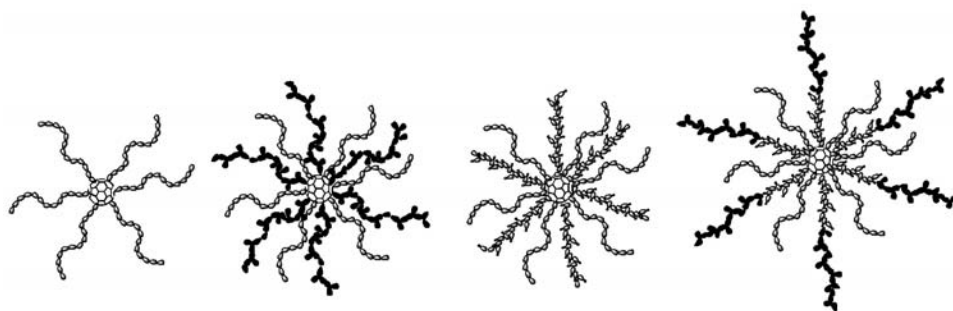
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Anionic polymerization techniques, functionalization and coupling reactions were used in the synthesis of star-shaped fullerene C₆₀-containing polystyrenes and heteroarm stars with non-polar (polystyrene) and polar (poly-2-vinylpyridine, poly-(*tert*-butyl methacrylate) and poly-2-vinylpyridine-*block*-poly-(*tert*-butyl methacrylate)) arms.



Small-angle neutron scattering was used in the study of fine structural organization of fullerene-containing star-shaped polystyrenes and hybrid stars, as well as the structure and parameters of supramolecular formations in deuterotoluene. It was shown that polystyrene stars and hybrid polymers with polystyrene and poly-2-vinylpyridine (P2VP) arms and C₆₀ branching center are weakly associated in dimers, the stars based on polystyrene and poly-(*tert*-butyl methacrylate) (PTBMA) form clusters containing ~12 macromolecules with diameter of ~ 50 nm, and stars with polystyrene and P2VP-PTBMA diblock copolymer arms form “chains” including 4 macromolecules.

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