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Conformation – Dependent Design of Copolymer Sequences

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In 1998 we have formulated the idea of design of copolymer sequences in order to achieve required functional properties of single macromolecules in the globular state. This approach was inspired by unique sophisticated functional performance of globular proteins-enzymes. In the present talk the review of the recent advances in this field will be given. A robust free-radical polymerization procedure of synthesis of copolymer macromolecules with core-shell structure in the globular state will be described. Like globular proteins, such macromolecules do not precipitate in poor solvents. Next problem is to design a catalytic activity for these molecularly dispersed objects. To this end we investigate amphiphilic substrates and catalytically active groups which possess surface activity and, thus, an authomatically attracted by globular surfaces. We show that the resulting non-specific catalytic effect can be very significant.