

Electronic supplementary information (ESI)

Movie 1: Temporal evolution of a copolymer globule having a protein-like core-shell microstructure at mesoscale. The copolymer is built up from hydrophobic (H) and hydrophilic (P) monomers. H segments are given in gray, P segments are in green, catalytic triads are depicted as red triangles with spheres at their center.

Movie 2: Temporal evolution of a single globule of the designed copolymer in water environment during a 10 ns molecular dynamics simulation. Like enzymes, this water-soluble "synzyme" - a functional analog of chymotrypsin - is tailored in such a way that it has a core-shell microstructure, with hydrophobic core and hydrophilic envelop. Catalytic triads are formed randomly from synthetic monomers imitating protein amino acid residues. The hydrocarbon backbone is represented by a two-tone "hose", in which chain segments connected with hydrophobic units are given in grey, while segments connected with hydrophilic units are colored green. The side chains of the monomer units are shown as sticks. Catalytic triads are depicted as red triangles. Water is not shown.