Random Heteropolymer Enables Protein Function in Foreign Environments

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The retention of enzymes' activity in non-biological conditions is pivotal to generate biomimetic materials. Random heteropolymer was thus designed to preserve enzymes' native structures and activities in organic solutions. Multiscale simulations at all-atom and coarse-grained resolutions showed that

- the local heterogeneity at protein surface plays the determinant role in stabilizing protein-polymer complex (core-shell structure) in oil;
- optimal polymer composition for protein encapsulation exists.

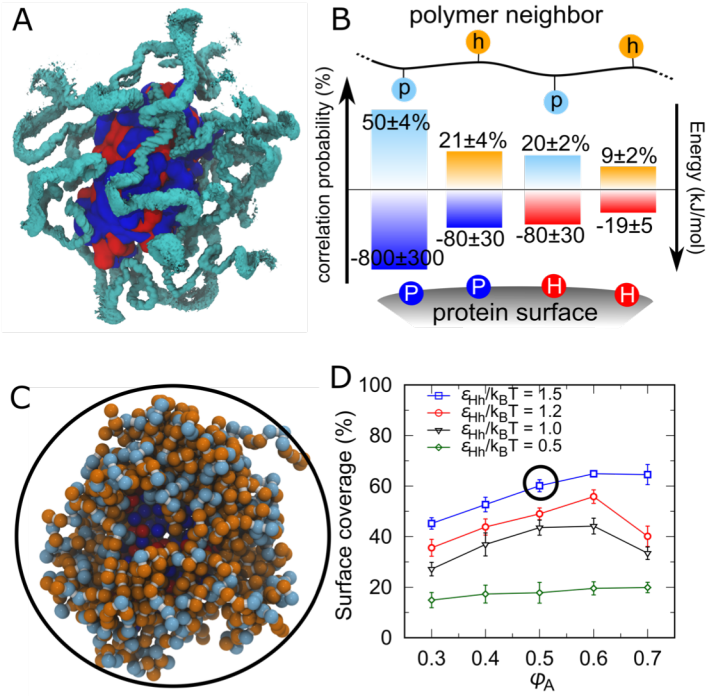

Figure. All-atom (A-B) and coarse-grained (C-D) simulations results.

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