



**Theoretical and Physical Chemistry Institute
National Hellenic Research Foundation
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ONLINE LECTURE

“Self-assemblies based on hydrophilic polymers in aqueous media”

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Self-assemblies based on hydrophilic polymers in aqueous media

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Self-assembly of polymers is currently widely considered a powerful tool for preparation of artificial functional hierarchical nanostructures inspired by the principles of self-assembly in nature. The resulting structures have diverse morphologies and properties which could be tuned and controlled by the chemical composition of polymer as well as by applying external stimuli. All these factors provide access to a multitude of potential applications ranging from nanoelectronics, soft lithography and nanoreactors to drug and gene delivery.

Our study was devoted to experimental investigation (light scattering, SAXS/SANS, NMR and fluorescence spectroscopy) of self-assemblies based on hydrophilic polymers in aqueous media. Specifically, we focused on two classes of systems: (i) hydrophilic polymers whose self-assembly is driven by association of terminal hydrophobic groups [1,4] and (ii) double hydrophilic block polyelectrolytes whose self-assembly occurs via electrostatic complexation of polyelectrolyte blocks [2,3,4].

[1] Fanova, A., et al., (2018). *Macromolecules*, 51(18): 7295-7308.

[2] Fanova, A., et al., (2019). *Macromolecules*, 52(16): 6303-6310.

[3] Fanova, A., et al., (2021). *ACS Applied Polymer Materials*, 3(4): 1956-1963.

[4] Fanova, A., et al., (2022). *Macromolecules*, 55 (14), 6191-6199.