

Self-assembled systems based on polyelectrolytes: Properties and applications

Miroslav Štěpánek

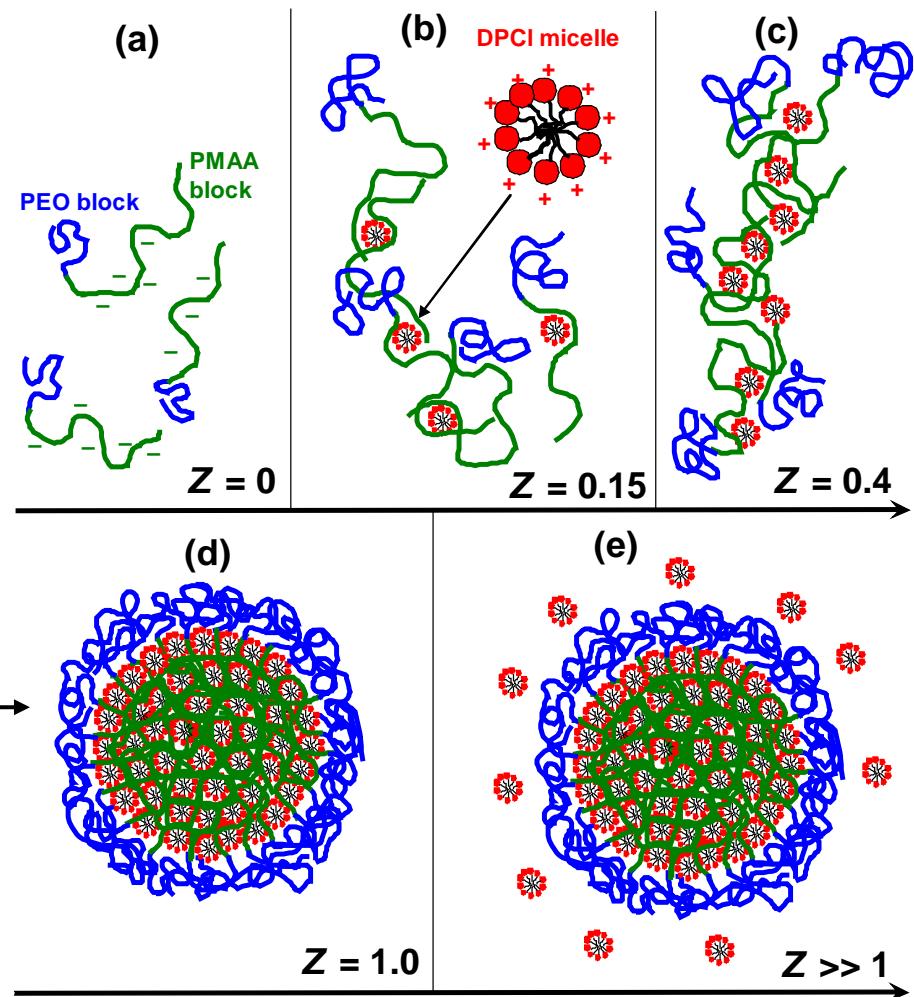
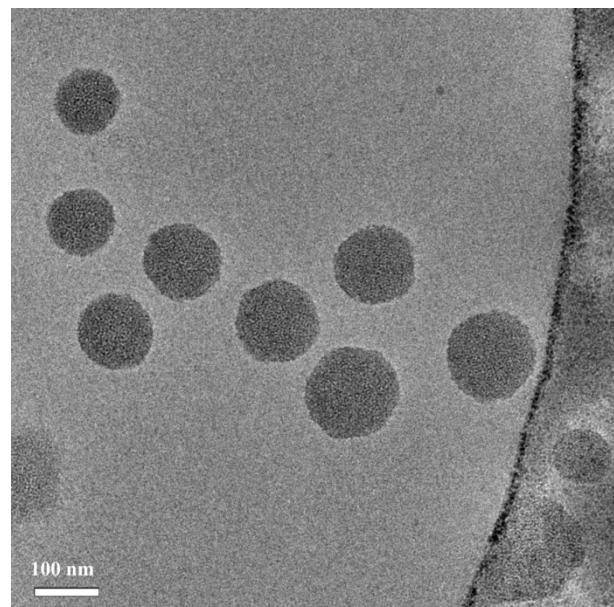
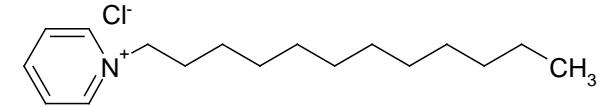
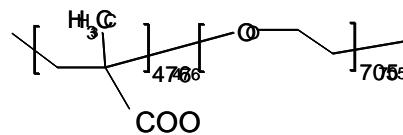
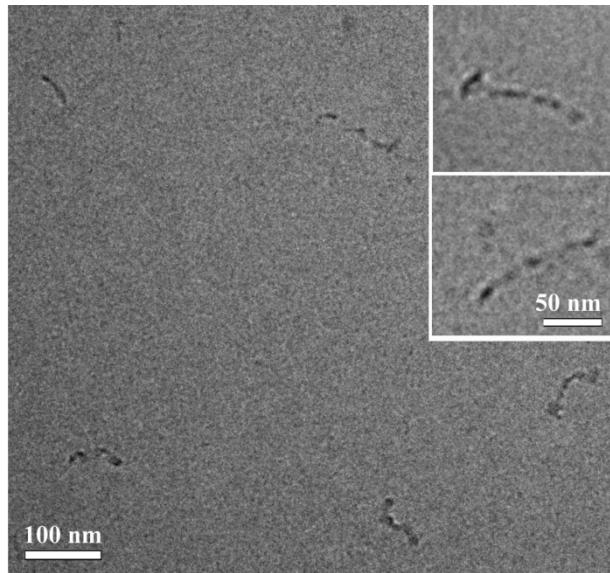
Department of Physical and Macromolecular Chemistry
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February 8th, 2017

Outline (current work & future plans)

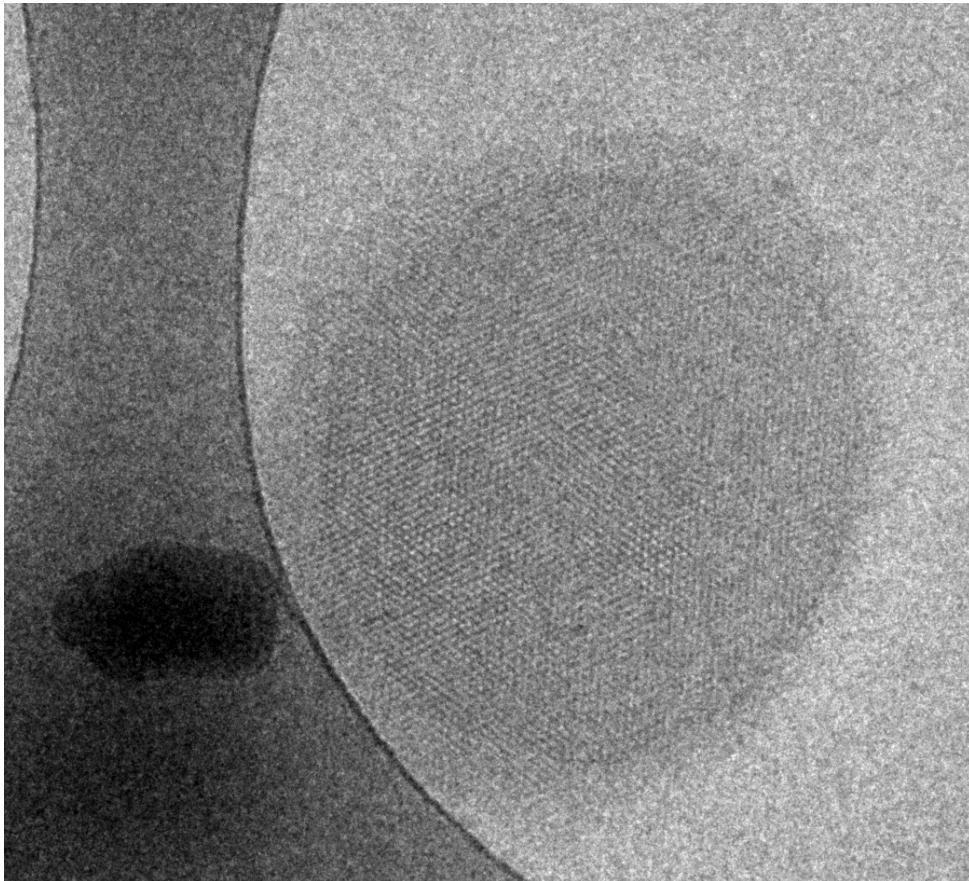
- NPs based on polyelectrolyte – surfactant complexes: “double hydrophilic” polyelectrolytes (DHBP)
- Block polyelectrolyte – boronic acid NPs: glucose responsive drug carriers?
- Polyelectrolyte – magnetic NPs: stabilization of magnetic NPs in aqueous dispersions
- Polyelectrolyte – magnetic NPs: magnetically responsive materials for immobilization of enzymes
- Triblock terpolymers with polyelectrolyte blocks: scavengers of bacterial toxins?

PE-surfactant complexes: double hydrophilic PE

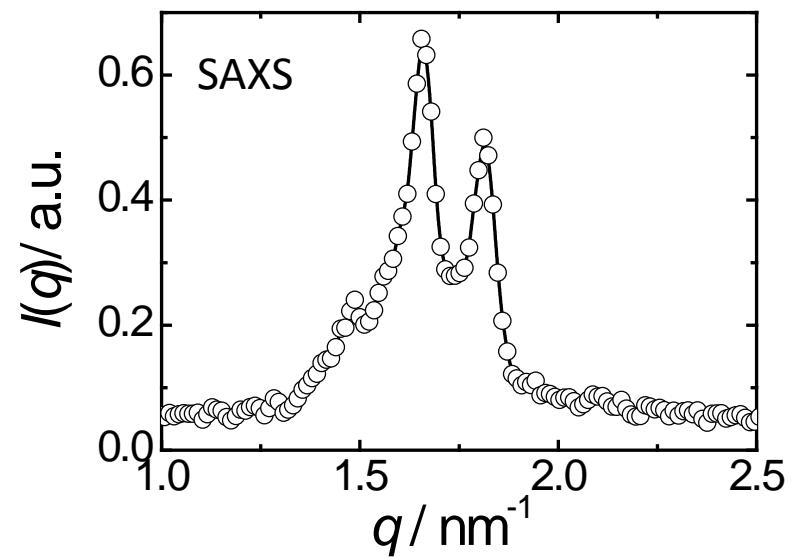
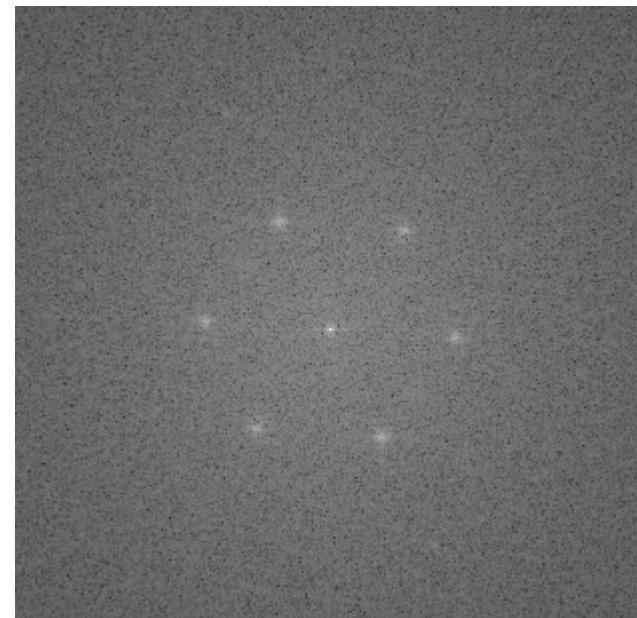


PE-surfactant complexes: Crystalline core

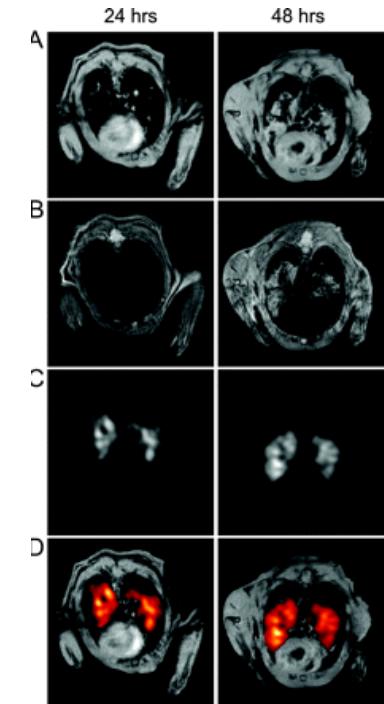
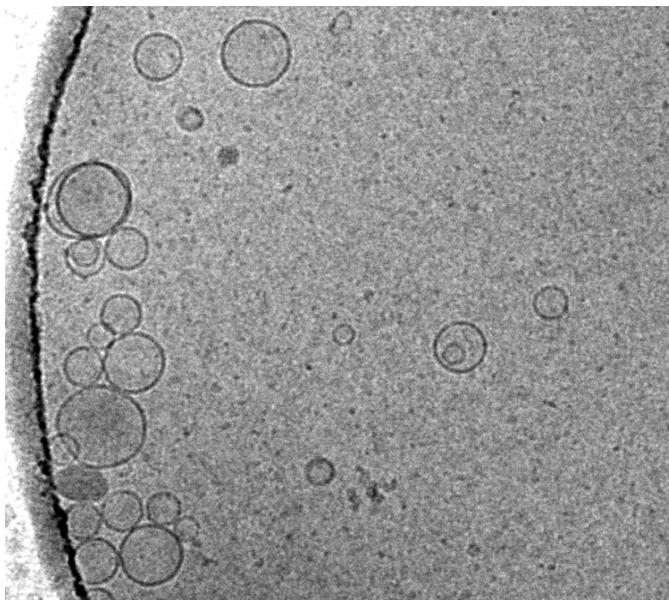
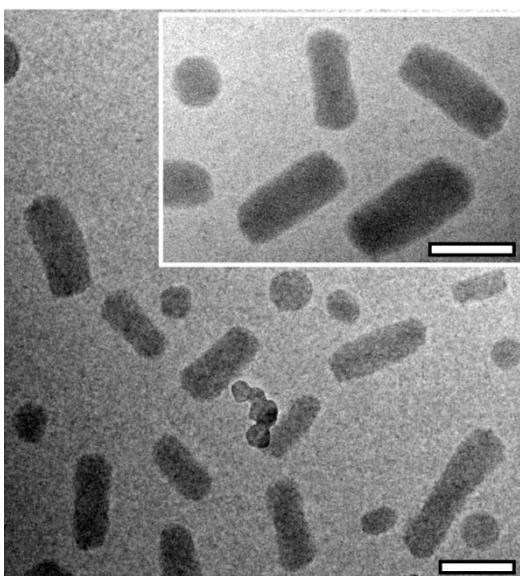
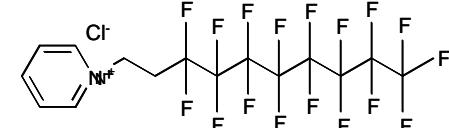
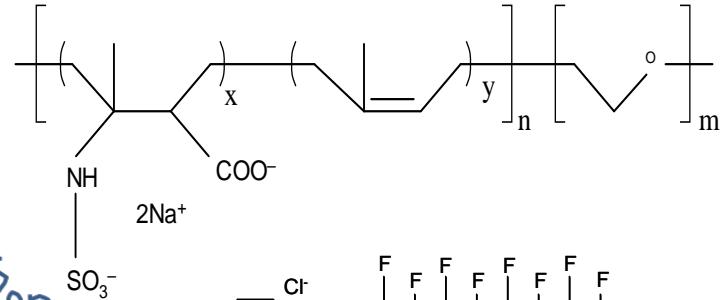
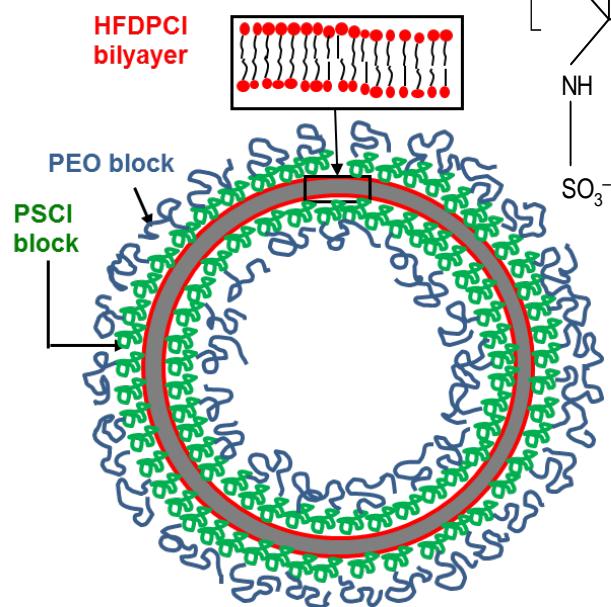
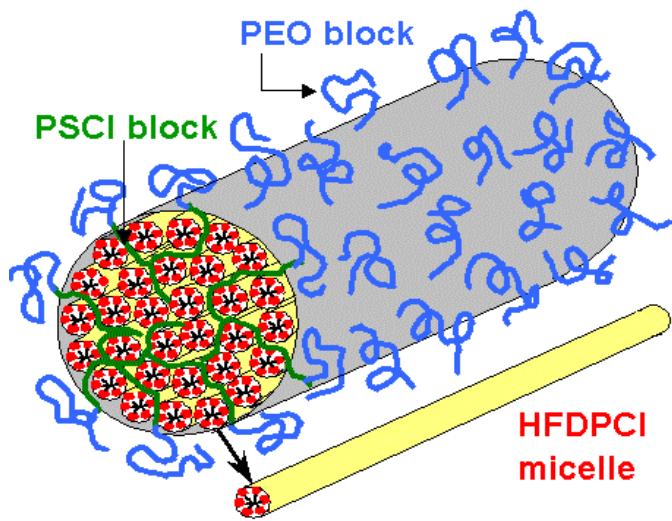
HRTEM



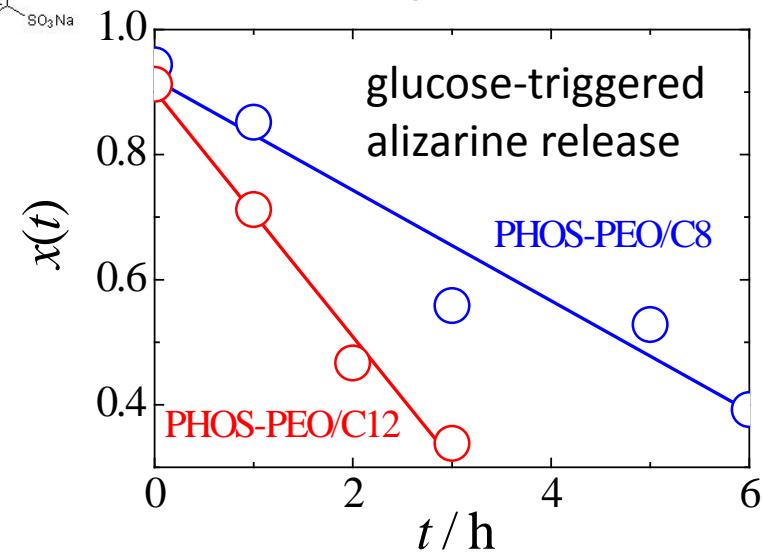
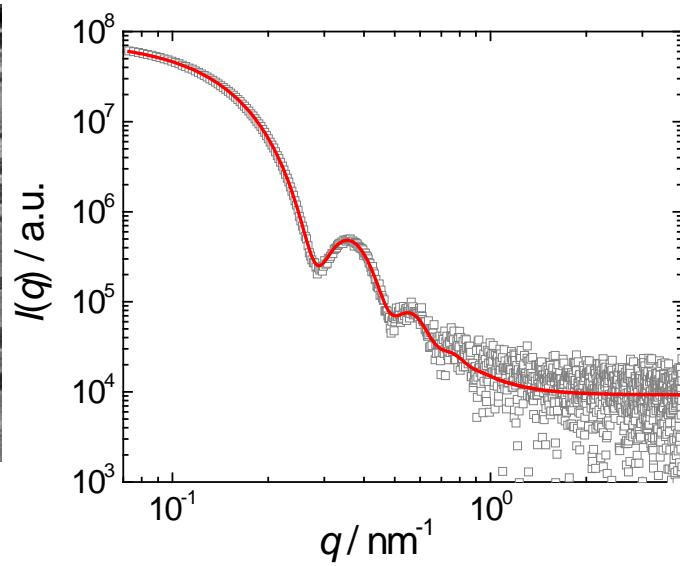
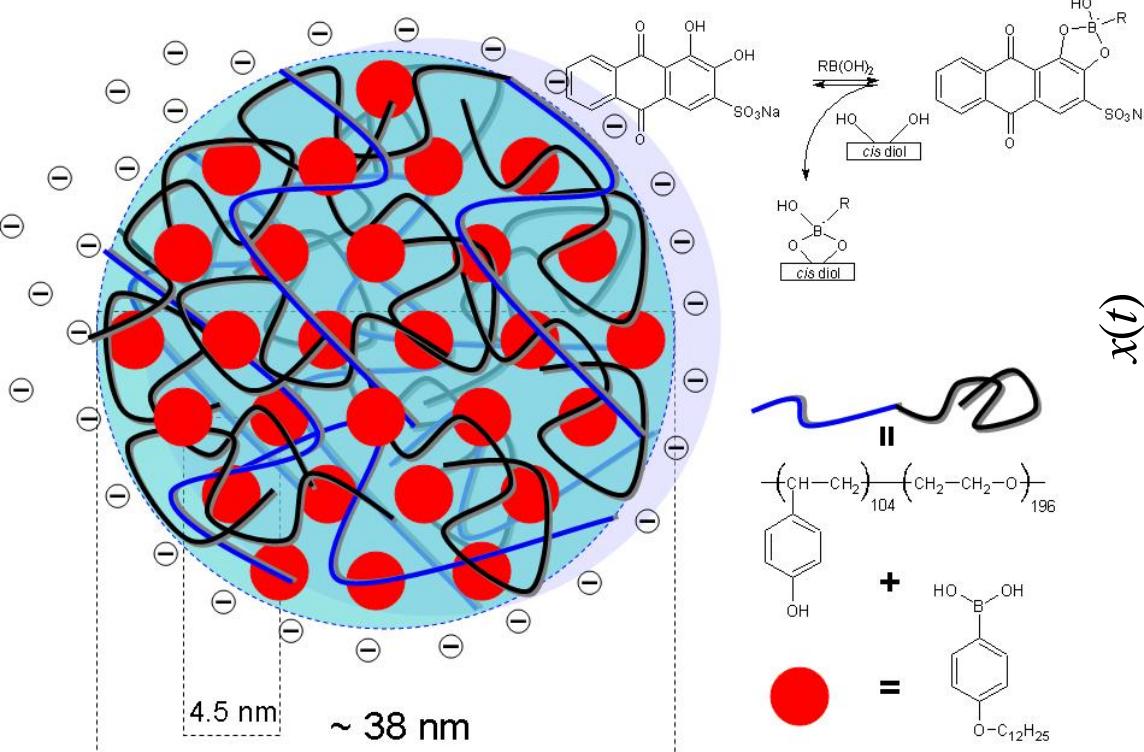
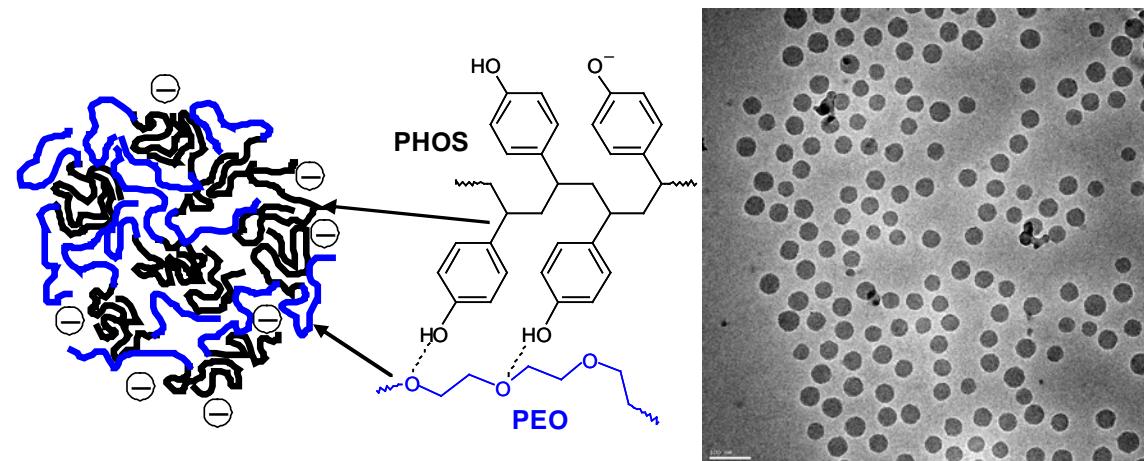
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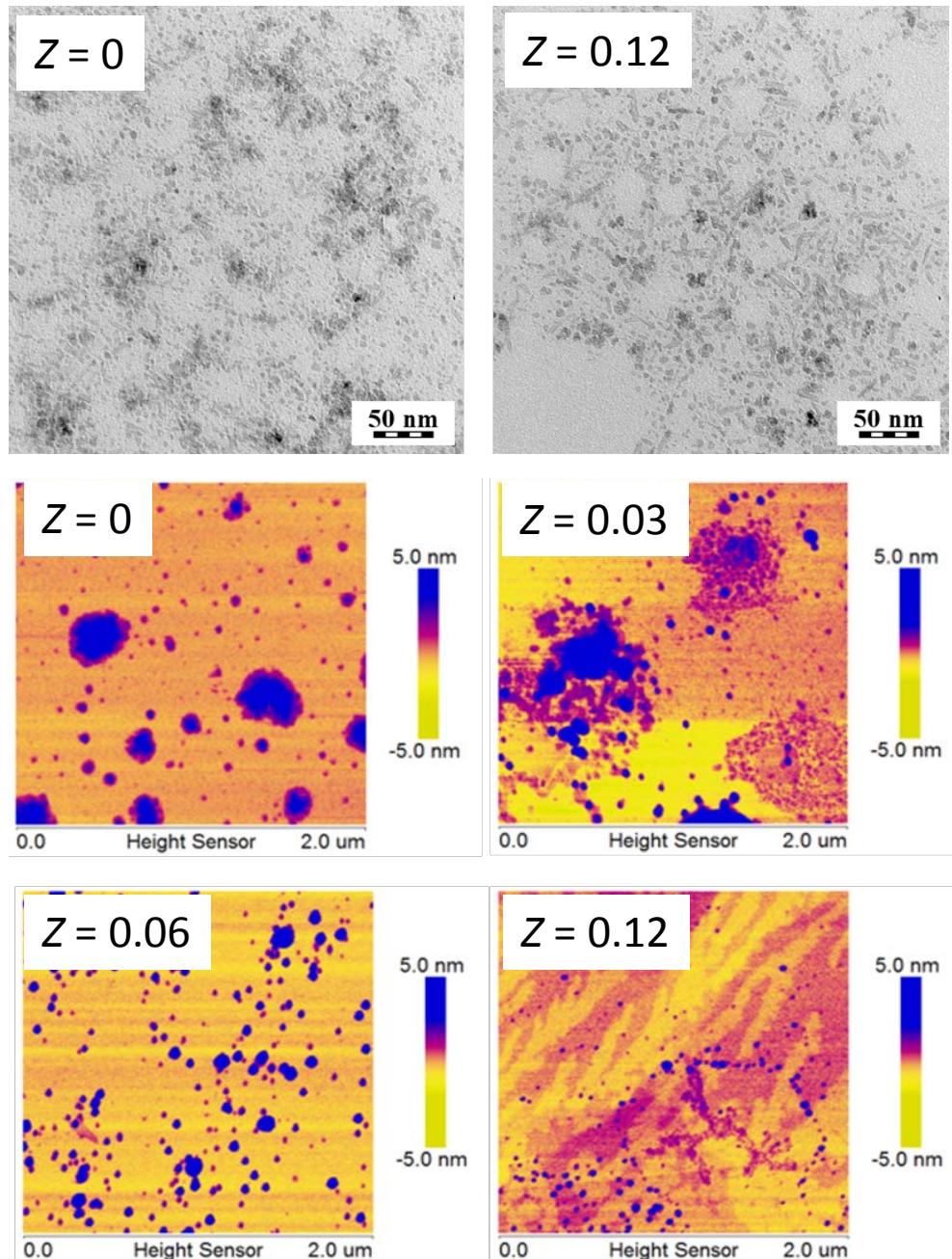
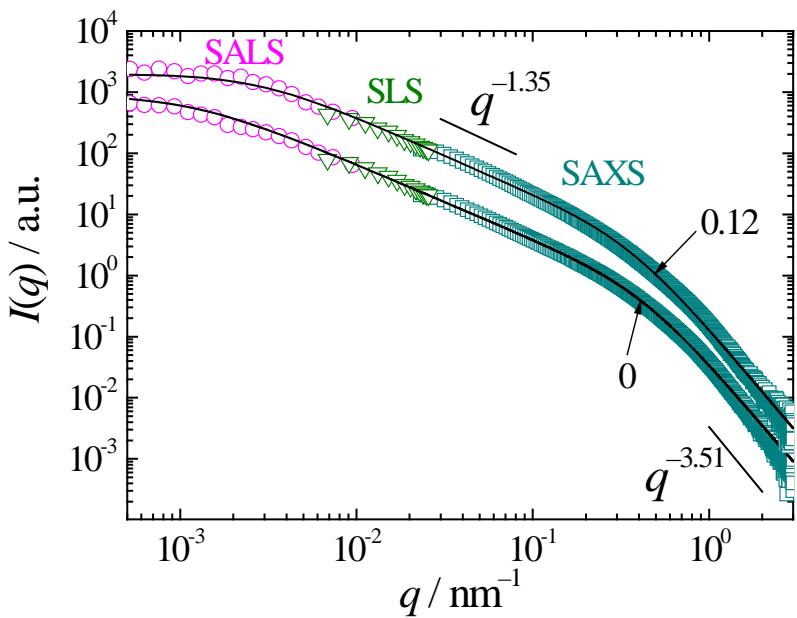
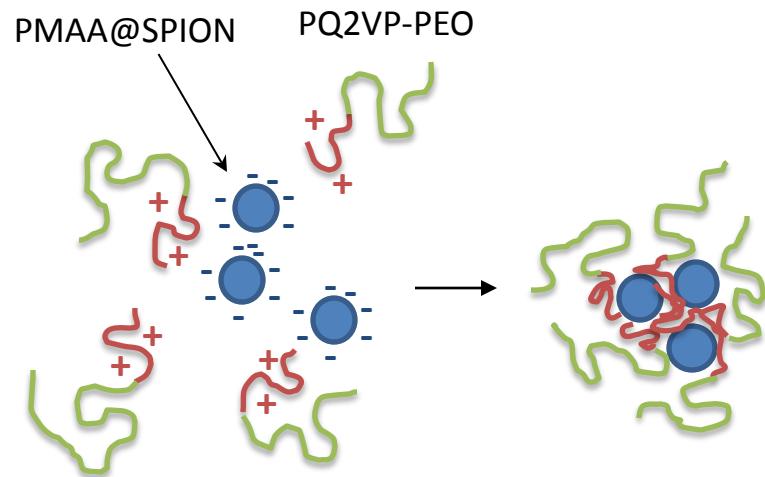
PE complexes with fluorosurfactants



Glucose responsive NPs based on poly(4-hydroxystyrene)-*b*-poly(ethylene oxide)



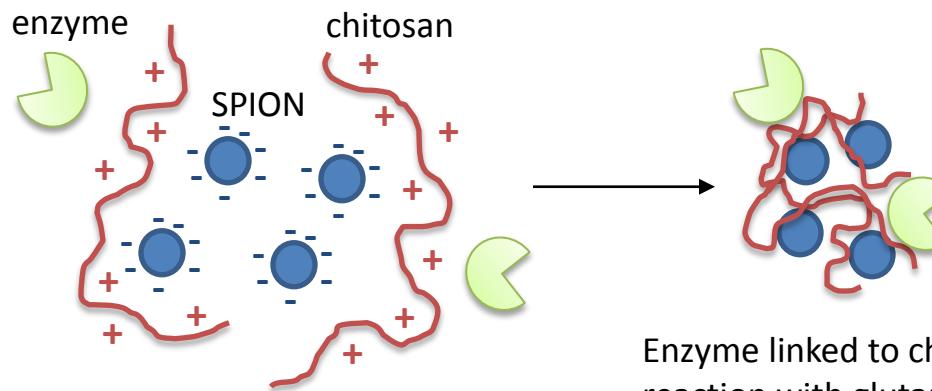
Stabilization of iron oxide NPs by block polyelectrolytes



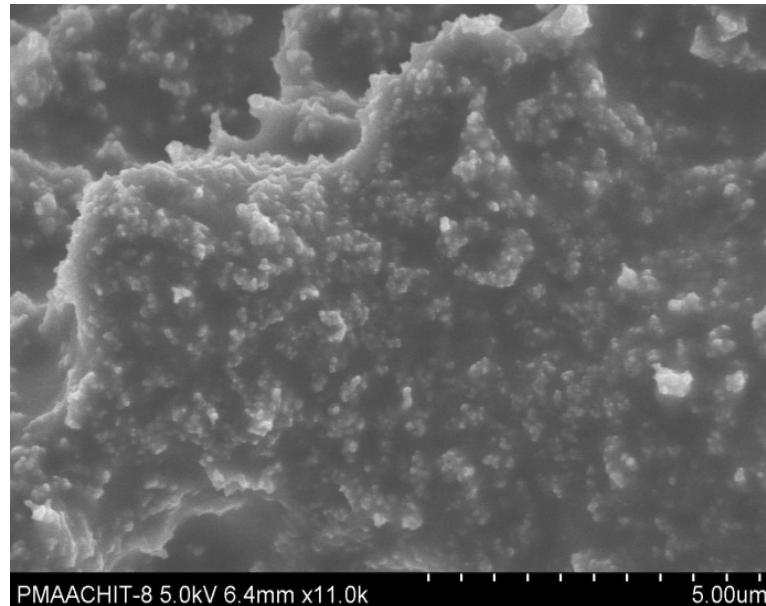
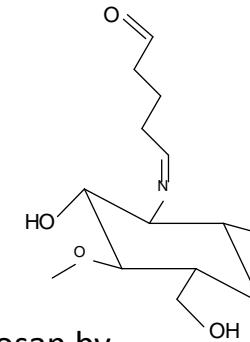
Colloids Surf. A 2015, 483, 1

Colloids Surf. A 2017, 514, 32

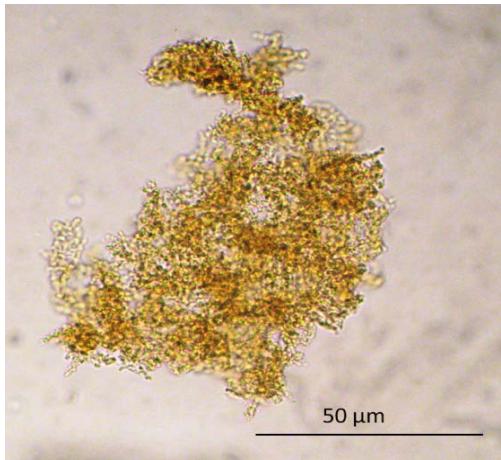
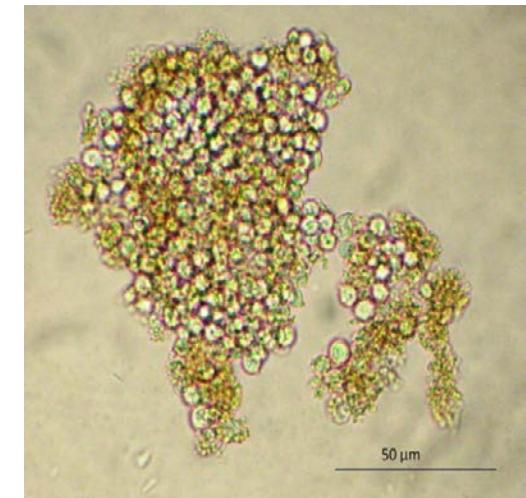
Magnetically responsive materials for immobilization of biologically active compounds



Enzyme linked to chitosan by reaction with glutaraldehyde

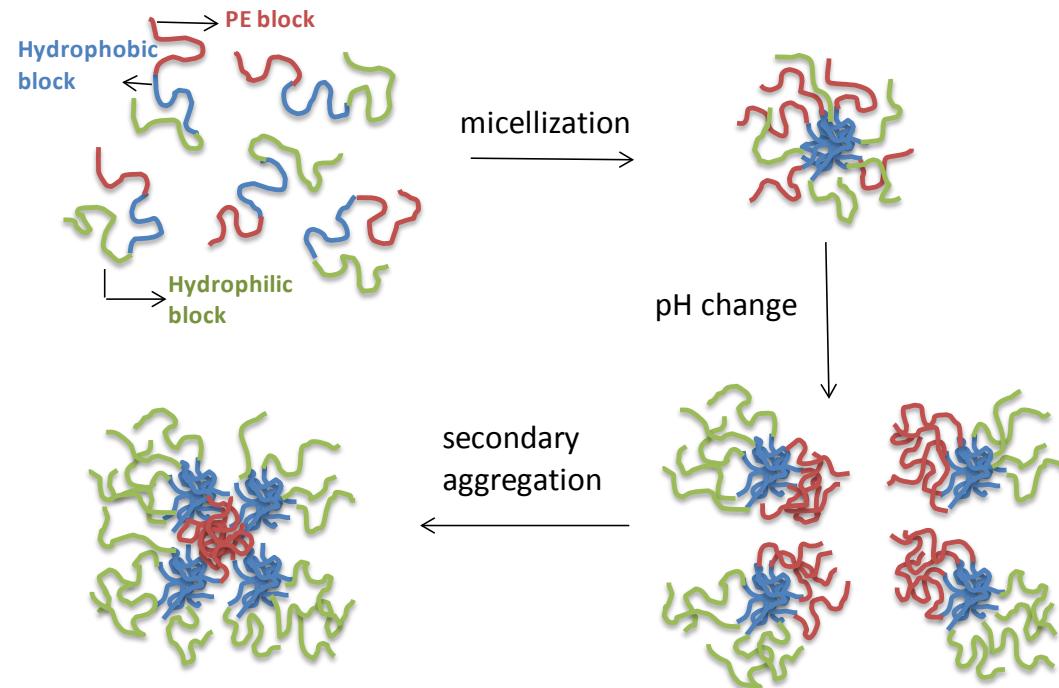
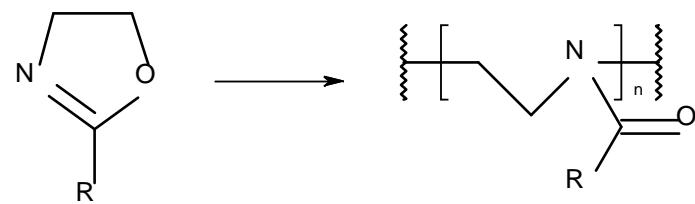


Embedding of yeast cells

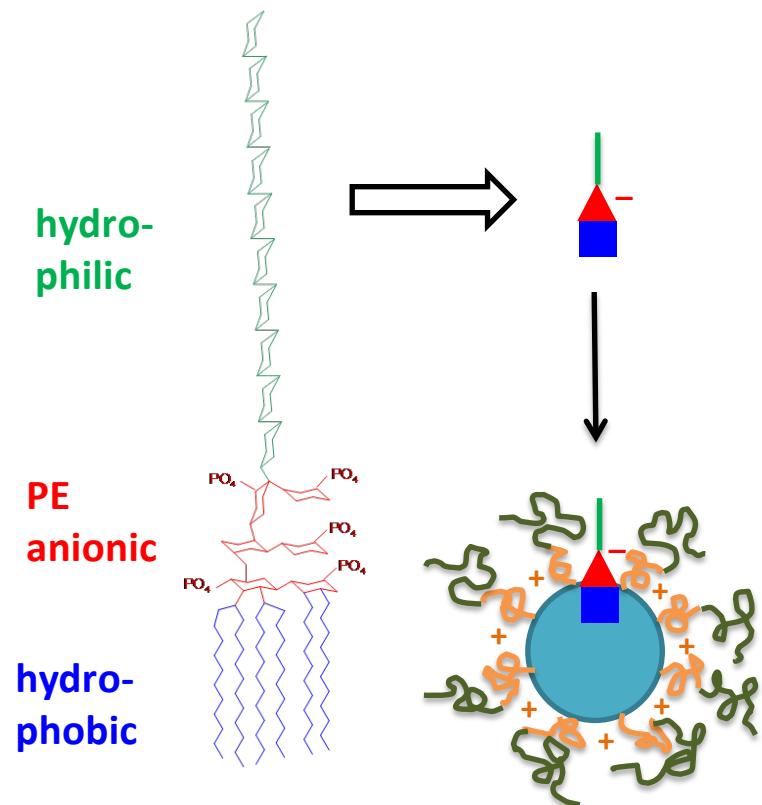


Hydrophilic-polyelectrolyte-hydrophobic triblock terpolymers

Polyoxazoline chemistry: biocompatible and versatile



Bacterial endotoxins



Collaborations



Faculty of Science
CHARLES UNIVERSITY
IN PRAGUE

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Thank you for your attention!