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ONLINE LECTURE

"Tunable self-assembled hydrogels from block copolymers with thermoresponsive and pH-responsive blocks"

Prof. Dr. Christine M. Papadakis

Physics Department,
TUM School of Natural Sciences,
Technical University of Munich,
Garching, Germany

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Link: Click here to join the lecture
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Tunable self-assembled hydrogels from block copolymers with thermoresponsive and pH-responsive blocks

Christine M. Papadakis

Physics Department, TUM School of Natural Sciences, Technical University of Munich, Garching, Germany

Combining complex polymer architectures with responsivity to temperature or pH-value results in a wealth of structures in micellar solution and tunable hydrogels. In my talk, I will present two examples: (i) A triblock copolymer with hydrophobic end blocks and a pH-responsive, ampholytic middle block, which we investigated with respect to the hydrogel formation [1]. (ii) A pentablock quaterpolymer with thermoresponsive end blocks and a pH-responsive middle block, which we investigated in thin film geometry [2]. Swelling thin films in water vapor allows addressing the regime of high polymer concentration. We studied the mesoscopic structures using dynamic light scattering, small-angle X-ray and neutron scattering and grazing-incidence small-angle X-ray scattering to determine the effect of temperature and pH-value. The results indicate the importance of the bridging of the micelles, the mobility of the end blocks and steric hindrances. Moreover, the transition from the dilute to the concentrated regime is characterized.

1. M. A. Dyakonova, C.M. P. et al., *Soft Matter* **2017**, *13*, 3568 et al. *Colloid Polym. Sci.* **2021**, *299*, 419

2. C. Tsitsilianis, C. M. P. et al., *Macromolecules* **2018**, *51*, 2169. F. A. Jung, C. M. P. et al., *Macromolecules* **2019**, *52*, 9746. M. M. S. Lencina, C. M. P. et al., *ACS Appl. Polym. Mater.* **2021**, *3*, 819. F. A. Jung, C. M. P. et al., *Macromolecules* **2020**, *53*, 6255.