



Contribution ID: 82

Type: Poster

Structural study of polyoxazoline-grafted PMMA amphiphilic copolymers

Tuesday, 5 December 2023 14:00 (3 hours)

Poly(2-oxazoline)s are biocompatible polymers featuring high copolymerization versatility and low in-vivo immunogenicity [1]. Thus, the system has potential in biomedical applications. While linear poly(2-oxazoline) homo- and block copolymers have been amply studied, studies on molecular brushes from poly(2-oxazoline)s are still scarce [2, 3]. In the present study, we investigate molecular brushes, in which poly(2-oxazoline)s with methyl or n-butyl side groups (namely PMeOx, hydrophilic and PBUOx, hydrophobic) were densely grafted onto a polymethyl methacrylate (PMMA) backbone. The backbone is either linear or has a star-shaped multi-arm configuration. The grafted chains are PBUOx-co-PMeOx diblock copolymer with the PBUOx ends connected to the backbone. The star-shaped brushes were investigated in dilute aqueous solution using dynamic light scattering (DLS) and synchrotron small-angle X-ray scattering (SAXS). This way, the size and shape of the molecules was determined. Our preliminary results show that an increased backbone-to-sidechain length ratio will lead to elongated brush shapes.

References:

- [1] T. X. Viegas, M. D. Bentley et al., *Bioconjugate Chem.*, **2011**, 22, 976.
- [2] J.-J. Kang, C. M. Papadakis et al., *Colloid Polym. Sci.*, **2021**, 299, 193.
- [3] J.-J. Kang, C. M. Papadakis et al., *Langmuir*, **2022**, 38, 5226.

Primary author: XU, Wenqi (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group)

Co-authors: FIETZKE, Laura (Technical University of Dresden, Faculty of Chemistry and Food Chemistry, Chair of Macromolecular Chemistry); ZHENG, Feifei (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group); ZHANG, Peiran (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group); ROMAN-QUINTERO, Montserrat (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group); SOLOVIOV, Dmytro (EMBL Hamburg); Prof. JORDAN, Rainer (Technical University of Dresden, Faculty of Chemistry and Food Chemistry, Chair of Macromolecular Chemistry); Prof. PAPADAKIS, Christine (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group)

Presenter: XU, Wenqi (Technical University of Munich, TUM School of Natural Sciences, Soft Matter Physics Group)

Session Classification: Poster Session

Track Classification: Soft Matter