



Seminar
“IRTG Soft Matter Science”

Poly(2-oxazoline)s as “smart” bioinspired polymers

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“Hörsaal Makromolekulare Chemie”,
Stefan-Meier-Str. 31, Freiburg

You are welcome to meet Dr. Helmut Schlaad , do not hesitate to contact Christelle Vergnat (softmattergraduate@physik.uni-freiburg.de)

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Bioorganic-synthetic copolymers (or biohybrids) are interesting materials for the bioinspired generation of “smart” functional colloids and hierarchical structures, for usage in for instance life science or materials science applications.

Thermoresponsive biohybrid glycopolymers based on poly(2-oxazoline)s can be readily synthesized by combination of living cationic ring-opening polymerization of 2-alkyl-2-oxazolines (alkyl = butenyl and isopropyl, etc.) and thiol-ene “click” photoaddition of thio-sugar derivatives. The (co)polymers can self-assemble into vesicles, tubes, or microspheres in dilute aqueous solution, depending on their molecular structure and the nature of interactions. Polymer vesicles are formed via hydrophobic interactions, whereas tubes are formed via hydrogen bonding. Micron-sized spheres built of nanofibers (Figure 1) are produced through a crystallization process in hot aqueous solution. Mechanisms of self-assembly and interactions of glycopolymer colloids with lectins will be discussed.

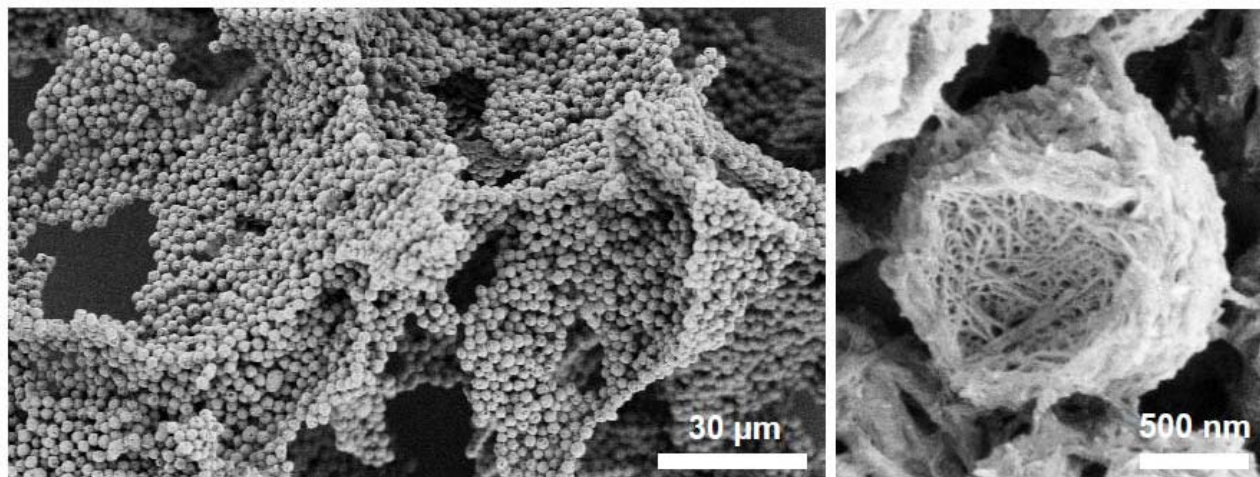


Figure 1. Scanning electron micrographs of hierarchically structured crystalline microspheres based on poly(2-isopropyl-2-oxazoline).