

NOMATEN HYBRID-SEMINAR

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In-person: NOMATEN seminar room

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Polymer systems for radiopharmaceutical purposes

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Abstract: Specific advantageous physico-chemical and biological properties of polymers and biomimetic supramolecular polymer systems are extremely useful for the construction of polymer drug, gene and radionuclide delivery systems. This is especially true for external stimuli-responsive polymer systems that change their behavior depending on surrounding environment. The Supramolecular Polymer Systems group at the Institute of Macromolecular Chemistry CAS has long time experience with the construction of radionuclide, drug and non-proton MRI contrast agent delivery systems based on stimuli-responsive polymers devoted to especially cancer and other medical applications. Several examples will be presented in the lecture, namely i) novel hybrid thermoresponsive polysaccharide-graft-poly(2-oxazoline)s for immunoradiotherapy, ii) advanced pH-responsive polymer system for the intercalator-aimed delivery of Auger electron emitters and iii) reactive oxygen species- and thermoresponsive polymer theranostic system for ¹⁹F magnetic resonance imaging.

Bio: Martin Hruby was born in Prague, Czech Republic, in 1978. He awarded his MSc. degree in 2002 in the field of organic chemistry and Ph.D. degree in 2006 in the field of polymer science. He is working as a senior researcher, head of the SUPRAMOL center and of the Supramolecular Polymer Systems department at the Institute of Macromolecular Chemistry, Czech Academy of Sciences, Prague. He published 183 impacted scientific papers with >3000 citations, 1 monograph and 6 chapters in monographs, 16 invited lectures and 6 patents (from which one international patent currently licensed and manufactured). He is currently teaching 2 courses on the use of polymers in biomedicine for master and Ph.D. students (at the Faculty of Science, Charles University in Prague and at the University of Chemistry and Technology, Prague). He supervised or co-supervised 12 Ph.D. theses from which 9 are defended and 3 underway. In 2021 he became an associate professor at the Faculty of Science, Charles University in Prague. His research is focused to the field of self-assembled stimuli-responsive biocompatible polymer nanostructures as drug and radionuclide carriers for theranostics and the use of polymer metal chelators in biomedicine.

