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Thio-amide functionalized polymers via polymerization or post-polymerization modification ALI OZCAM, NC State University, ADAM HENKE, IVA STIBINGEROVA, JIRI SROGL, Institute of Organic Chemistry and Biochemistry, JAN GENZER, NC State University — Decreasing supplies of fresh water and increasing population necessitates development of advanced water cleaning technologies, which would facilitate the removal of water pollutants. Amongst the worst of such contaminants are heavy metals and cyanides, infamous for their high toxicity. To assist the water purification processes, we aim to synthesize functionalized macromolecules that would contribute in the decontamination processes by scavenging detrimental chemicals. Epitomizing this role thio-amide unit features remarkable chemical flexibility that facilitates reversible catch-release of the ions, where the behavior controlled by subtle red-ox changes in the environment. Chemical tunability of the thio-amide moiety enables synthesis of thio-amide based monomers and post-polymerization modification agents. Two distinct synthetic pathways, polymerization and post-polymerization modification, have been exploited, leading to functional thioamide-based macromolecules: thioamide-monomers were copolymerized with N-isopropylacrylamide and post-polymerization modifications of poly(dimethylaminoethyl methacrylate) and poly(propargyl methacrylate) were accomplished via quarternization and "click" reactions, respectively.

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