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# Study of Poly(acrylamidoxime) Brushes Conformation with Uranium Adsorption by Neutron Reflectivity

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## Abstract

Chain conformation of surface tethered poly(acrylamidoxime) brushes plays an important role in increasing their uranium adsorption capacity in seawater. In this work, poly(acrylamidoxime) brushes are prepared via surface-initiated activators regenerated by electron transfer atom-transfer radical polymerization. For the first time, *in situ* neutron reflectivity experiments are employed to investigate the conformation of poly(acrylamidoxime) brushes in deuterated water containing  $\text{UO}_2^{2+}$  ions. It is found that the poly(acrylamidoxime) brushes shrink when  $\text{UO}_2^{2+}$  ions adsorb due to the multiple coordination effect. However, this phenomenon is unfavorable for further adsorption of  $\text{UO}_2^{2+}$  ions in poly(acrylamidoxime) brushes because  $\text{UO}_2^{2+}$  ions solutions are subsequently discharged from the polymer brushes.

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