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Ionic Organic/Inorganic Materials

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Quaternary ammonium salt (QAS) groups included in siloxane copolymers induce interesting properties depending on the cationic centres content and the substituent structure. The synthesis and characterization of some novel ionic organic/siloxane copolymers will be presented. Ionic organic/siloxane copolymers containing QAS sequences in the backbone were obtained by a polyaddition reaction between 1,3-bis(3-aminopropyl)tetramethyldisiloxane and siloxane oligomers, on the one side, and some reactive cationic oligomers containing preformed QAS groups, on the other side. Ionic organic/siloxane copolymers containing QAS sequences in the side chain were obtained by the quaternization reaction of polyethylene glycol chains bearing tertiary amine groups with a monofunctional or polyfunctional chloroalkylated siloxane. Soluble and crosslinked cationic siloxane copolymers were thus obtained. Soluble ionic copolymers were characterized by $^1\text{H-NMR}$ spectroscopy and viscometric behavior. Swelling properties of the crosslinked ionic siloxane copolymers in different solvents were evaluated.