Charge regulation in microgels across the volume phase transition under varying salt conditions

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Charged microgel dispersions constitute an excellent benchmark for studying colloidal interactions among charged spheres permeable to microions. Here, we explore the electrostatic properties of poly-N-isopropylacrylamide microgels in the liquid phase as a function of microgel size, which can be controlled by temperature, and ionic strength. The experimental static structure factor measured by light scattering can be successfully described by primitive model calculations, where the bare charge of the microgel is a fixed parameter independent of the microgel size, microgel concentration, and ionic strength. The calculations indicate that at low salt concentrations, there is an uptake of counterions upon collapse of the microgel but this scenario reverses at high salt concentrations, where a release of counterions is observed upon shrinking.

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Microgel dispersions, Electrostatic interactions, Static Light Scattering, Poly(N-isopropylacrylamide)

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