

This thesis is focused on mixed systems of various copolymers (double hydrophilic block and gradient polyelectrolytes, hydrophobic graft copolymers) and low-molar-mass compounds (sodium dodecyl sulfate as a representative of a ionic surfactant or superparamagnetic iron oxides in the form of nanocrystals). The electrostatic and hydrophobic interactions in the studied systems in aqueous solutions leading to aggregation behavior and to the formation of co-assembled nanoparticles were investigated by combination of scattering and microscopy techniques, including light, X-ray and neutron scattering, electron microscopy and atomic force microscopy.