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**Light- and pH Switchable Supramolecular Nanoparticles through Electrostatic Self-Assembly** FRANZISKA GROEHN, University Erlangen-Nuremberg, IMMANUEL WILLERICH — Supramolecular structures that can respond to external triggers are of high interest for example for nanotechnology or drug delivery. Recently we have introduced an approach to electrostatic self-assembly for the formation of supramolecular particles in solution: polyelectrolytes and multivalent stiff organic counterions build well-defined and stable nano-objects. In addition to electrostatics, secondary interactions between counterions such as pi-pi stacking directs the association. Aggregates with narrow size distribution and varying shape such as spheres, cylinders, vesicles and networks result. PH-responsive assemblies can be repeatedly switched "on" and "off" through pH. Furthermore, light is an elegant, non-invasive stimulus offering possibilities for new functional nanostructures. By electrostatic self-assembly, supramolecular particles can be built the size of which can be triggered by light. For example, assemblies of dendrimer macroions and divalent azobenzene counterions can respond to light with a size increase from 30 nm to 165 nm radius. Detailed characterization by static and dynamic light scattering, AFM, SANS and zeta-potential measurements as well as thermodynamic studies yield insight into driving forces and structural control in the self-assembly process.

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