

## **Stimuli-responsive reversible hydrogels from triblock polyampholytes and terpolymers**

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The mechanical properties of hydrogels formed by block copolymers with charged blocks are very sensitive to pH value. Using small-angle neutron scattering, we have investigated the structures of a triblock polyampholyte having negatively and positively charged blocks in dependence on the pH value and salt content. pH variation alters the charge densities of the ionizable blocks and thus the charge asymmetry. At low charge asymmetry, the chains collapse into large globular structures, whereas at higher charge asymmetry, a network is formed [1]. Salt addition makes the hydrogel softer due to a gradual disintegration of the network. Another system under study is a terpolymer with glassy end blocks and a middle block containing both positively and negatively charged monomers. Their relative amounts in dependence on pH lead to gross changes in the correlation between the micelles.

[1] M. Dyakonova et al., *Macromolecules* 47, 7561 (2014).

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