SUPORTING INFORMATION

Self-healing hydrogels formed by complexation between calcium ions and bisphosphonate-functionalized star-shaped polymers

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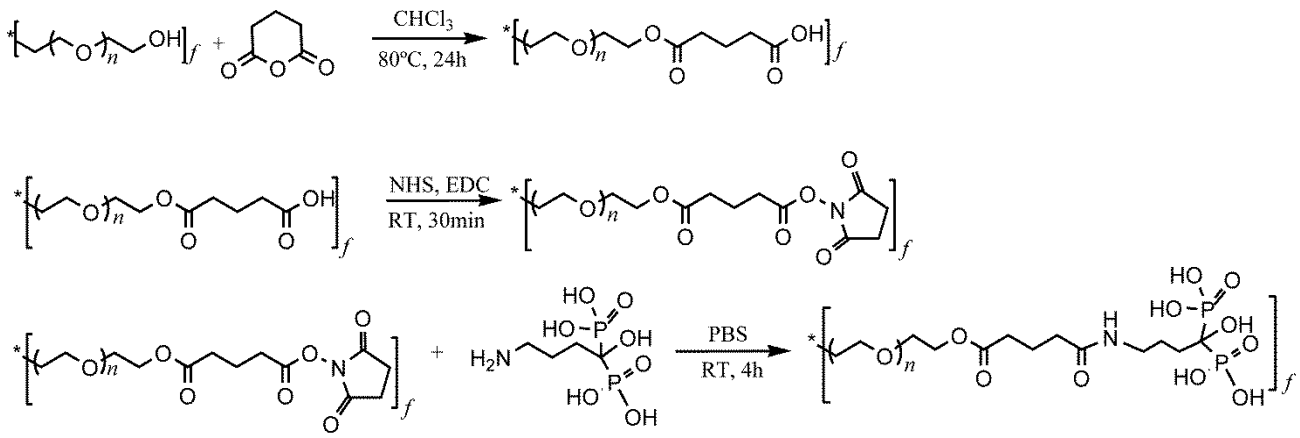

Figure SI-1. Chain terminus functionalization of multi-arm (f = 4, 8) star-shaped PEG polymers with alendronic acid

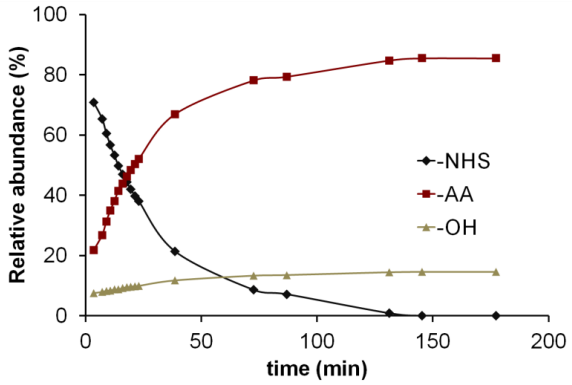

Figure SI-2. Reaction kinetics from ^{1}H-NMR data showing competition between NHS hydrolysis (-OH) and alendronic acid (-AA) coupling.

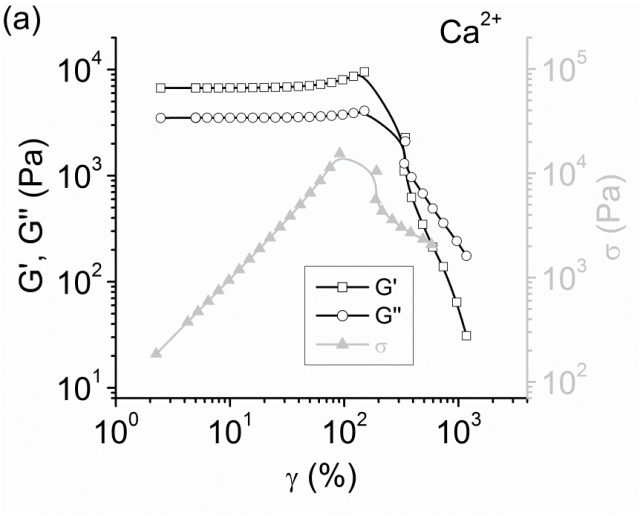

Figure SI-3. Strain sweep test for the determination of the linear viscoelastic region for at a Ca^{2+}concentration of 100 mM and P(8)20-AA polymer concentration 15 wt%. Storage (*G*') and loss (*G*'') modulus, and oscillatory stress (σ) are represented as function of strain (γ).

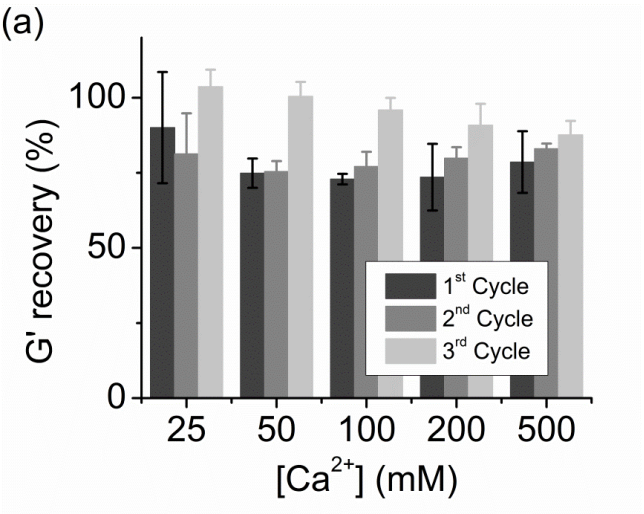

Figure SI-4. Recovery between failure cycles quantified by measuring the recovery of storage modulus for P(8)20-AA gels at calcium concentrations ranging from 25 to 500 mM and a polymer concentration of 15 wt%. Gel failure was induced by an increase in strain from 5 to 1000% and recovery was measured at 5% strain and at an angular frequency of 10 rad/s.

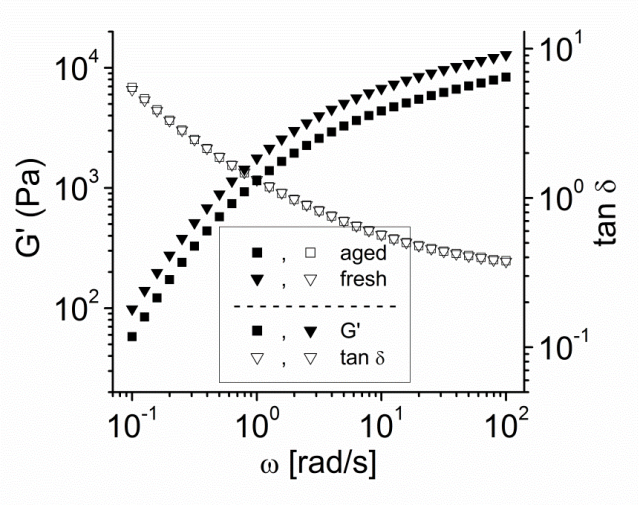

Figure SI-5. Frequency sweep of freshly prepared (~3 min) and 24 h aged hydrogels (Polymer P(8)20-AA; C_P = 15 wt%; [Ca^{2+}] = 100 mM)