

# Tuning the Swelling and Mechanical Properties of pH-Responsive Doubly Crosslinked Microgels using Particle Composition

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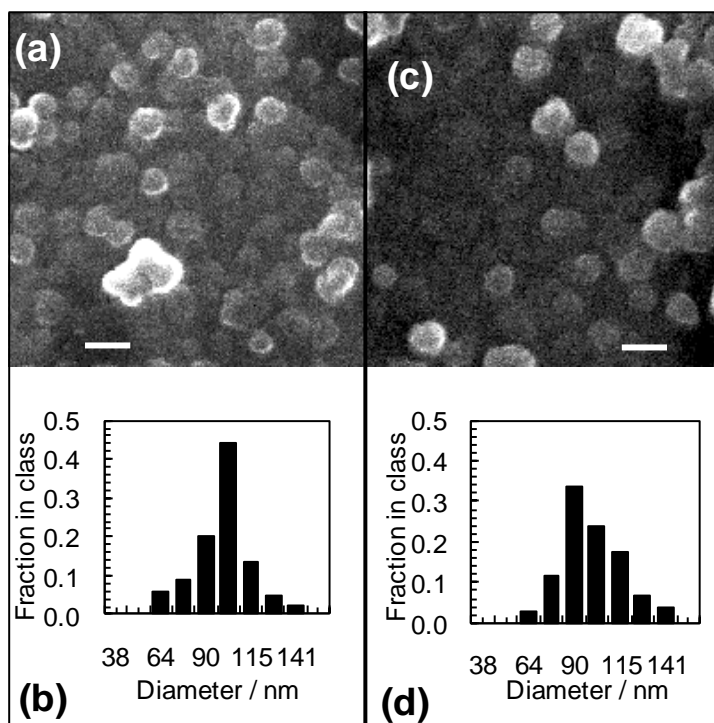
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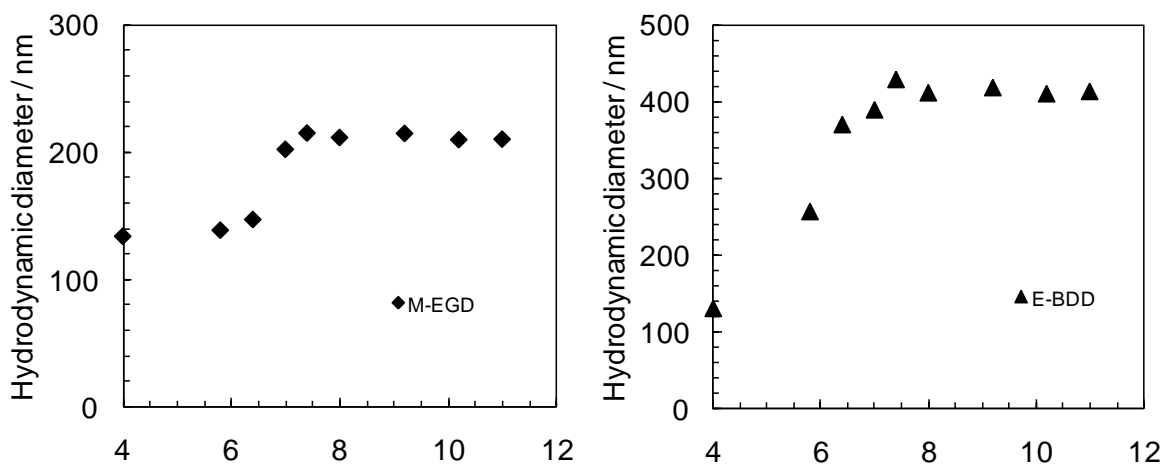
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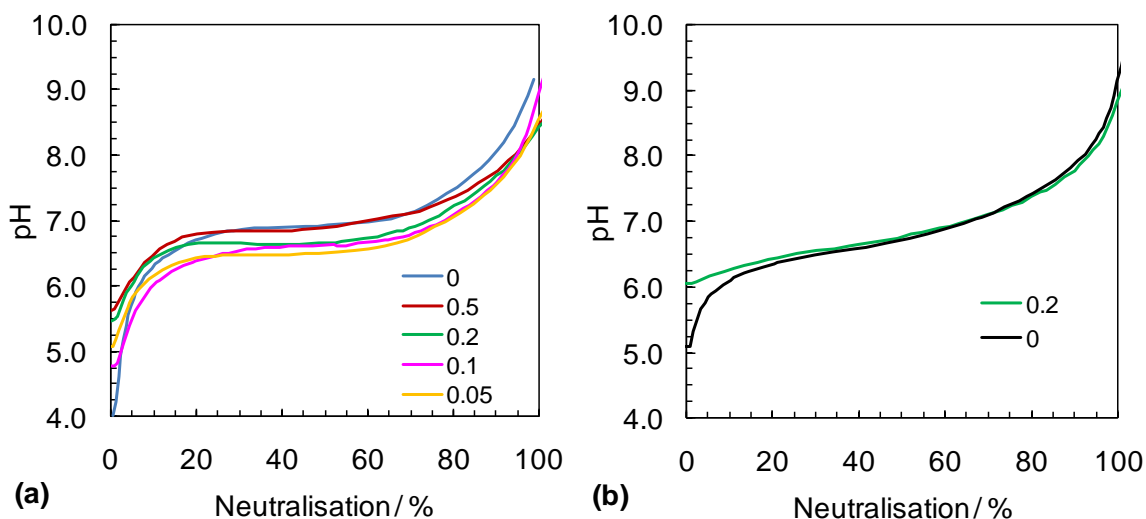
## SUPPLEMENTARY INFORMATION



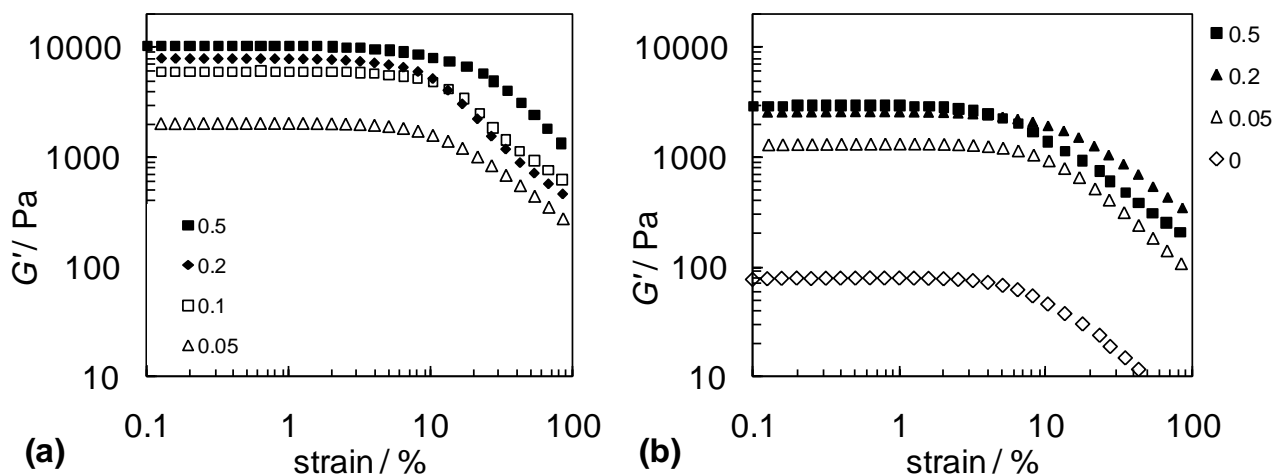
**Fig. S1.** SEM images and particle size distributions for M-EGD (a) and (b)) and E-BDD ((c) and (d)) microgels. The scale bars represent 100 nm.



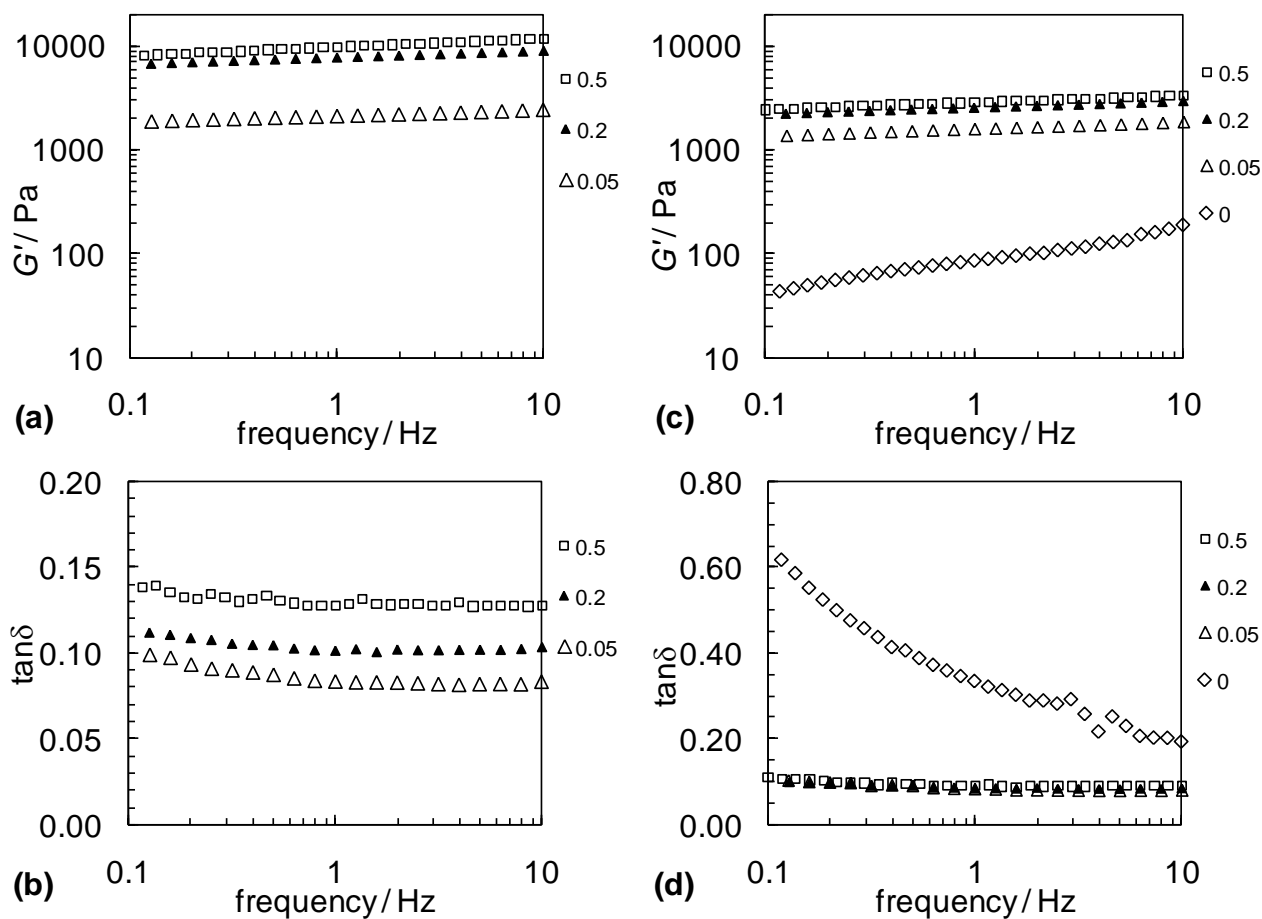
**Fig. S2.** Variation of hydrodynamic diameter with pH for the (a) M-EGD and (b) E-BDD microgels. The data were measured using 0.1 M buffers.



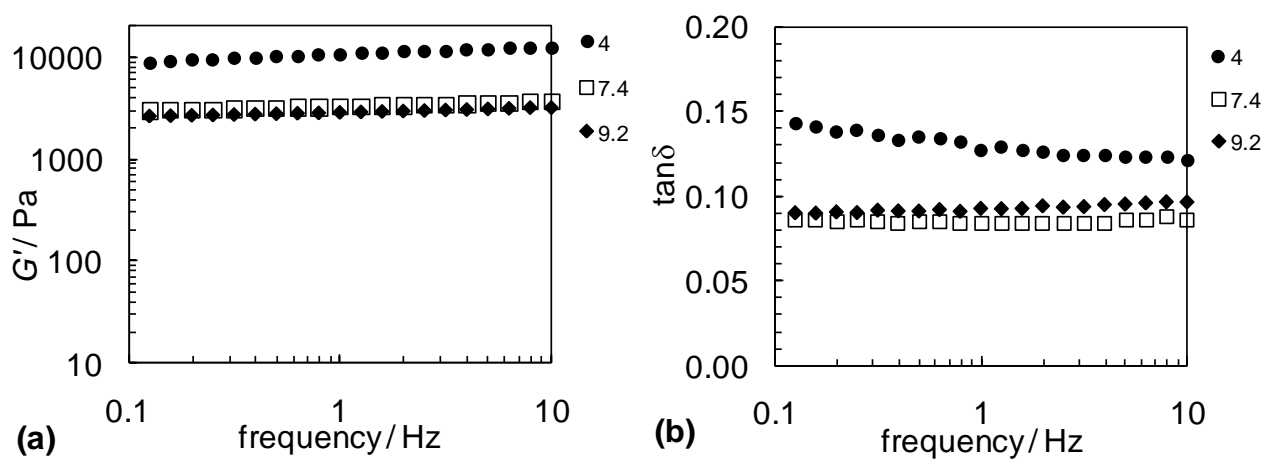
**Fig. S3.** pH titration data for (a) AEM<sub>x</sub>-M-EGD and (b) AEM<sub>x</sub>-E-BDD microgels. The legends give the [AEM]/[MAA] ratios used during microgel functionalisation.



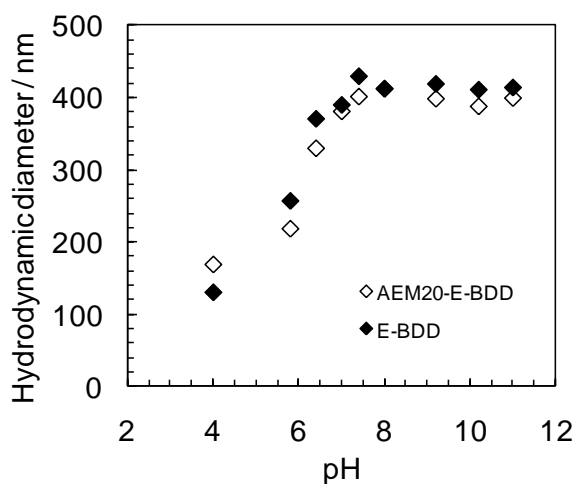
**Fig. S4.** Strain sweep data for (a) DX AEM<sub>x</sub>-M-EGD and (b) SX AEM<sub>x</sub>-M-EGD microgels. The legend shows the values used for [AEM]/[MAA] during preparation. Note that  $\phi_p = 0.1$  and pH = 8.4 for these systems.



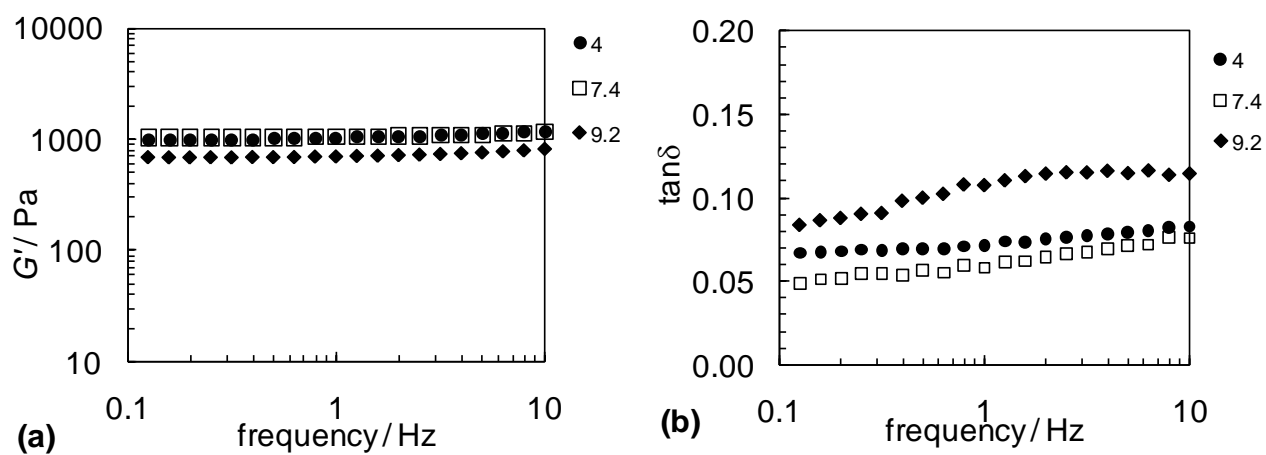
**Fig. S5.** Frequency sweep data for DX AEM-M-EGD ((a) and (b)) and SX AEM-M-EGD ((c) and (d)) microgels. The legend shows the [AEM]/[MAA] ratios used during preparation. Not all systems have been shown for clarity.



**Fig. S6** Frequency sweep data for (a) DX AEM20-M-EGD microgels after 8 days of swelling. The legend shows the pH values.



**Fig. S7.** Variation of hydrodynamic diameter with pH for the AEM20-E-BDD and E-BDD microgels. The data were measured using 0.1 M buffer.



**Fig. S8.** Frequency sweep data for DX AEM20-M-EGD microgels after 8 days of swelling. The legend shows the pH values.