

## SUPPORTING INFORMATION

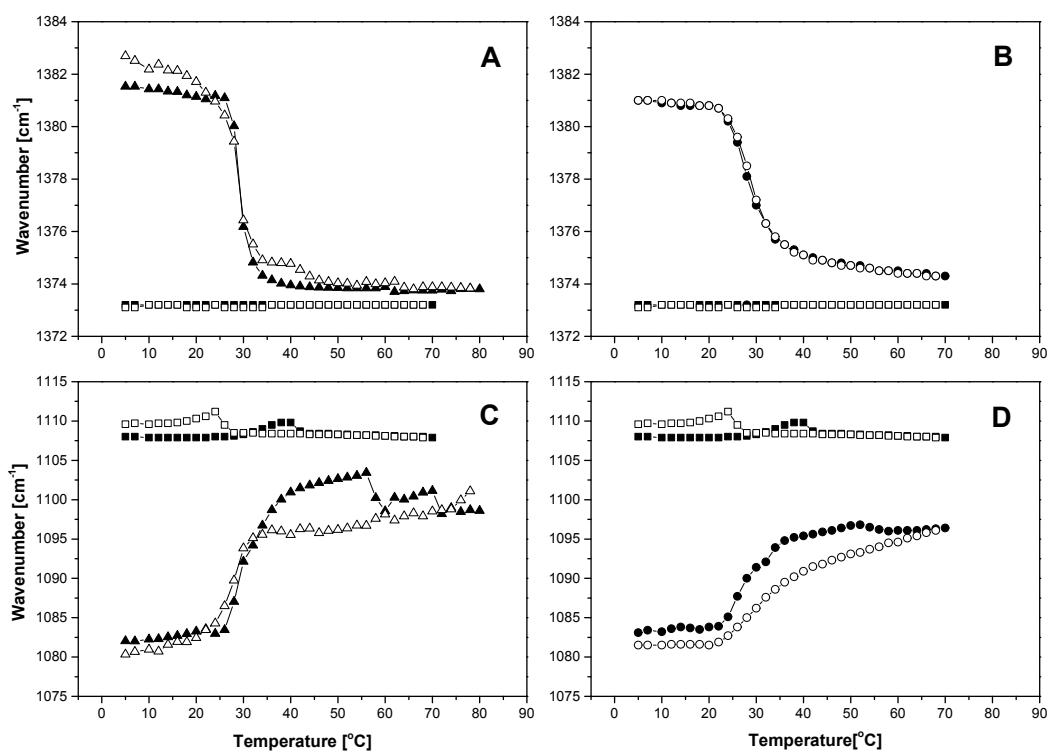
# The effect of deprotonation on the associative behavior of a thermoresponsive polymer surfactant

CAE85

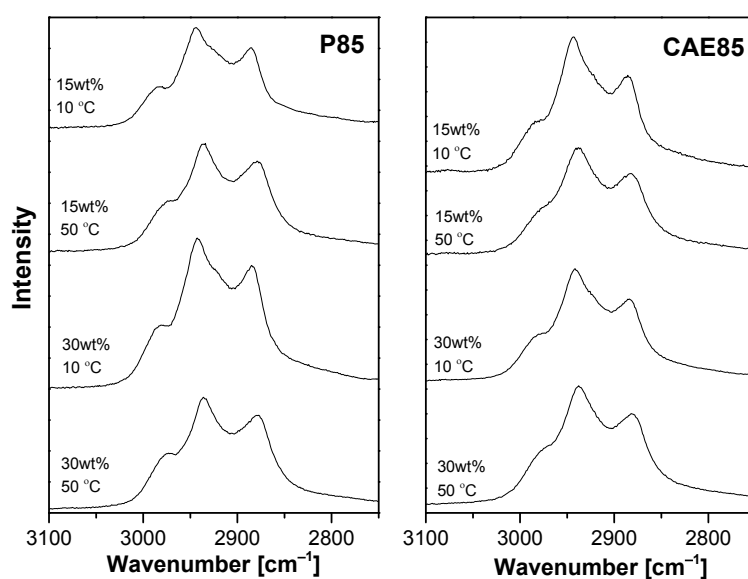
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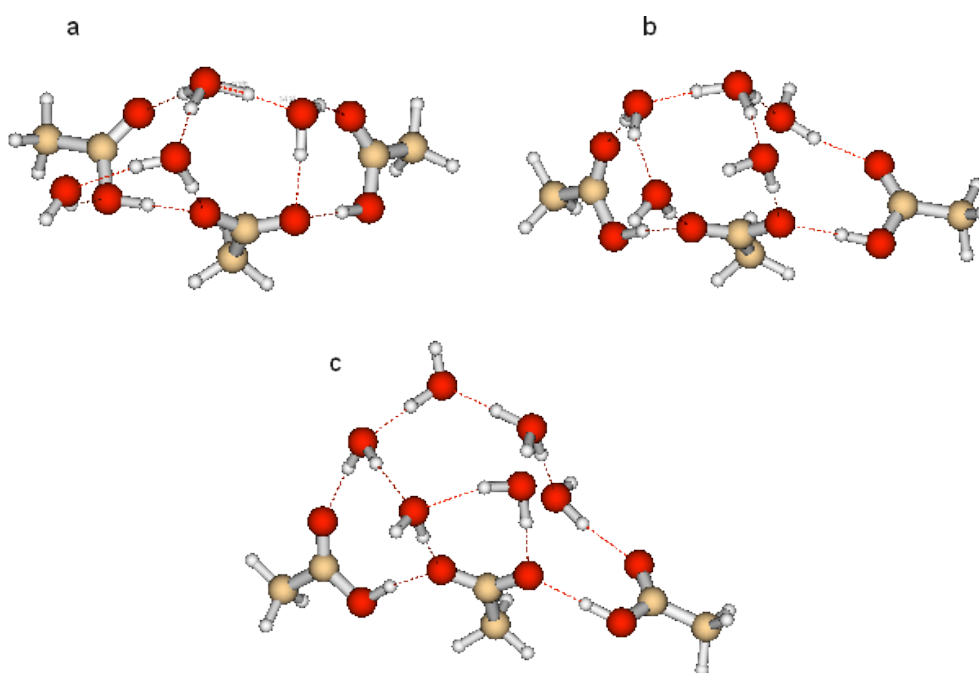
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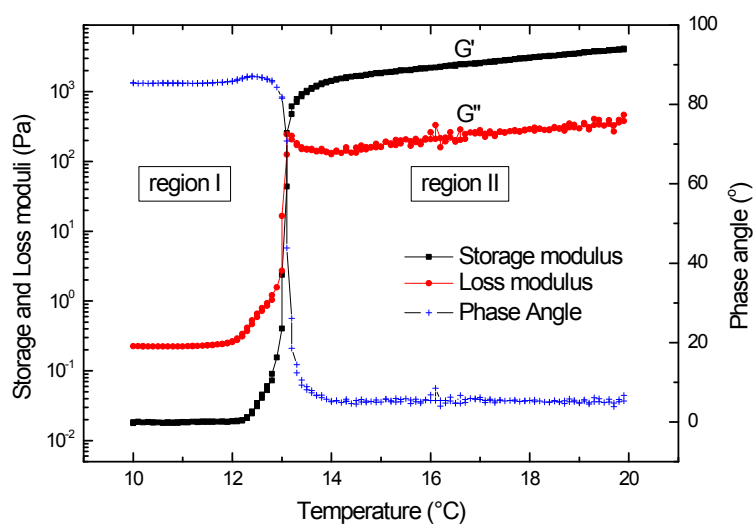
**Figure S1.** (A, C) Wavenumber shift with temperature of the methyl deformation vibration in the propylene oxide block. (B, D) Wavenumber shift with temperature of the C–O stretching vibration. The shift is shown for neat copolymer P85 (■, heating; □, cooling); for 5 wt% aqueous solution (▲ heating, △ cooling); and for 15 wt% aqueous solution of P85 (● heating, ○ cooling).



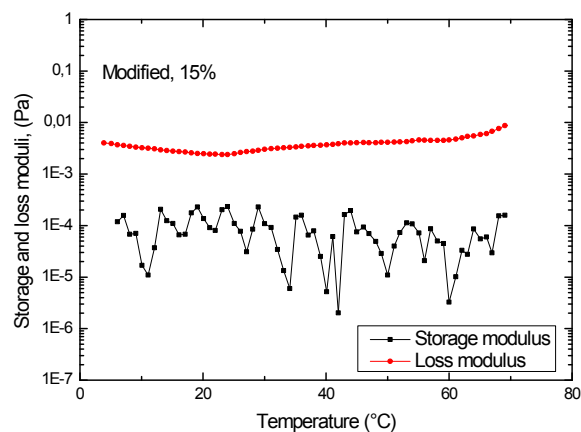
**Figure S2:** Raman spectra of aqueous solutions of P85 and of CAE85.



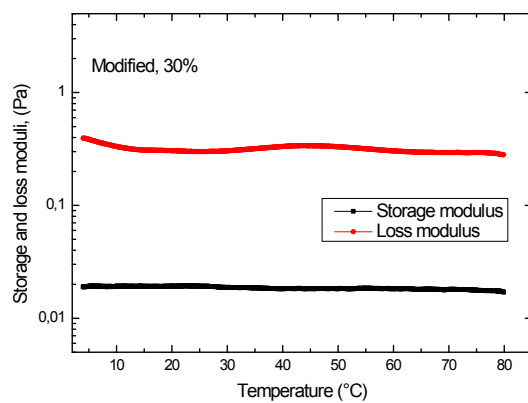
**Figure S3.** Optimized geometries of deprotonated stable structures of acetic acid trimer hydrated with four (a), five (b) and six (c) water molecules calculated at the MP2/6-31+G(d) level; distances in angstroms.



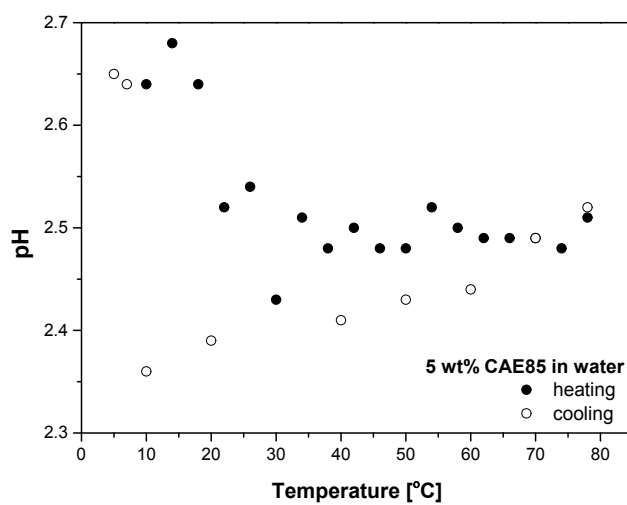
**Figure S4.** Storage ( $G'$ ) and loss ( $G''$ ) moduli are shown for 30 wt % of P85 in water.



**Figure S5.** Storage ( $G'$ ) and loss ( $G''$ ) moduli are shown for 15 wt % of modified P85 (CAE85) in water.



**Figure S6.** Storage ( $G'$ ) and loss ( $G''$ ) moduli are shown for 30 wt % of modified P85 (CAE85) in water.



**Figure S7:** Temperature dependence of pH of aqueous solution of CAE85 (5wt%).