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Mesostructured Silica Hybrids from Liquid Polyelectrolyte-Surfactant-Aminosilanol Complexes

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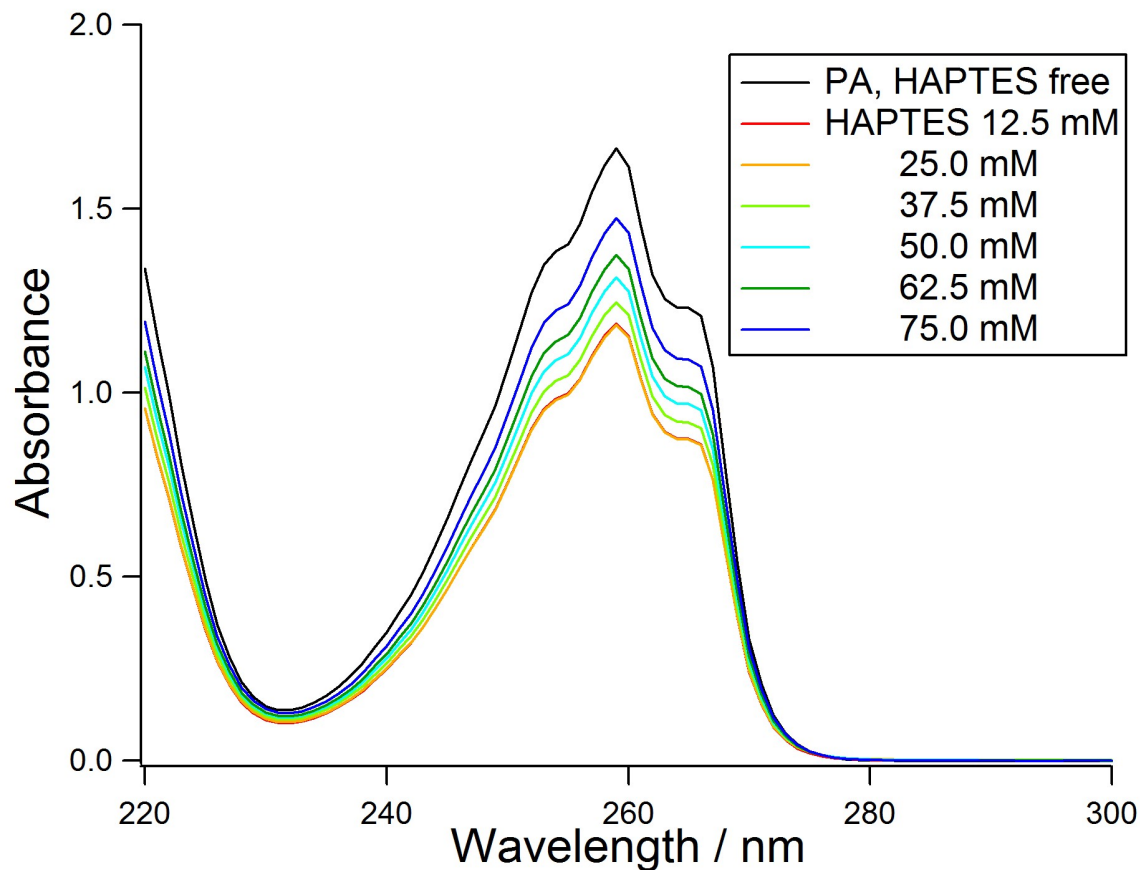


Figure S1. UV-VIS spectra of PSA-free upper layer solutions (diluted with water x100) obtained from phase-separated mixtures at different HAPTES concentrations. Measurements of the optical absorbance at $\lambda = 259$ nm was used to evaluate the CP concentration, and hence the number of unbound CP molecules.

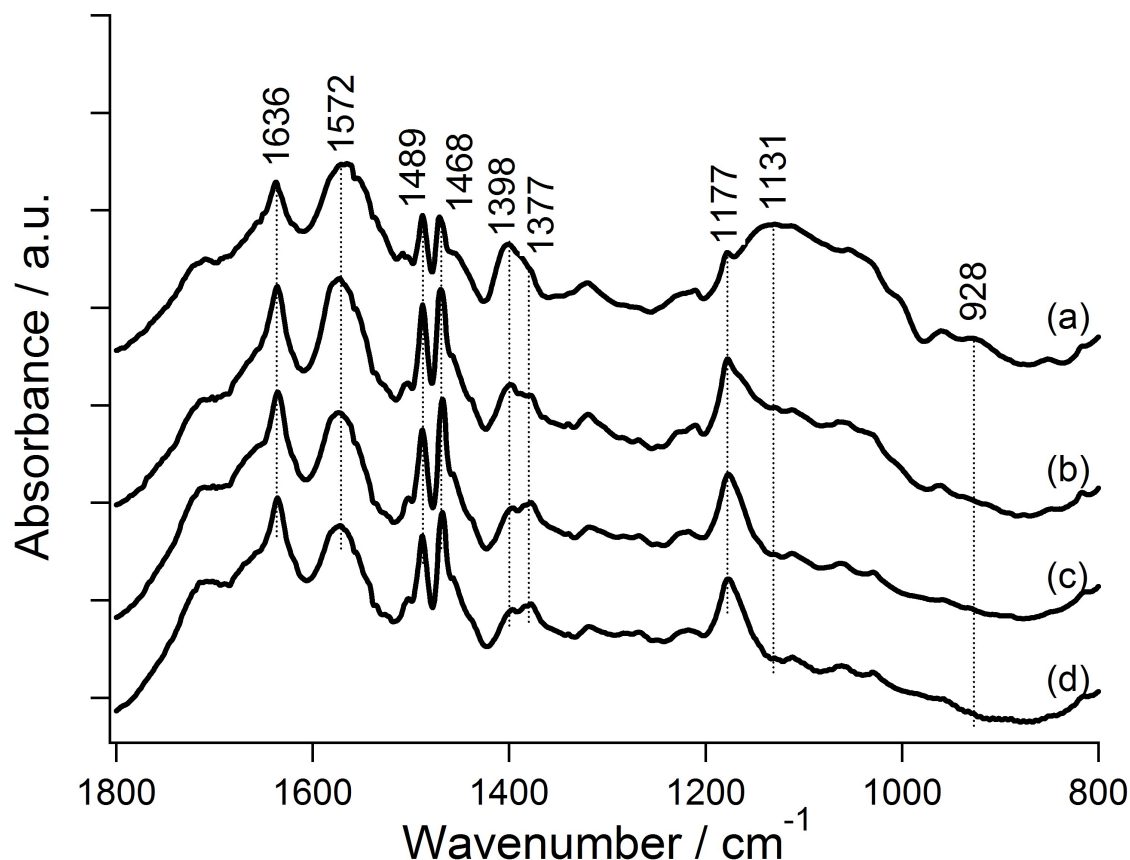


Figure S2. FT-IR spectra of dried PSA complexes produced at different HAPTES concentrations; (a) $C_{\text{HAPTES}} = 75$ mM, (b) 50 mM, (c) 25 mM and (d) 0mM. The dashed lines are guides to the peak positions.

Notes: With increase in C_{HAPTES} , absorbances at 1117, 1468, 1489 and 1636 cm^{-1} assigned to the vibration modes of the pyridine ring of CP [a) K. B. Wiberg, V. A. Walters, K. N. Wong and S. D. Colson, *J. Phys. Chem.*, 1984, **88**, 6068-6075; b) V. Palmer, R. Zhou, K. E. Geckeler, *Angew. Makromol. Chem.*, 1994, **215**, 175 -188] and at 1377 cm^{-1} (assigned to the umbrella bending mode of CH_3) [*Infrared spectral interpretation: a systematic approach*, ed. B. Smith, CRC Press LLC, 1999, Chapter 4] decrease by about 0.3-0.5 times relative to the absorbances at 1398 and 1572 cm^{-1} (assigned to the asymmetric and symmetric stretching modes of carboxyl group of PA [B. Smith, *ibid*]). Absorbances at 928 and 1131 cm^{-1} assigned to the symmetric and asymmetric stretching mode of the siloxane bond [M. Colilla, M. Darder, P. Aranda and E. Ruiz-Hitzky, *J. Mater. Chem.*, 2005, **15**, 3844–3851] increase with C_{HAPTES} , indicating an increase in the number of HAPTES molecules and formation of siloxane network in the drying process. These results are consistent with the C_{HAPTES} dependence of the β_{HAPTES} value derived from weight fraction of HAPTES and the β_{CP} value as determined from UV-VIS spectroscopy.

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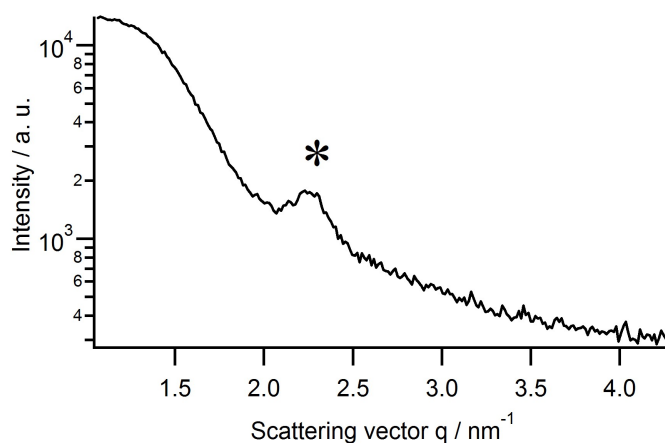


Figure S3. XRD profile of the electrospun fibres of PSA complex. Asterisk (*) denotes CP surfactant solid.

Table S1. Composition of mixtures and properties of layers separated by centrifugation

Sample No.	C_{CP} (mM)	C_{PA} (mM)	C_{HAPTES} (mM)	pH	Upper layer/ Bottom layer
0	25	25	0.0	6.2	Stable colloid solution / White precipitate
1	25	25	12.5	6.5	Clear solution / White precipitate
2	25	25	25.0	6.5	Clear solution / White precipitate
3	25	25	37.5	6.5	Clear solution / White precipitate
4	25	25	50.0	6.4	Clear solution / White precipitate
5	25	25	62.5	6.2	Clear solution / Viscous liquid
6	25	25	75.0	6.0	Clear solution / Viscous liquid