Electronic Supplementary Material (ESI) for Biomaterials Science
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Micromechanical characterization of Spider Silk Particles

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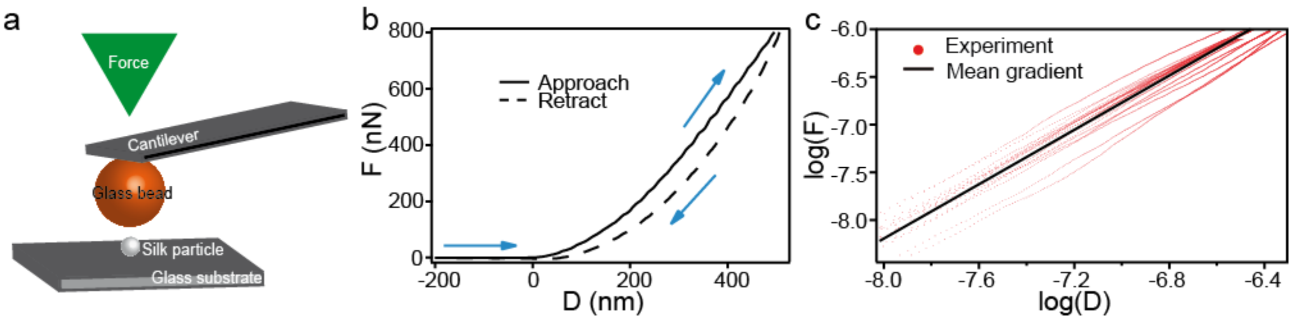

Fig. 1 ESI a) Schematic, lateral view of the colloidal probe setup. b) Exemplary force-deformation curve of an eADF4(C16) particle (diameter 2.7 µm) in water. The particle compression follows a power law with a marginal adhesion. The slight hysteresis is due to material relaxation. c) Scatter plot of 20 randomly selected logarithmic force vs. deformation curves of eADF4(C16) particles. The gradient equals 1.42 ± 0.10 which is close to the predicted 1.5 from Hertz theory.

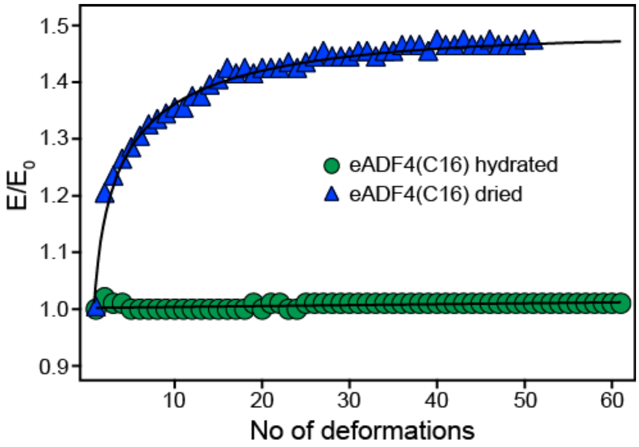

Fig. 2 ESI Fatigue tests of eADF4(C16) particles in dried and hydrated state. The average modulus of dried particles (n = 11) increases, whereas swollen particles (n = 17) show elastic behavior with constant modulus. Solid lines represent a guide to the eye.

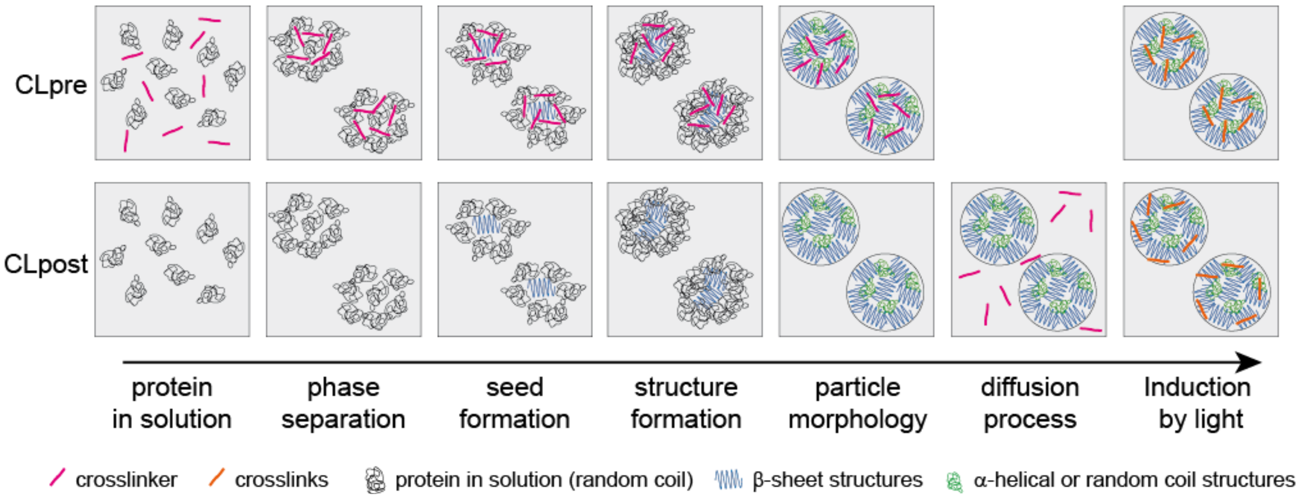

Fig. 3 ESI Schematic of particle-formation and the crosslinking process of eADF4 proteins. CLpre: crosslinkers added before precipitation of the particle, CLpost: addition of APS and Rubpy after formation of particles. By exposing the particles to a tungsten lamp, crosslinking is induced.

Table 1 ESI Fit parameters[a] from Gaussian fits in Fig. 3a and 3b

Sample	Amplitude [%]	Mean [MPa]	Width [MPa]
eADF4(C8)	18.0 ± 2.9	2.45 ± 0.21	1.58 ± 0.30
eADF4(C16)	24.6 ± 1.2	2.99 ± 0.04	1.07 ± 0.06
eADF4(C32)	13.1 ± 1.0	5.42 ± 0.13	2.16 ± 0.19
eADF4(C16) CLpre	12.5 ± 1.3	5.14 ± 0.19	2.22 ± 0.27
eADF4(C16) CLpost	7.26 ± 1.6	8.19 ± 0.69	3.87 ± 0.99

[a] Values ± one standard deviation.