

Silk fibroin dissolution in tetrabutylammonium hydroxide aqueous solution

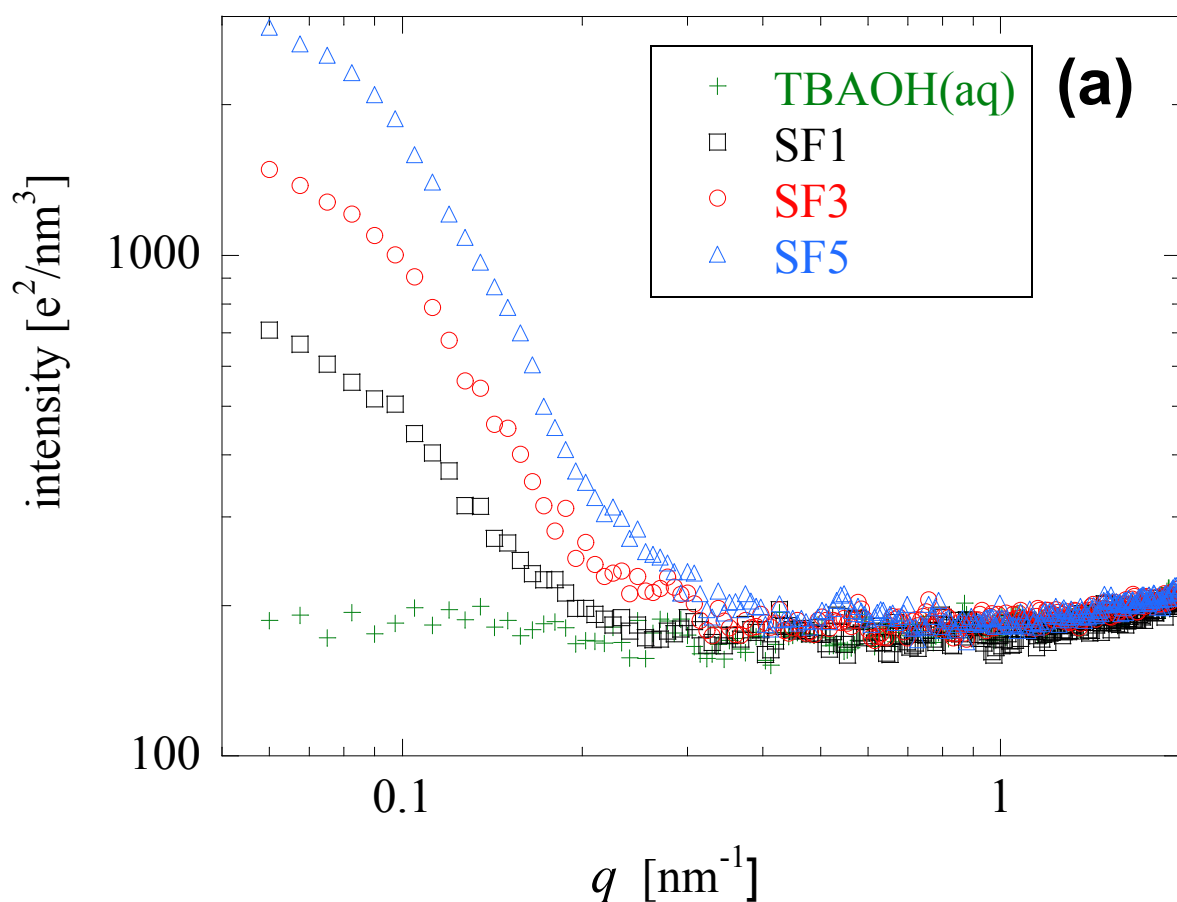
Bruno Medronho, Alexandra Filipe, Sofia Napso, Rafail. L. Khalfin, Rui F. P. Pereira,

Verónica de Zea Bermudez, Anabela Romano, Yachin Cohen.

Supplementary Information

Small-angle x-ray scattering (SAXS) from silk fibroin solutions in TBAOH(aq).

The SAXS patterns from the low concentration solutions SF1, SF3 and SF5, before subtraction of solvent scattering, as well as the pattern from the TBAOH(aq) solvent, in normalized (absolute) units, are presented in Figure S1. Figure S1a shows the data on logarithmic scales, highlighting the significant data at low- q . Figure S1b shows the data in the higher- q range on linear scales, highlighting the range where the deviations of the recorded data do not allow a meaningful background subtraction.



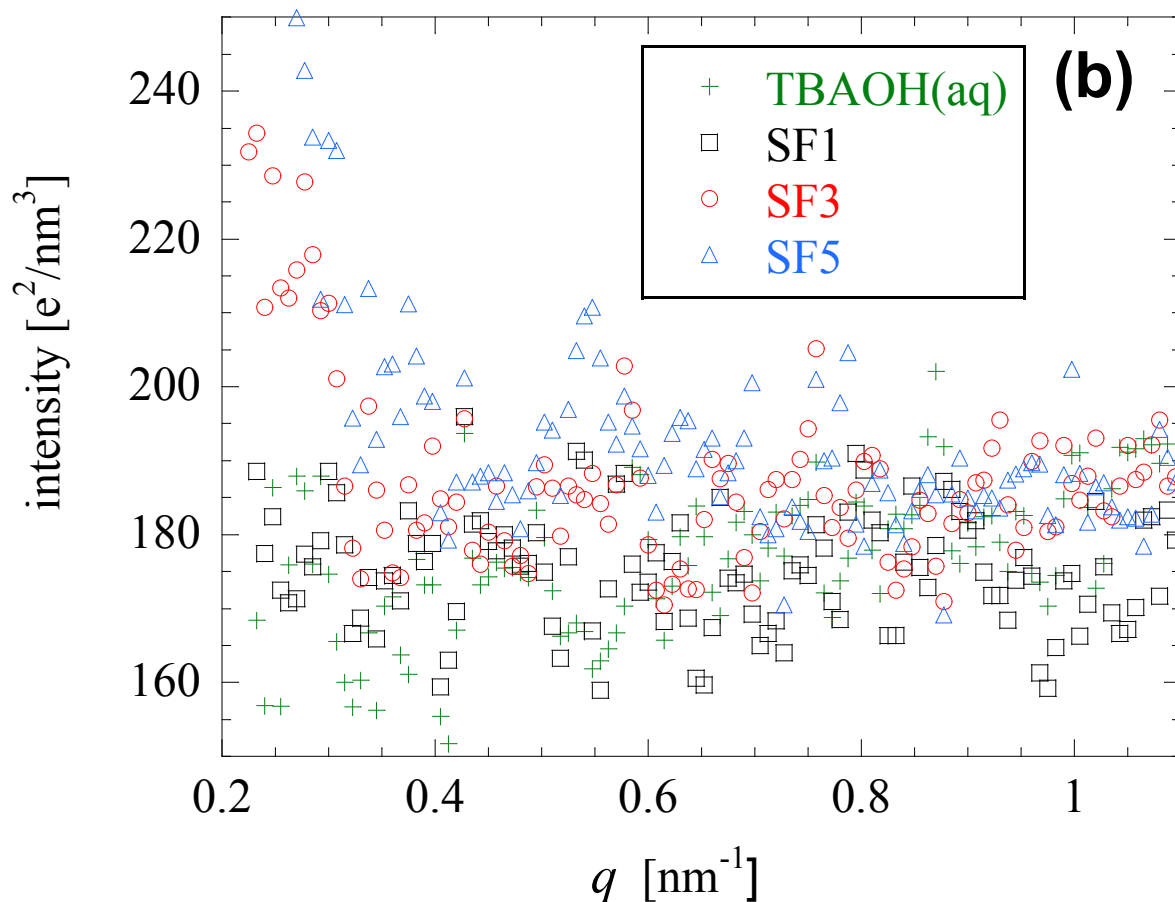
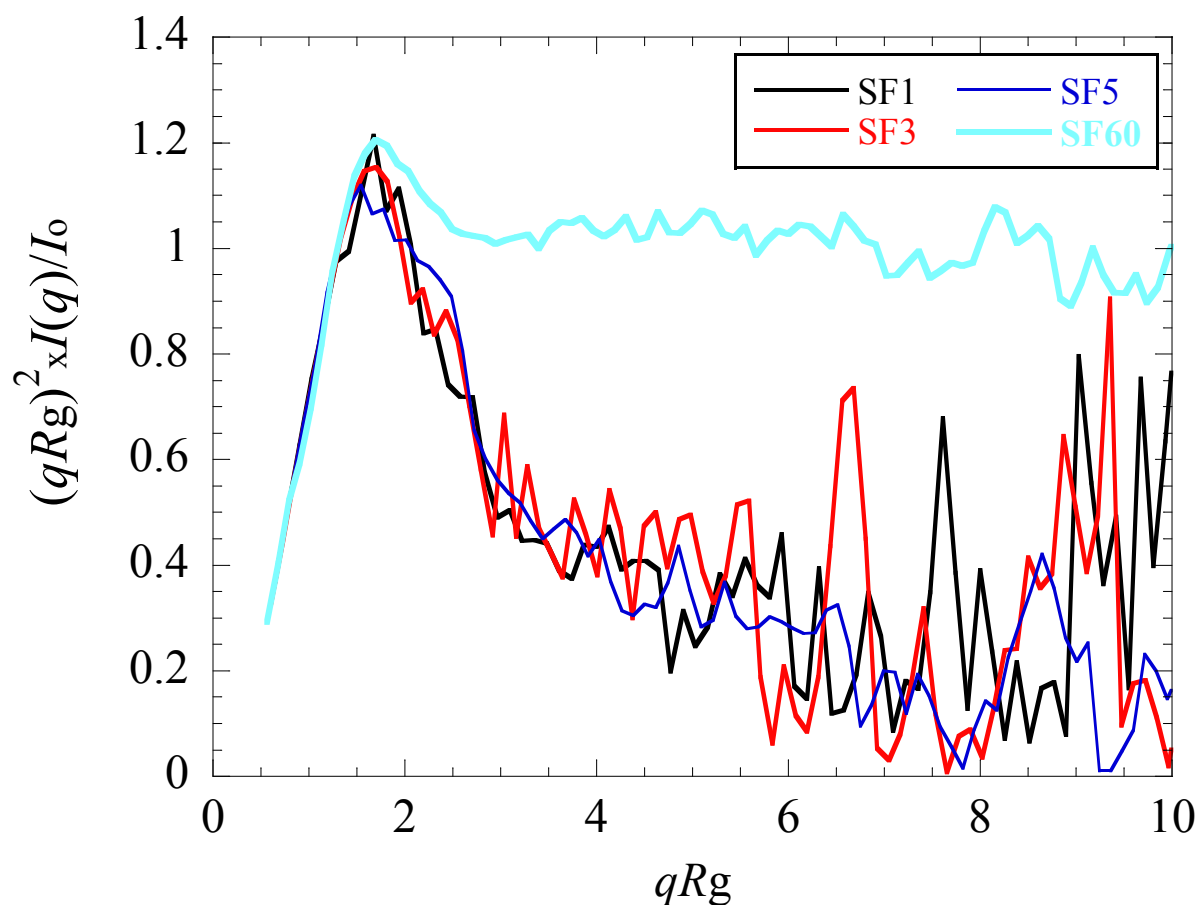


Figure S1: SAXS patterns from the low concentration solutions SF1, SF3 and SF5, before subtraction of solvent scattering, together with the pattern from the TBAOH(aq) solvent:

- (a) logarithmic scales highlighting the significant low- q data;
- (b) higher- q range data on linear scales indicating the range where deviations in the recorded data do not allow meaningful background subtraction.

The SAXS data from the SF1, SF3, SF5 and SF60 solutions are presented in Figure S2 as a Kratky plot, $I(q) \cdot q^2$ vs. q , in dimensionless form introduced by Durand et al.^[1]. At low- q the plots of all solutions coincide, indicating the validity of the dimensionless reduction in this case. The low concentration plots exhibit a peaked shape, with a maximum at qR_g about 1.7-1.8 and height about 1.1-1.2, which may be indicative of a compact structure. However, the low signal-to-noise ratio at the intermediate and high q -range do not allow a firm conclusion to be drawn. At measured data in these low concentrations is meaningful only at low- q , around the Guinier region. Significant high- q data, relevant to evaluation of coil conformation, is achieved only in

the scattering from the SF60 sample. It exhibits leveling of the dimensionless Kratky plot, characteristic of a random coil conformation, as expected from the q^{-2} power-law. However, the dimensionless value of this level is about 1, not 2 as expected from the Debye formula of a random coil. This indicates that the structure can have some compact domains linked with flexible random chains.^[1]



Reference

- [1] Durand, D.; Vives, C.; Cannella, D.; Perez, J.; Pebay-Peyroula, E.; Vachette, P.; Fieschi, F. NADPH Oxidase Activator P67(Phox) Behaves in Solution as a Multidomain Protein with Semi-Flexible Linkers. *J. Struct. Biol.* **2010**, 169 (1), 45–53.