Supporting Information

Effects of Hydrogen Bonds on the Single-Chain Mechanics of Chitin

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Fig. S1 (A) Ten F-E curves of chitin obtained in nonane. (B) Normalized F-E curves of chitin obtained in nonane (the force for normalization is 1000 pN).

Fig. S2 Normalized F-E curves of chitin obtained in DMSO (the force for normalization is 1000 pN).

Fig. S3 Normalized F-E curves of cellulose obtained in nonane (the force for normalization is 1000 pN).
**Fig. S4** Normalized F-E curves of cellulose obtained DMSO (the force for normalization is 1000 pN).

**Fig. S5** (A) The \( \frac{dF}{dx} \) of the polynomial fitting curve that shown in Fig. 4A (the F-E curves of chitin and cellulose obtained in nonane). (B) The \( \frac{dF}{dx} \) of the polynomial fitting curve that shown in Fig. 4B (the F-E curves of chitin and cellulose obtained in DMSO).

**Fig. S6** Normalized F-E curves of cellulose obtained water (the force for normalization is 1000 pN).
Fig. S7 Comparison of renormalized (at 2000 pN) F-E curves of cellulose obtained in nonane (yellow solid line), water (bright blue solid line) and the QM-FJC model (black dashed line).

Fig. S8 Normalized F-E curves of chitin obtained water (the force for normalization is 1000 pN).

Fig. S9 Comparison of renormalized (at 2000 pN) F-E curves of chitin obtained in nonane (red solid line), water (blue solid line) and the QM-FJC model (black dashed line).
**Fig. S10** The $dF/dx$ of the polynomial fitting curve that the F-E curve of chitin obtained in water.

**Fig. S11** Comparison of renormalized (at 2000 pN) F-E curves of chitin obtained in nonane (red solid line), water (blue solid line) and the QM-FJC model (black dashed line).