

## Supporting Information

### **Magic Angle Spinning NMR Analysis of $\beta_2$ -Microglobulin Amyloid Fibrils in Two Distinct Morphologies**

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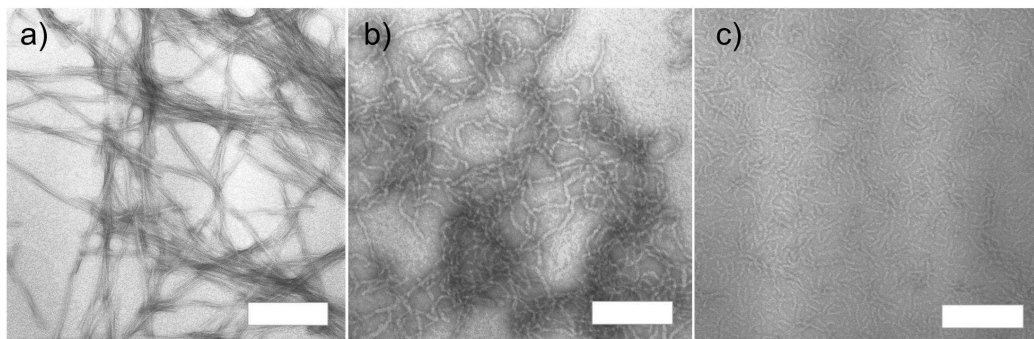
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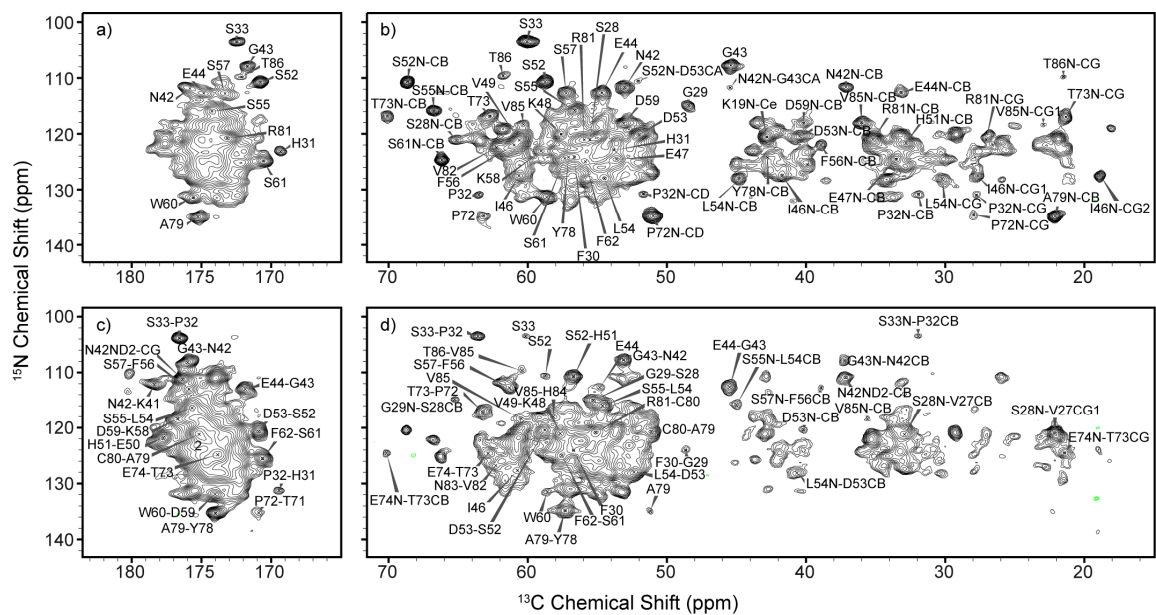
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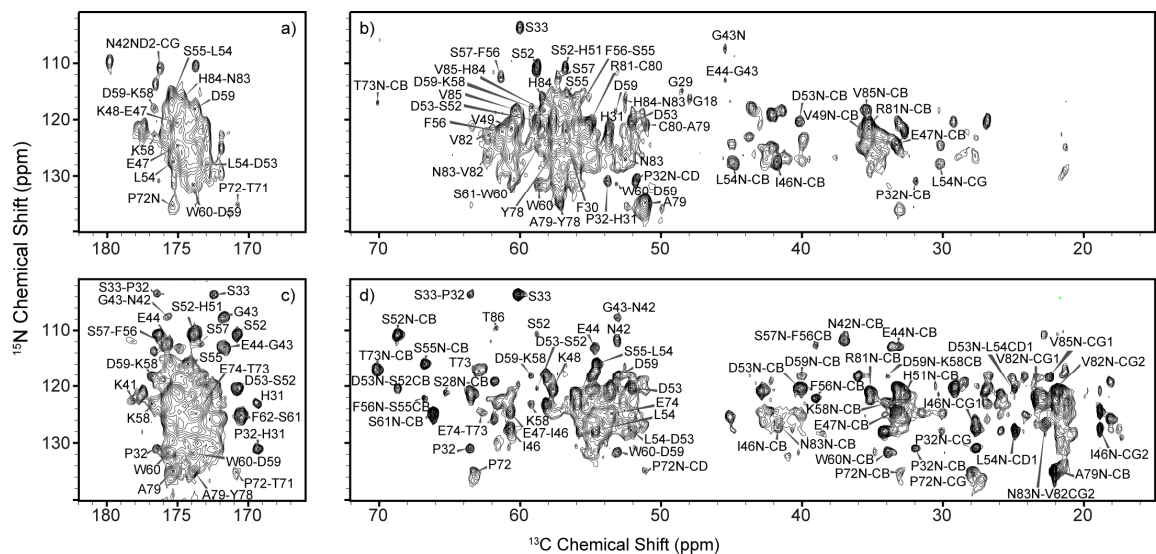
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**Figure S1:** EM images of the a) LS fibrils and WL fibrils b) before pelleting and in 200 mM ammonium formate buffer (pH 3.6), and c) four weeks after pelleting in 50 mM ammonium formate buffer (pH 3.6). No evidence of other fibril forms is observed before or after pelleting. The scale bars represent 200 nm.



**Figure S2:** a) and b) NCACX and c) and d) NCOCX experiments obtained at 700 MHz,  $\omega_r/2\pi = 12.5$  kHz with a U- $\beta_2$ m fibril sample. 3 ms DCP was employed for  $^{15}\text{N}$ - $^{13}\text{C}$  transfer, and RFDR mixing was used for  $^{13}\text{C}$ - $^{13}\text{C}$  transfer ( $\tau_{\text{mix}} = 3.8$  ms). The labels correspond to a) N-CO, b) N-C $\alpha$ , c) N $_i$ -CO $_{i-1}$ , d) N $_i$ -C $\alpha_{i-1}$  and N-C $\alpha$  correlations unless otherwise noted.



**Figure S3:**  $^{15}\text{N}$ - $^{13}\text{C}$  correlation experiments recorded with TEDOR mixing ( $\tau_{\text{mix}} = 6.4$  ms) and  $\omega_r/2\pi = 12.5$  kHz. (a) and b) 2-  $\beta_2\text{m}$  fibril sample, data recorded at 500 MHz, c) and d) 1,3-  $\beta_2\text{m}$  fibril sample, data recorded at 750 MHz. The labels correspond to a) and c)  $\text{N}_i\text{-CO}_{i-1}$  and N-CO, b) and d) N-C $\alpha$  and  $\text{N}_i\text{-C}\alpha_{i-1}$  correlations unless otherwise noted.