

## Electronic Supplementary Information for

### **Charge Transport in Pyroprotein-based Electronic Yarns**

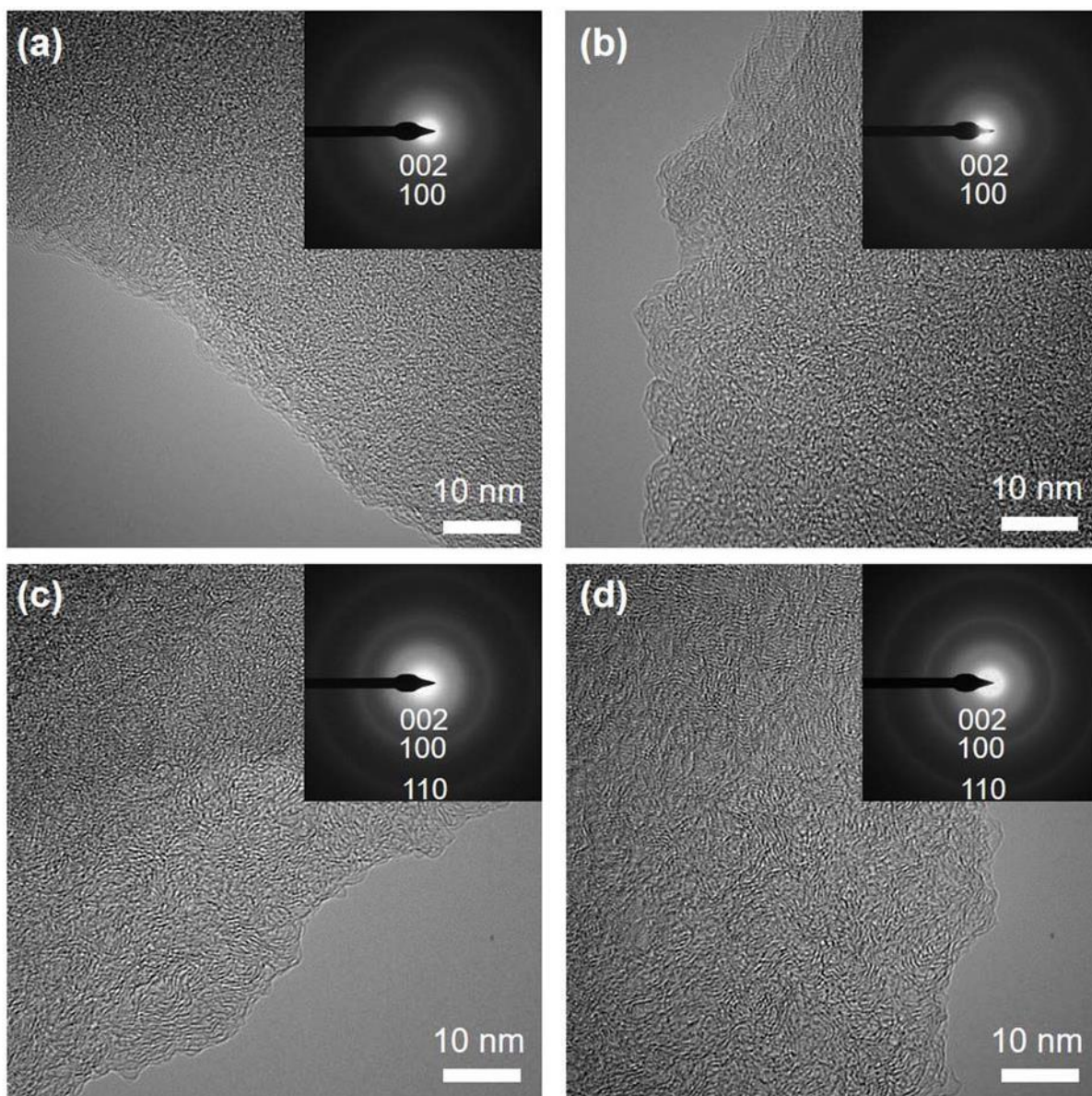
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**Fig. S1.** TEM images and ED patterns of the (a) e-CS yarn800, (b) e-CS yarn1000, (c) e-CS yarn 1200, and (d) e-CS yarn1400.

Fig. S1(a)-S1(d) show the transmission electron microscopy (TEM) images and electron diffraction (ED) patterns (the insets in Fig. S1(a)-S1(d)) of the e-CS yarn800, e-CS yarn1000, e-CS yarn1200, and e-CS yarn1400, respectively. In all samples, the crystalline structures could not be clearly identified. However, it was confirmed that the crystalline structures tended to

become more distinct as the HTT increased, as shown in ED patterns.

Although perfect carbon structures could not be found due to the existence of the amorphous carbon, ED patterns changed as the HTT increased. The ED patterns corresponding to the (002), (100), and (110) planes were broad and faint in the e-CS yarn800 and e-CS yarn1000 (the insets in Fig. S1(a) and S1(b)). When heated up to 1200 and 1400 °C, the carbon structures expanded and the ring patterns became more clear (the insets in Fig. S1(c) and S1(d)). This means that the heteroatoms detached and the carbon structures developed as the HTT increased, as shown in the Raman spectra and XRD results.