

Supplementary Information:
Protonic conductivity in metalloprotein nanowires

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Figure S1a shows a microscope image of a high concentration ($2.5 \mu\text{M}$) of metalloprotein nanowires (MPNs) drop-casted on pre-fabricated Pd interdigitated electrodes (IDEs). Because dialysis was not performed on this sample it contains crystallized NaCl residues which reside with the protein nanowires on the IDE, unlike the clean sample shown in Figure 1e of the Main Text. The measured resistance under a RH ranging from 40 to 80% as shown in Figure S1b indicates that at higher RH than approximately 55%, there is no protonic conductivity. The signal instead becomes saturated by electrical conductivity, likely due to the electrically conductive NaCl residues. After dialysis is performed, protonic conductivity is observed over the entire range considered RH range, as shown in Figure 2b of the Main Text.

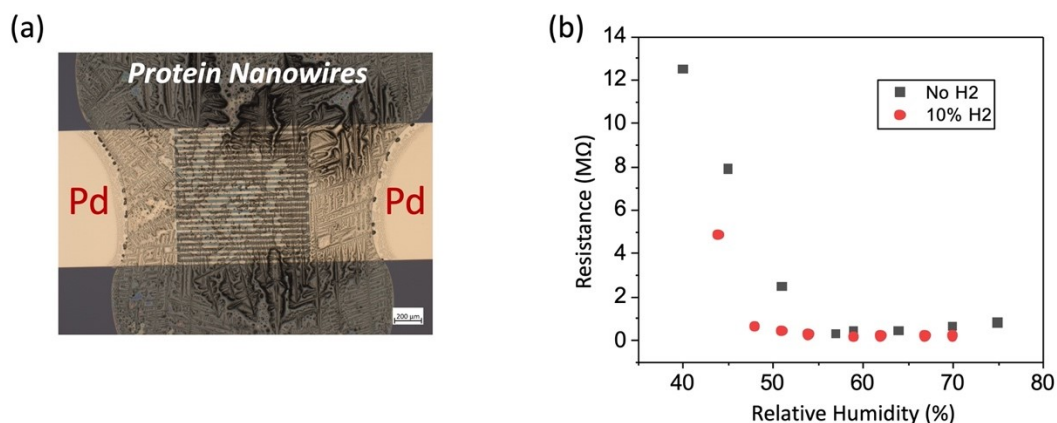


Fig. S1 (a) A microscope image of a high concentration of MPNs ($2.5 \mu\text{M}$) drop-casted protonic device prior to dialysis showing crystallized NaCl residues, (b) resistance of MPNs on IDE without hydrogen (black) and with hydrogen gas (red) in the range of RH from 40% to 80%.