

Description of Additional Supplementary Materials

Supplementary Data 1. The geometry calculated for TBN, **4**.

Supplementary Data 2. The geometry calculated for PTBN, **4+2H⁺**.

Supplementary Movie 1. Representative video of a visible appearance-changing device during cyclical electrical actuation with a square waveform (frequency of 0.5 Hz, minima of 0 kV, and maxima of ~ 3.2 kV).

Supplementary Movie 2. Representative video of a near-infrared signature management device during cyclical electrical actuation with a square waveform (frequency of 0.5 Hz, minima of 0 kV, and maxima of ~ 3.2 kV).

Supplementary Movie 3. Representative video of a fluorescence signaling device during cyclical electrical actuation with a square waveform (frequency of 0.5 Hz, minima of 0 kV, and maxima of ~ 3.2 kV).