

Supporting Information

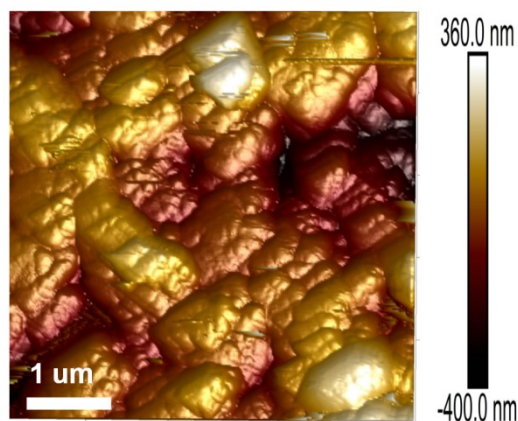
A flexible polyethyleneimine film sensor for high humidity monitoring

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1. Simulation method

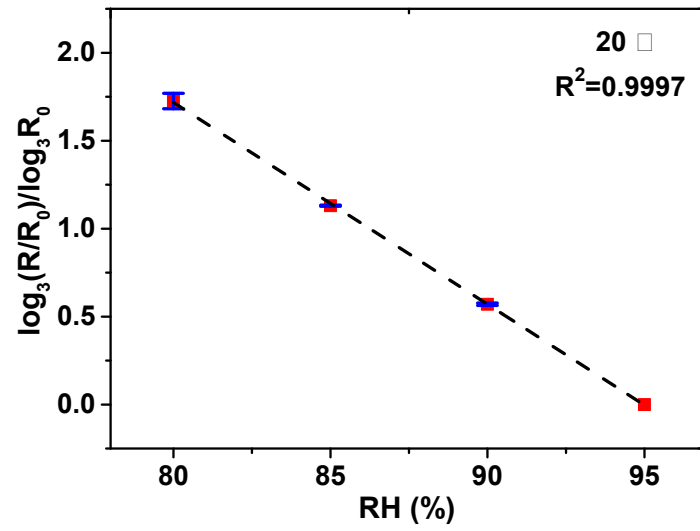
The electrostatic potential-related structural analysis of the samples was optimized on a Materials Studio software. Density Functional Theory (DFT) calculations were executed via the DMol3 module, and visual representations were created within Materials Studio. The polymer models of PEI and APEI underwent optimization utilizing the DMol3 module, employing the BLYP functional along with a double numerical plus polarization (DNP) basis set.

2. Results and discussions



Height sensor

Fig. S1 AFM image of PAPEI polymer

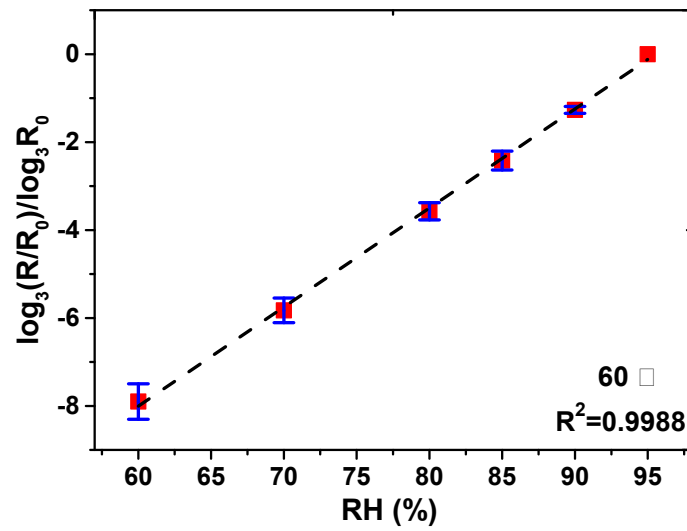


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Fig. S2 Resistance of PAPEI film sensors versus different RH levels at 10 Hz and 20 °C.

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Fig. S3 Resistance of PAPEI film sensors versus different RH levels at 10 Hz and 60 °C.

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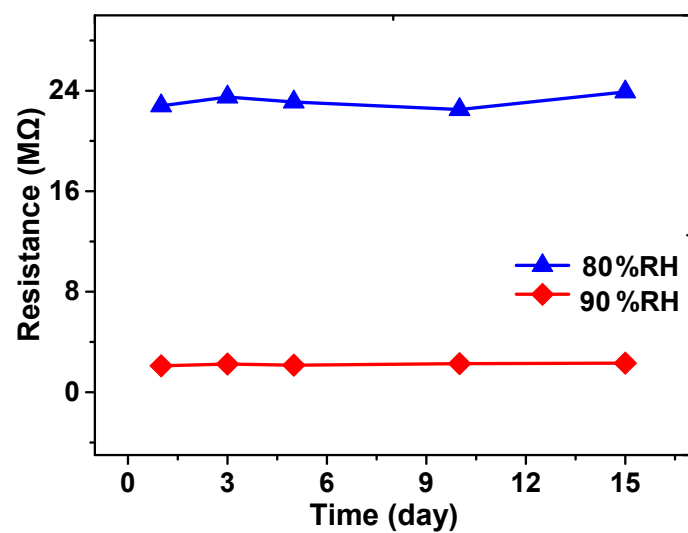


Fig. S4 Resistance changes of PAPEI film sensor for 60 min and 15 days to different RH at 10 Hz and 40 °C.