Supporting Information

In Situ Growth of Continuous Metal-Organic Framework Thin Film for Capacitive Humidity Sensing

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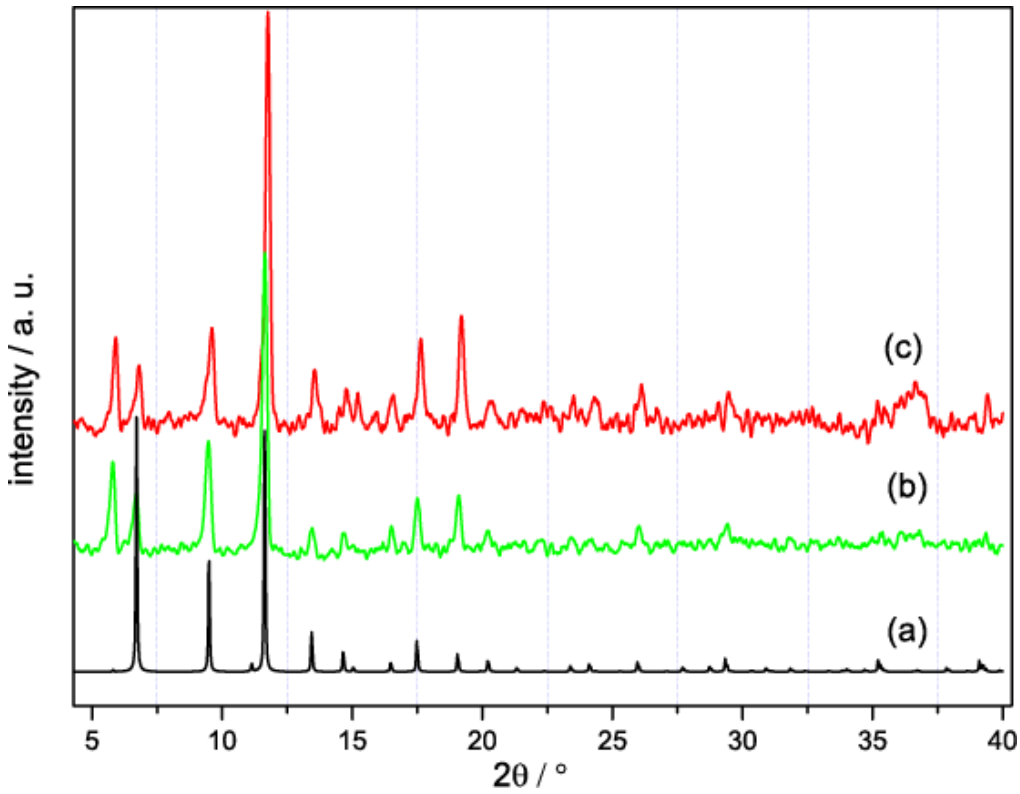

Figure S1 Powder X-ray patterns: simulated from $Cu_3(BTC)_2$ single-crystal structure (a), as-prepared film (b) and activated film (c).

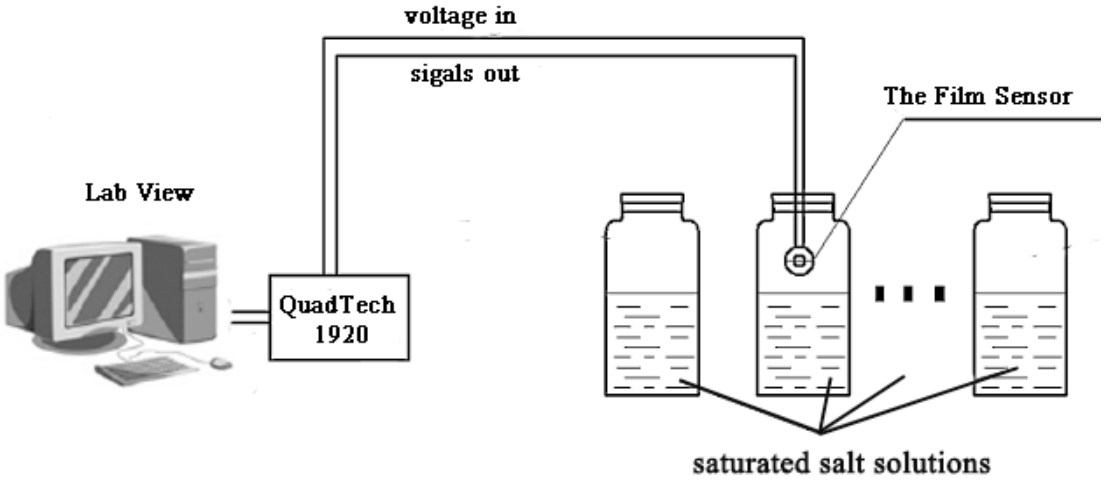

Figure S2 Schematic diagram of the setup for the film to sense guest molecules.

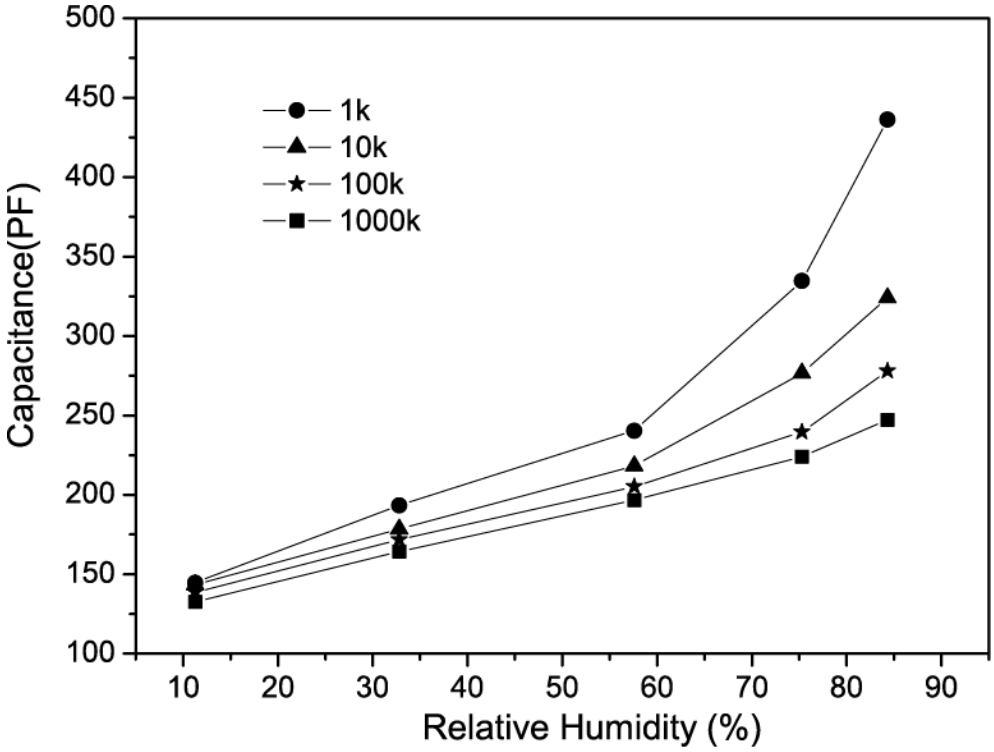

Figure S3 Capacitance response to the relative humidity at different frequency.

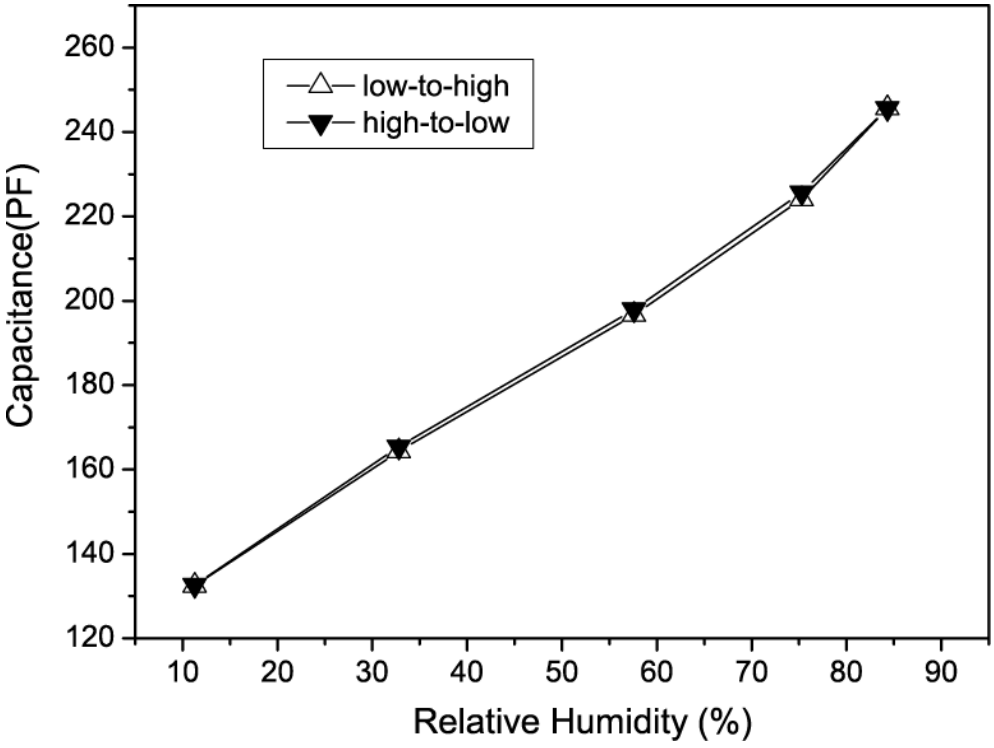

Figure S4 Humidity hysteresis characteristic of the film sensor.

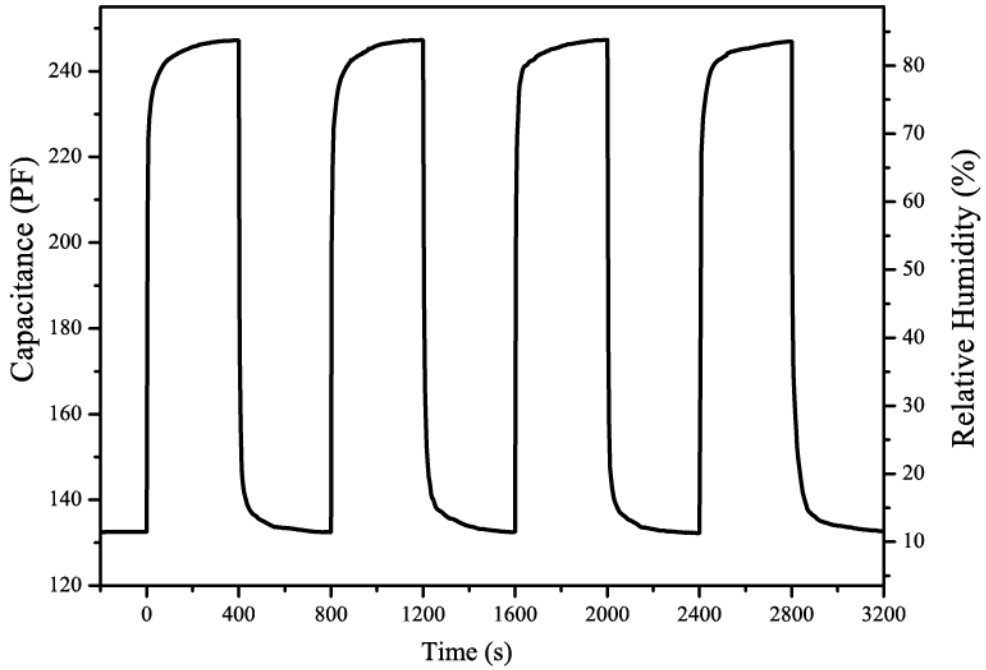

Figure S5 Dynamic capacitance variation of the fabricated humidity sensor exposed to relative humidity steps varying from 11.3 to 84.3% showing the reproducibility of the sensor.

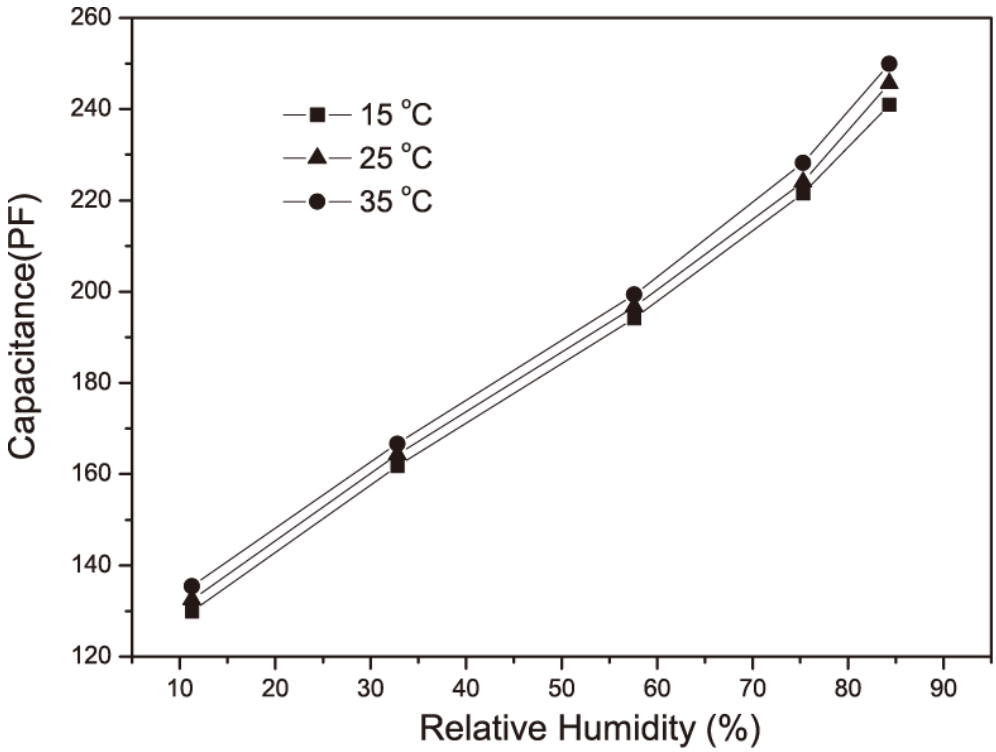

Figure S6 Capacitance response to RH of the film sensor under different temperature.

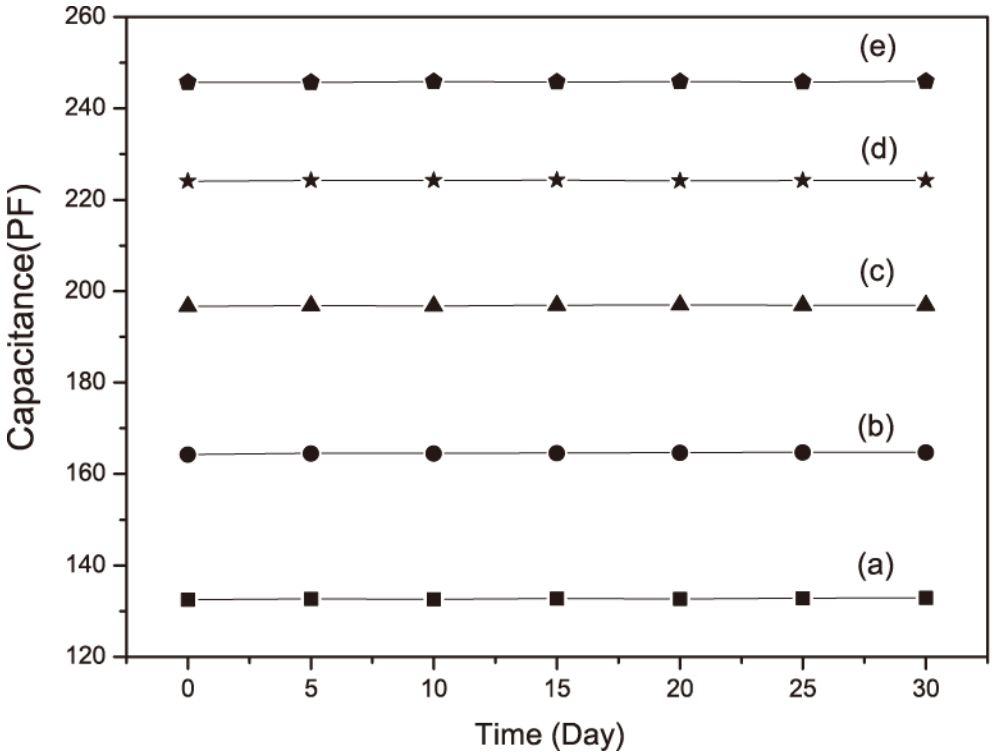

Figure S7 Stability of the MOF film sensor under RH of 11.3% (a), 32.8% (b), 57.6% (c), 75.3% (d) and 84.3 % (e).