Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Additional Data

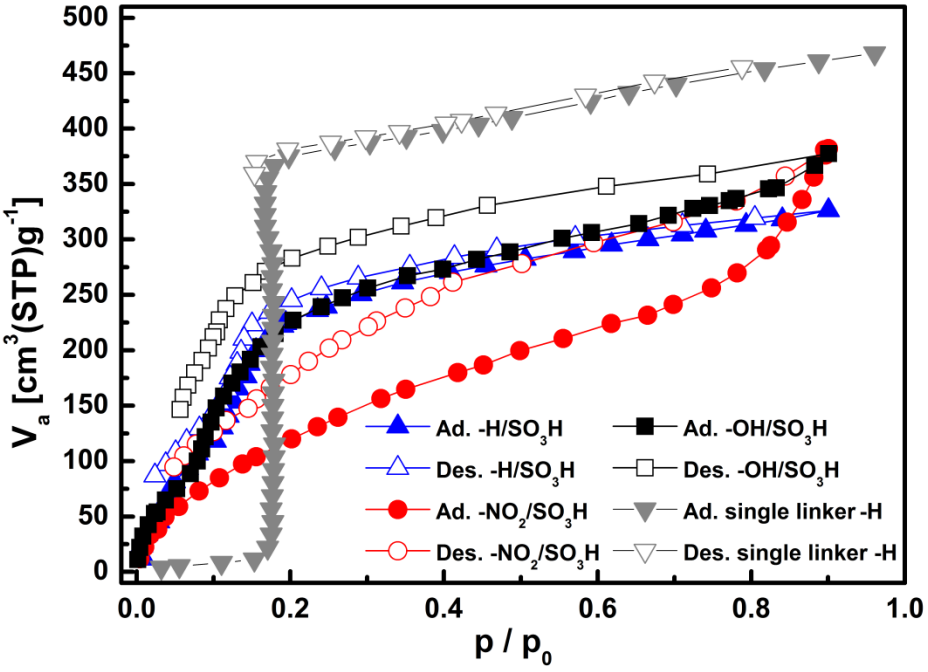

Figure S1. Water sorption isotherms at 298 K of the samples H-MOF (CAU-10-$H_{0.76}$/$(SO_3H)_{0.24}$), NO_2-MOF (CAU-10-$(NO_2)_{0.79}$/$(SO_3H)_{0.21}$), OH-MOF (CAU-10-$(OH)_{0.89}$/$(SO_3H)_{0.11}$) and single linker CAU-MOF. Prior to each measurement the samples were activated at 200 °C over night under vacuum (10^{-2} kPa). [Weiss et al. 2015, Reinsch et al. 2013]

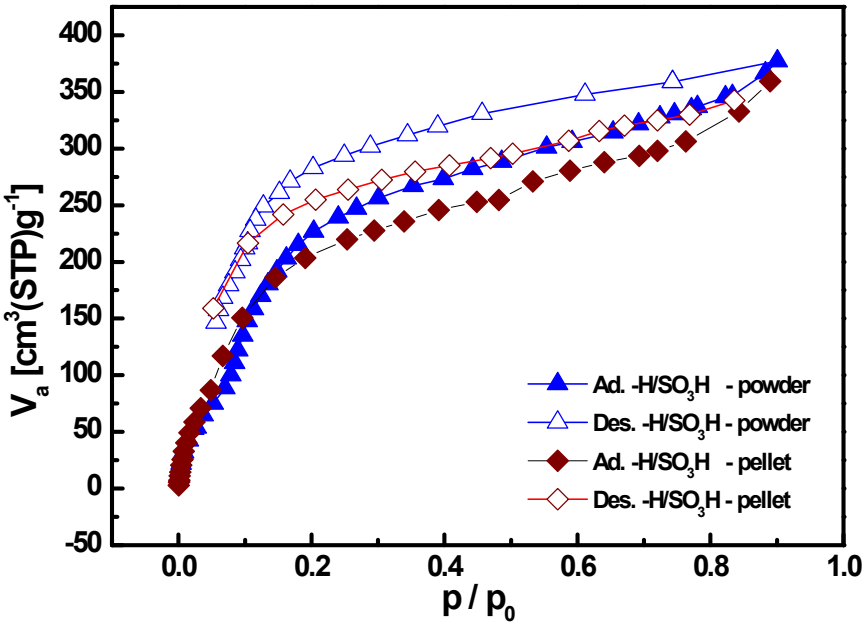

Figure S2. Water sorption isotherms at 298 K of the powder sample H-MOF (CAU-10-$H_{0.76}$/$(SO_3H)_{0.24}$) and after pellet pressing. Prior to each measurement the samples were activated at 200 °C over night under vacuum (10^{-2} kPa).

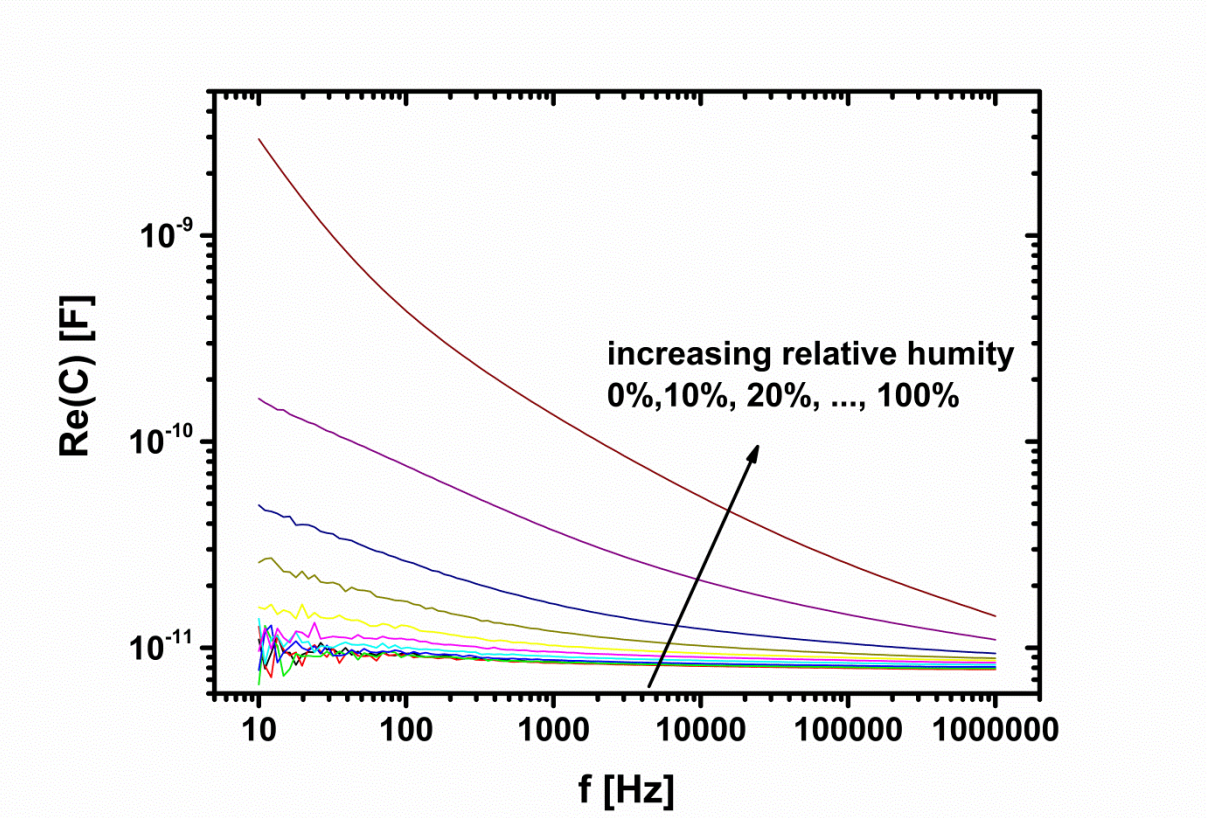

Figure S3. Screening using measurement setup (a) in the range from 10 Hz to 10^6 Hz. Exemplary plots of Re(C) over frequency for the H-MOF sample (CAU-10-$H_{0.76}$/$(SO_3H)_{0.24}$) at different relative

humidity levels. Calculated according the the following equation: $Re(C) = \frac{-Im(Z)}{\omega(Re(Z)^2 + Im(Z)^2)}$ [Weiss et al. 2015].

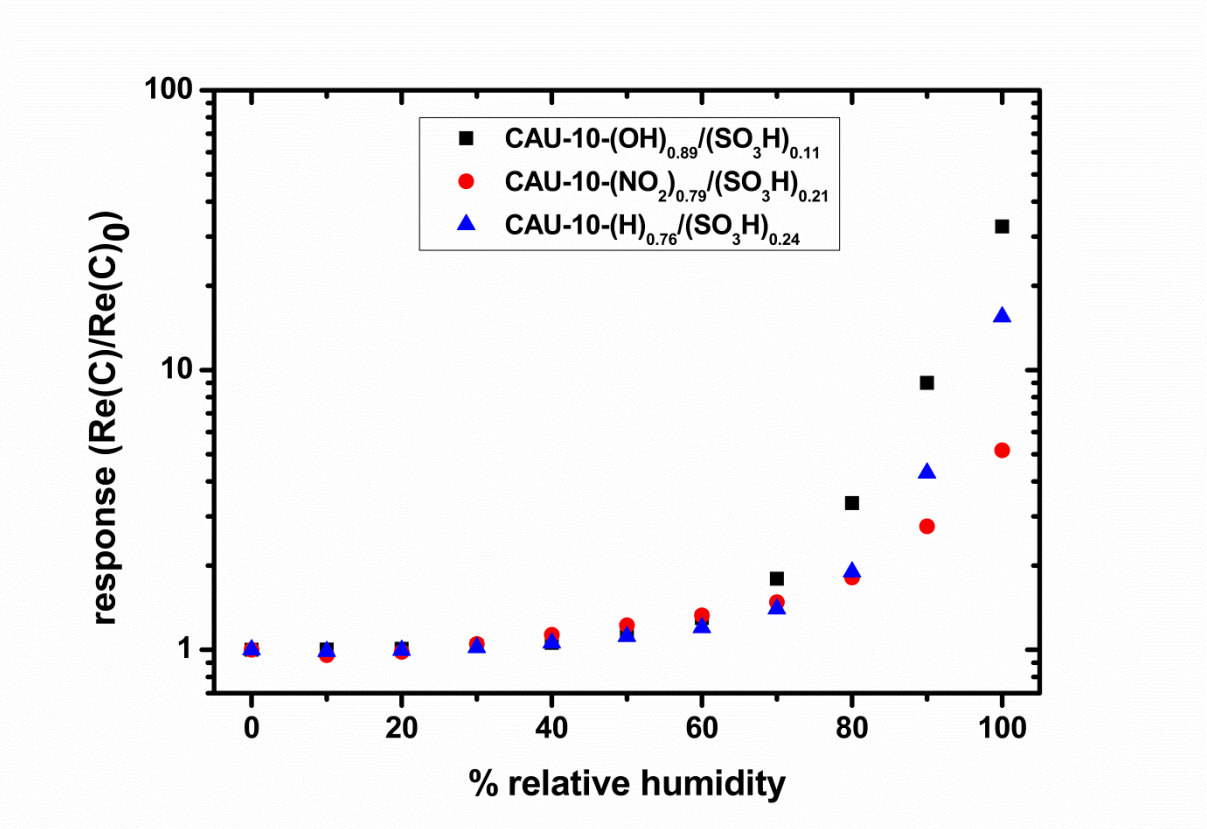

Figure S4. Response $Re(C)/Re(C)_0$ of the samples H-MOF (CAU-10-$H_{0.76}$/$(SO_3H)_{0.24}$), NO_2-MOF (CAU-10-$(NO_2)_{0.79}$/$(SO_3H)_{0.21}$) and OH-MOF (CAU-10-$(OH)_{0.89}$/$(SO_3H)_{0.11}$) when exposed to different humidity levels. Data points are calculated using the values at 1039 Hz from the frequency sweep. [Weiss et al. 2015]

Weiss et al. 2015 Weiss, A.; Reimer, N.; Stock, N.; Tiemann, M.; Wagner, T. Screening of Mixed-linker CAU-10 MOF Materials for humidity Sensing by Impedance Spectroscopy. Microporous and Mesoporous Materials, submitted 2015.

Reinsch et al. 2013 Reinsch, H.; van der Veen, M.; Gil, B.; Marszalek, B.; Verbiest, T.;de Vos, D.; Stock, N. Structures, Sorption Characteristics, and Nonlinear Optical Properties of a New Series of Highly Stable Aluminum MOFs. Chem. Mater., 2013, 25 (1), pp 17–26; DOI: 10.1021/cm3025445