Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Wiring functional groups in mesoporous organosilica materials.

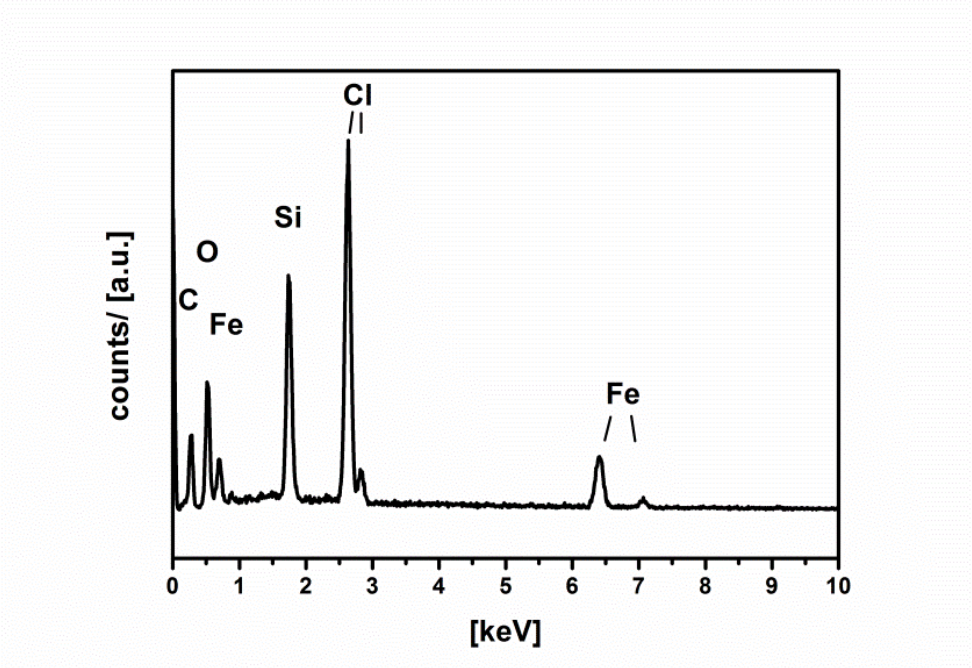
Martin Luka and Sebastian Polarz.*

University of Konstanz, 78457 Konstanz, Germany.

SUPPORTING INFORMATION

(S-1) Additional analytical data for $FeCl_3$@UKON2a

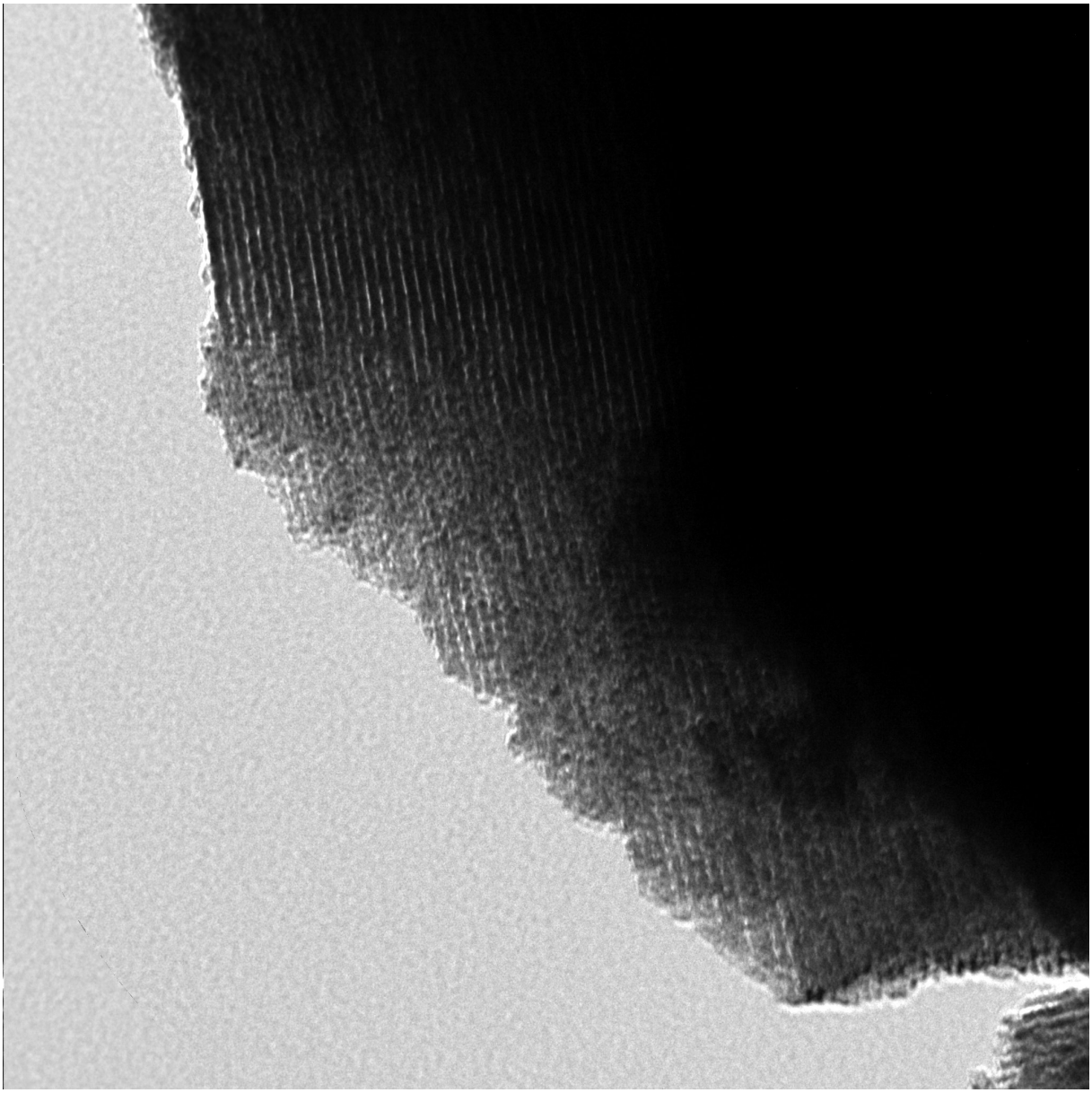
(a) EDX data of $FeCl_3$@UKON-2a.



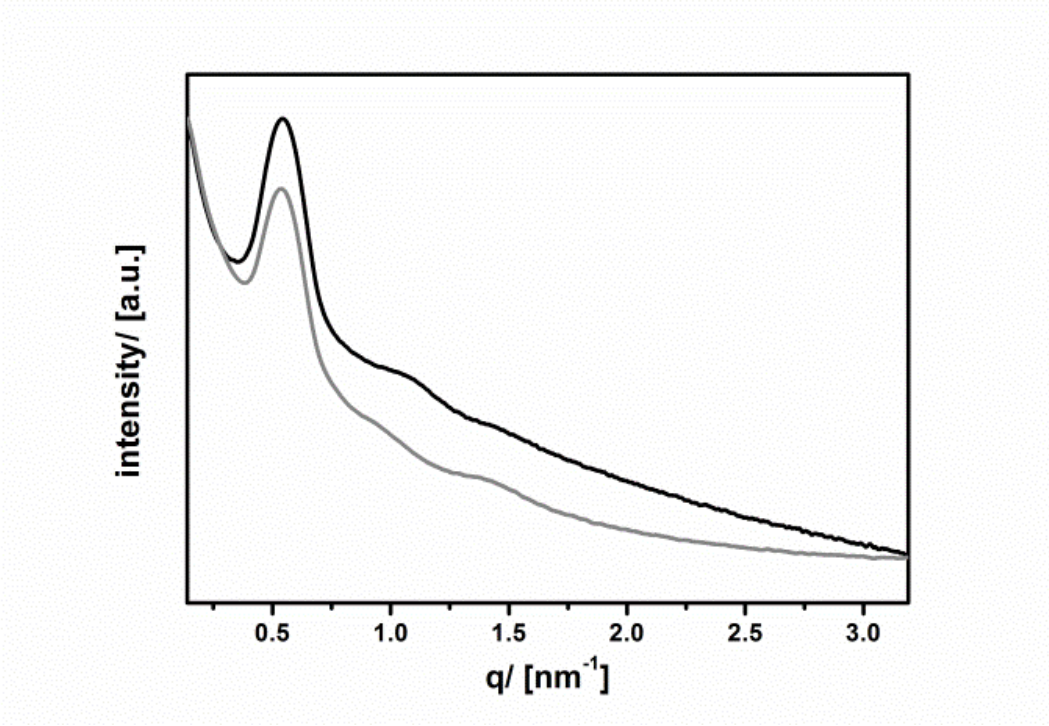
Spectrum: Point

Element	AN	Series	unn. C [wt.%]	norm. C [wt.%]	Atom. C [at.%]
Carbon	6	K-series	33.70	32.39	49.93
Oxygen	8	K-series	26.60	25.56	29.58
Chlorine	17	K-series	18.68	17.96	9.38
Iron	26	K-series	15.10	14.52	4.81
Silicon	14	K-series	9.96	9.57	6.31
		Total:	104.04	100.00	100.00

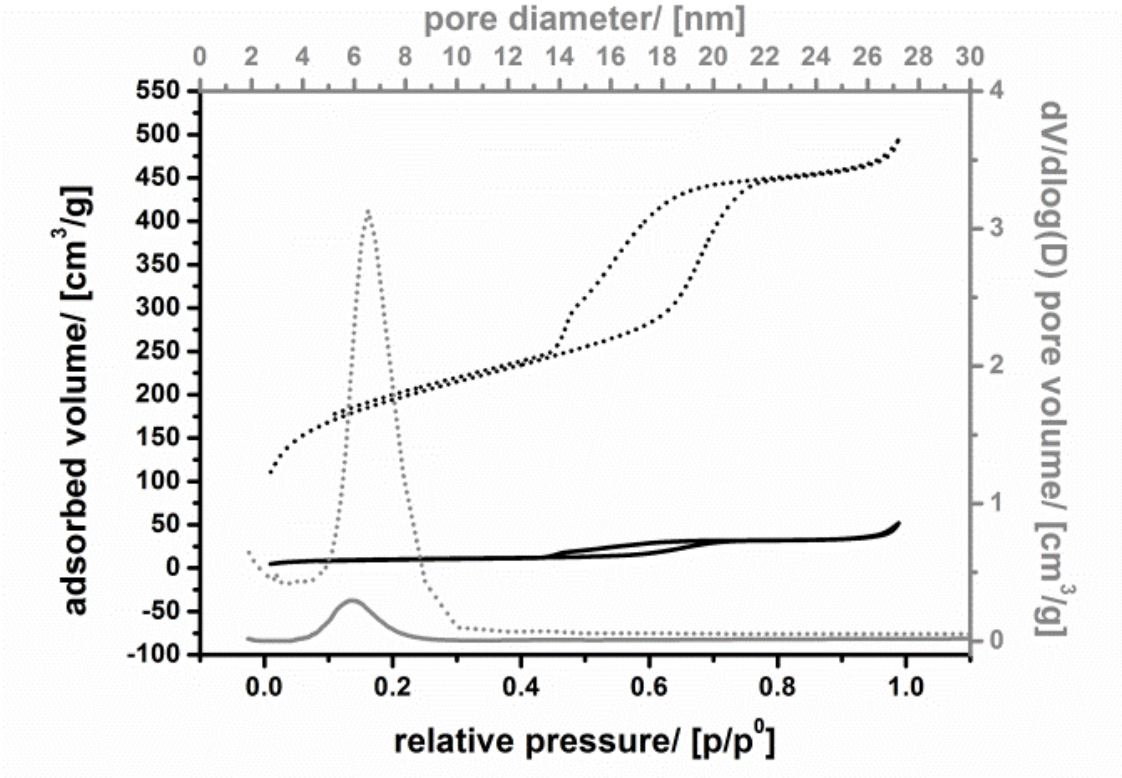
(b) TEM picture of $FeCl_3$@UKON-2a.



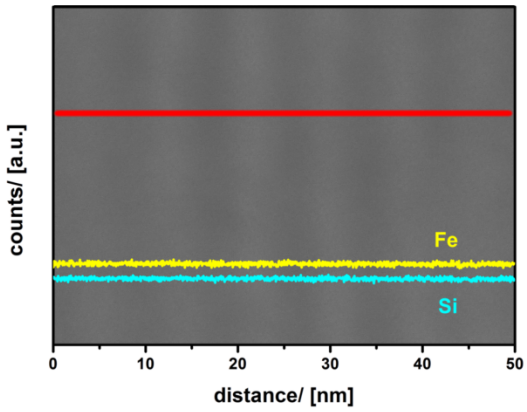
(c) SAXS data of $FeCl_3$@UKON-2a (black line) and UKON-2a (grey line).



(d) N_2-Physisorption data of $FeCl_3$@UKON-2a (black and grey line) and UKON-2a (black and grey dots).



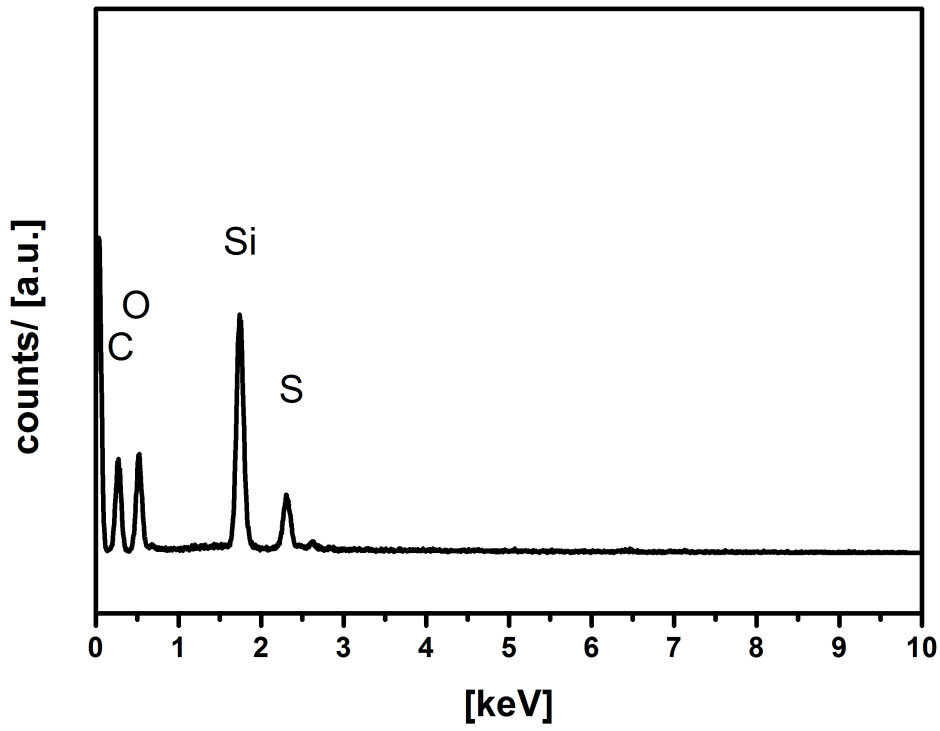
(e) HRTEM-EDX-line scan results.



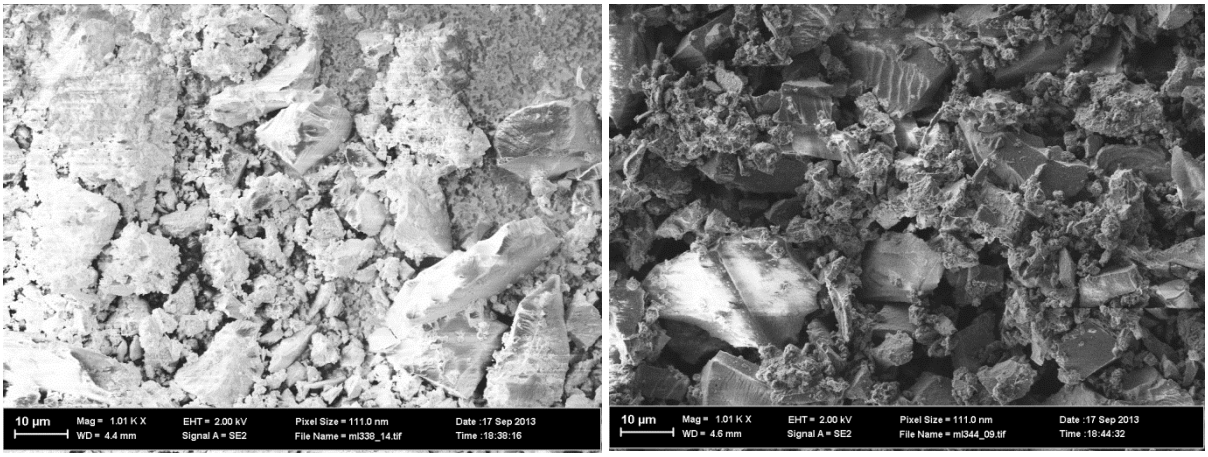
The graphs show a HR-TEM EDX linescan in a high resolution of $FeCl_3$@UKON-2a. The resolution of the EDX measurement is not high enough to reveal the modulation of the silica wall and though the exact distribution of $FeCl_3$ in the pores. Nevertheless a homogeneous distribution of the incorporated $FeCl_3$ is visible.

(S-2) Additional analytical data for PEDOT@UKON-2a

(a) EDX data of PEDOT@UKON-2a.

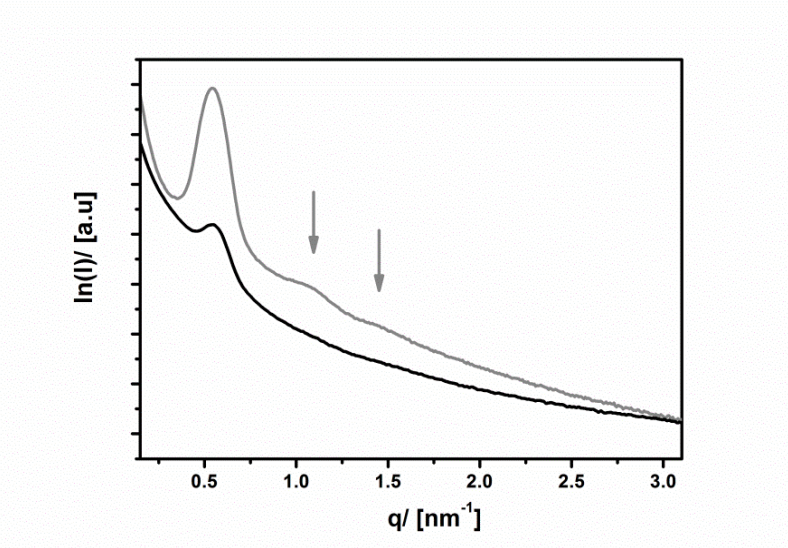


(b) SEM comparison before and after polymer synthesis.



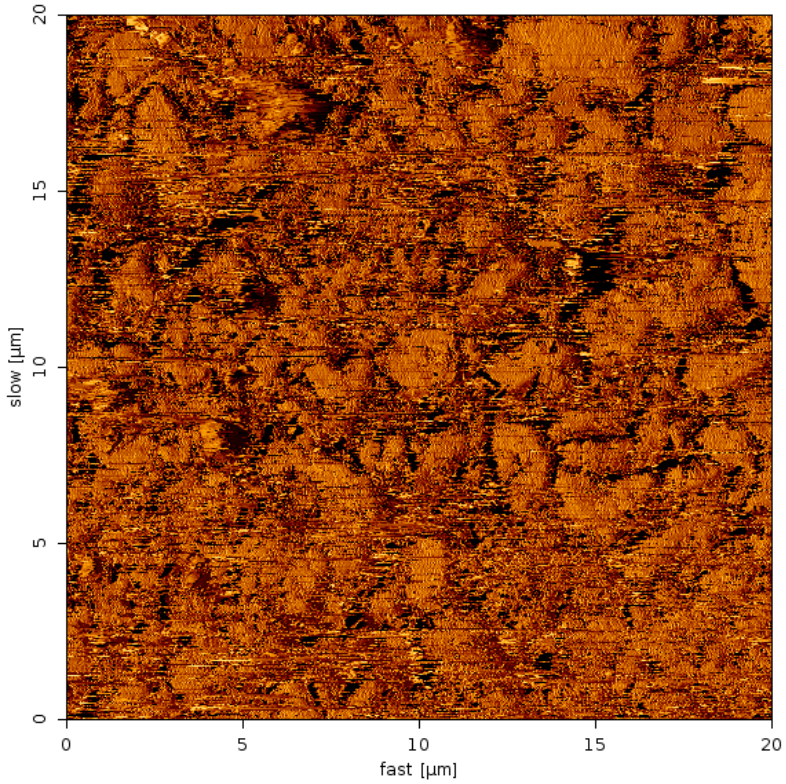
SEM pictures of UKON-2a (left) and PEDOT@UKON-2a (right).

(c) SAXS measurements.

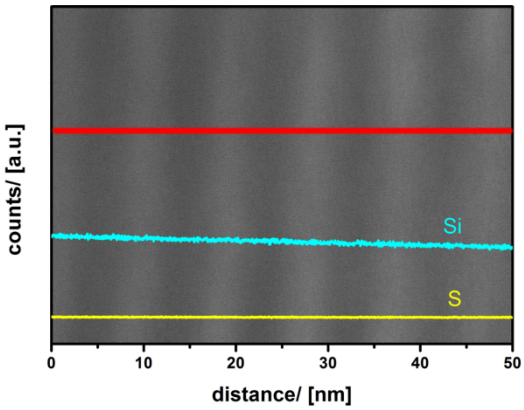


SAXS data of UKON-2a (grey) and PEDOT@UKON-2a (black). Decrease in signal intensity results from the pores being filled up with polymer and developing an electron density similar to the pore walls. However, the position of the main signal at q = 0.55 nm^{-1} remains unchanged.

(d) AFM measurements.



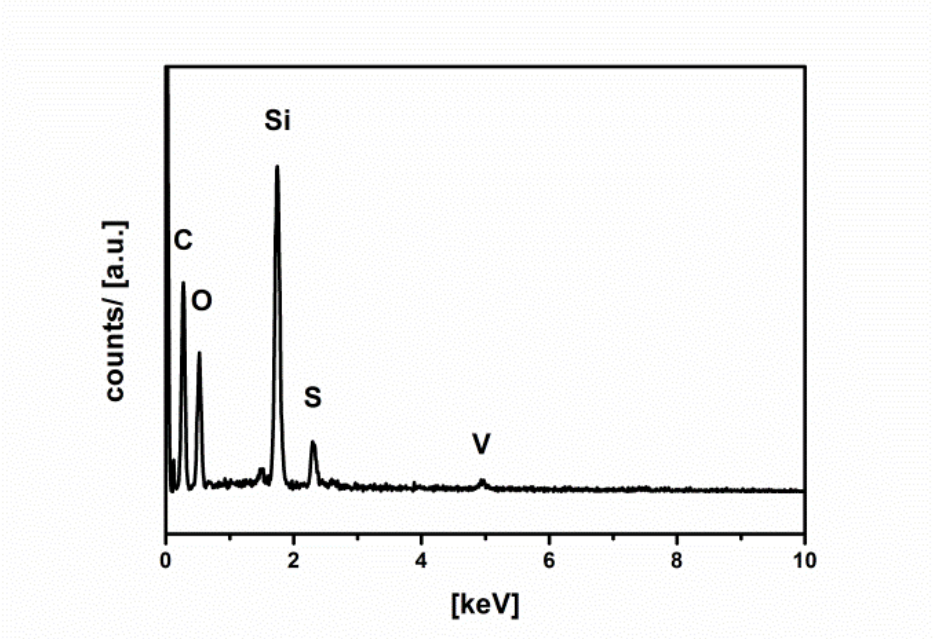
(e) HRTEM-EDX-line scan



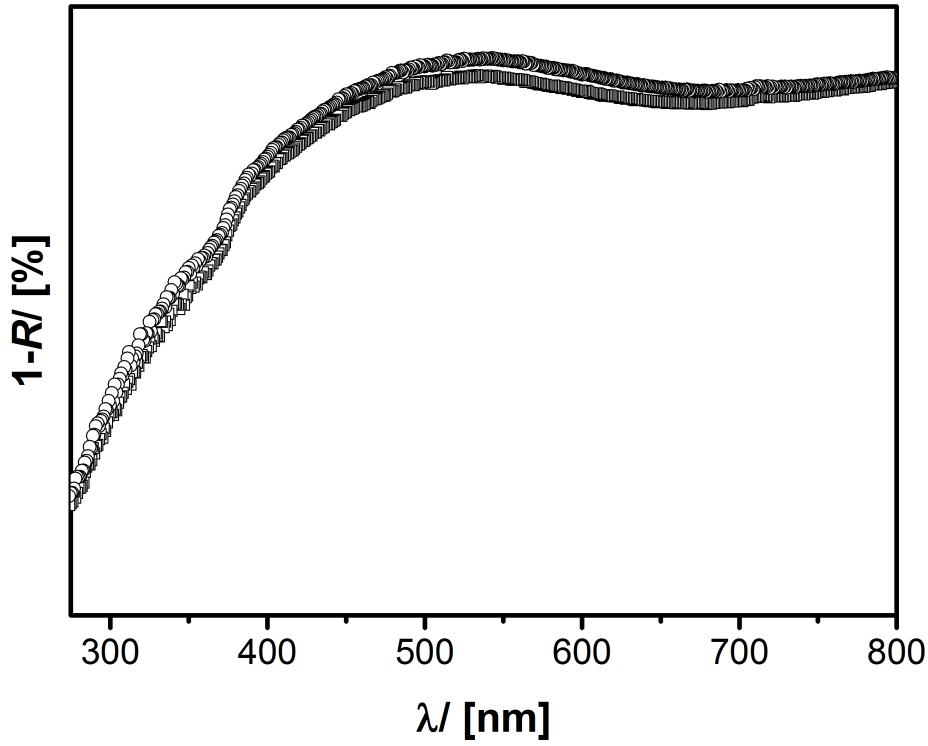
The graphs show a HR-TEM EDX linescan in a high resolution of PEDOT@UKON-2a. The resolution of the EDX measurement is not high enough to reveal the modulation of the silica wall and though the exact distribution of the polymer. Nevertheless a homogeneous distribution of the incorporated polymer and $FeCl_3$ is visible.

(S-3) Additional analytical data for VO@PEDOTUKON2a

EDX data



(S-4) UV/Vis data for treatment of pure PEDOT with [VO](acac)$_2$.



squares ≅ PEDOT after treatment with [VO](acac)$_2$

circles ≅ PEDOT not treated with [VO](acac)$_2$

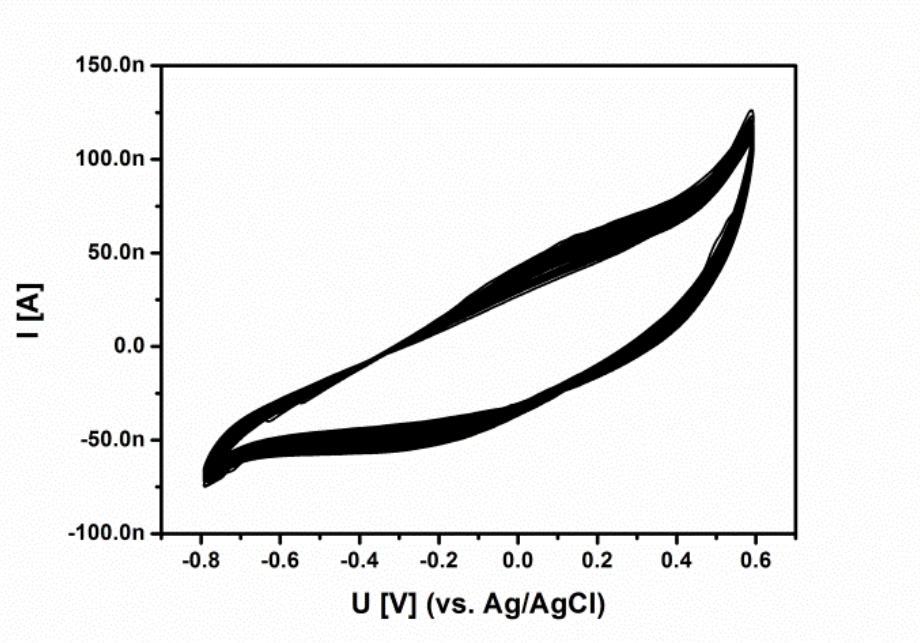
(S-5) Table of textural parameters for selected mesoporous materials.

	Pore diameter/ [nm][a]	Surface area/ [m^2/g][b]	Pore volume/ [cm^3/g][c]	a_{10}/ [nm][d]
UKON-2a	6.5	694	0.79	11.4
$FeCl_3$@UKON-2a	6.0	37	0.08	11.4
PEDOT@UKON-2a	6.1	541	0.45	11.4

(a) The given pore diameter reflects the value for the maximum in the BJH pore-size distribution function calculated from N_2-physisorption measurements. (b) BET surface area values calculated from N_2-physisorption measurements. (c) Pore volumes determined via N_2-physisorption measurements. (d) Periodicities determined from evaluation of the main (q_{10}) scattering signal observed in SAXS measurements.

(S-6) Investigation of the stability of the PEDOT@UKON2a material.

(a) CV measurements 100 × cycles (sweep rate 50mV/s, 1M $LiClO_4$).



(b) FT-IR measurements before and after 100 × CV cycles.