

Supplementary Information  
Continuous and Discontinuous water release/intake of  $(\text{BEDO-TTF})_2\text{Br}(\text{H}_2\text{O})_3$  micro  
crystals embedded in polymer film  
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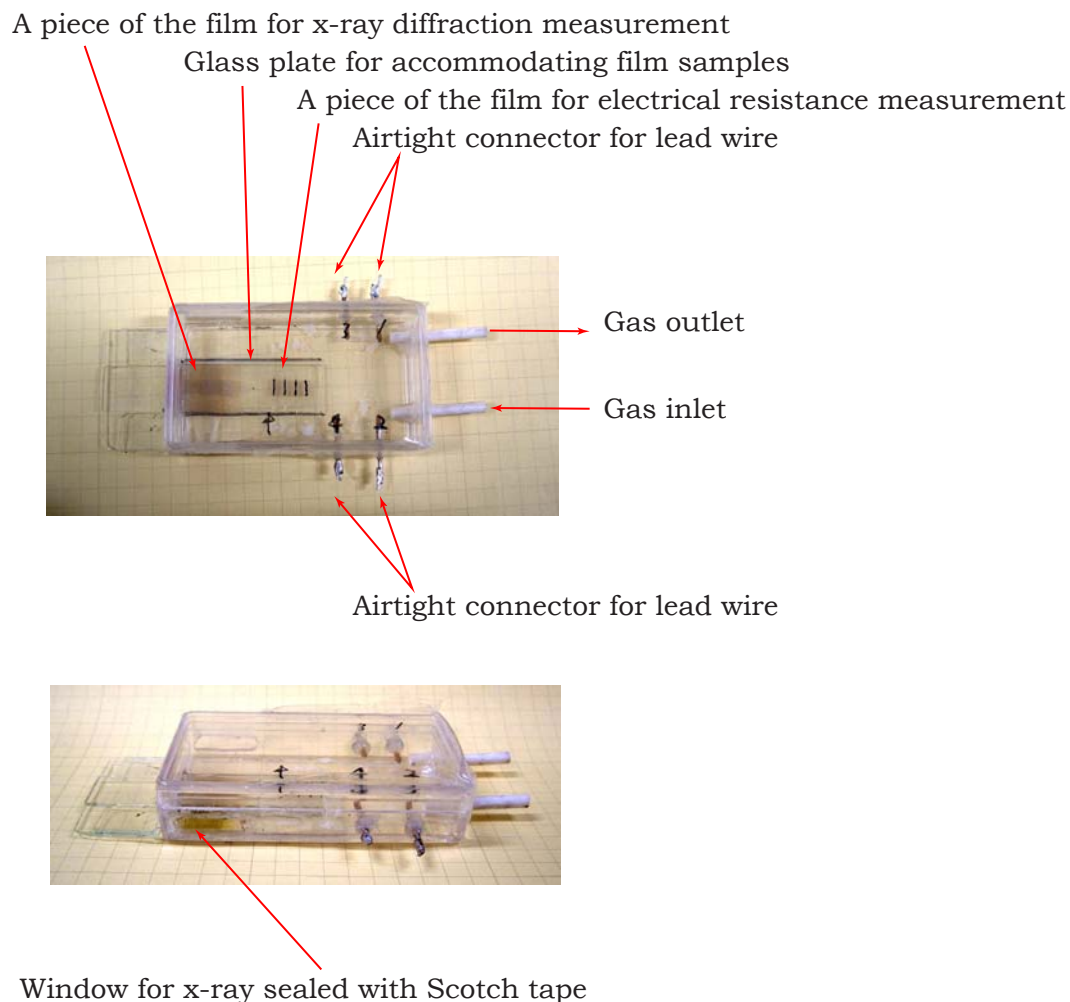


Figure S1. The photo of the plastic box for simultaneous measurements of electrical resistance and x-ray diffraction. For the background, a section paper with squares per  $5 \times 5 \text{ mm}^2$  pattern is used.

Table S1. Surface resistance of the film normalized by the initial value ( $R/R_0$ ) and x-ray diffraction angle of embedded micro crystals (XRD  $2\theta$ ) at the relative humidity (RH) of 16.5 - 65.0 %.

data # <sup>a</sup>	RH (%)	$R/R_0$	XRD $2\theta$ /°	T/°C <sup>b</sup>
1	24.2	1.00	5.238	23.6
2	16.5	1.00	5.242	23.8
3	27.0	1.01	5.237	24.5
4	46.4	1.02	5.233	24.3
5	63.8	1.02	5.231	24.3
6	44.7	1.01	5.235	24.4
7	26.2	1.01	5.239	24.4
8	16.0	1.00	5.246	24.3
9	34.4	1.01	5.237	24.3
10	65.0	1.02	5.232	24.3
11	35.2	1.01	5.237	24.0
12	16.7	1.00	5.246	24.0
13	62.5	1.02	5.233	24.1
14	63.7	1.02	5.233	24.0
15	25.3	1.01	5.241	24.2
16	23.6	1.01	5.241	24.5

a) Data numbers are given according to the measurement sequence. b) Flow gas temperature for each measurement.

Table S2. Surface resistance of the film normalized by the initial value ( $R/R_0$ ) and x-ray diffraction angle of embedded micro crystals ( $2\theta$ ) at the relative humidity (RH) of 1.9 - 33.7 %.

data # <sup>a</sup>	RH (%)	$R/R_0$	XRD $2\theta$ /° <sup>b</sup>				T/°C <sup>c</sup>
			$2\theta$ /°	(int. (%))	$2\theta$ /°	(int. (%))	
1	33.7	1.00	5.247				23.7
2	20.1	0.99	5.252				23.8
3	17.1	0.99	5.255				23.7
4	15.6	0.99	5.257				23.6
5	12.8	0.99	5.260				24.4
6	18.4	1.00	5.255				24.6
7	9.8	0.99	5.265				24.7
8	7.1	1.01	5.271	(97.6)	5.410	(2.4)	24.4
9	12.8	1.00	5.262				24.1
10	9.7	1.00	5.266				23.7
11	6.9	1.03	5.273	(85.0)	5.445	(15.0)	23.6
12	6.9	1.04	5.274	(82.0)	5.450	(18.0)	23.8
13	7.4	1.04	5.273	(84.3)	5.450	(15.7)	23.8
14	6.2	1.05	5.277	(60.0)	5.466	(40.0)	23.7
15	5.4	1.12	5.289	(58.1)	5.480	(41.9)	23.6
16	3.6	1.38			5.484		23.6
17	3.5	1.63			5.489		23.9
18	7.2	1.25	5.292	(56.5)	5.473	(43.5)	24.0
19	7.0	1.23	5.293	(57.3)	5.475	(42.7)	24.1
20	4.5	1.37			5.478		24.1
21	3.0	1.53			5.504		24.0
22	1.9	1.77			5.547		23.8
23	7.9	1.49	5.355	(64.7)	5.474	(35.3)	23.8
24	8.6	1.34	5.298	(57.2)	5.466	(42.8)	23.9
25	17.5	1.17	5.266				24.2
26	11.7	1.13	5.272				24.6
27	26.9	1.14	5.260				24.8
28	28.5	1.14	5.259				24.4

a) Data numbers are given according to the measurement sequence. b) The relative ratio of the area intensities is given when double-peak feature was observed. c) Flow gas temperature for each measurement.