

### Full results of $\Delta F$ and $W_{\text{ads}}$ for CWK 13XBFK and NaYBFK

The full results including the measurement uncertainties for the adsorption potential  $\Delta F$  and the adsorbed water volume  $W_{\text{ads}}$  for CWK 13 and NaYBFK are listed in Table S 1 and Table S 2, respectively. The indicated measurement uncertainties for  $\Delta F$  and  $W_{\text{ads}}$  are combined measurement uncertainties with a 95% confidence interval.

**Table S 1.** Overview of the results for the adsorption potential  $\Delta F$  and the adsorbed water volume  $W_{\text{ads}}$  for CWK 13XBFK for adsorption and desorption.

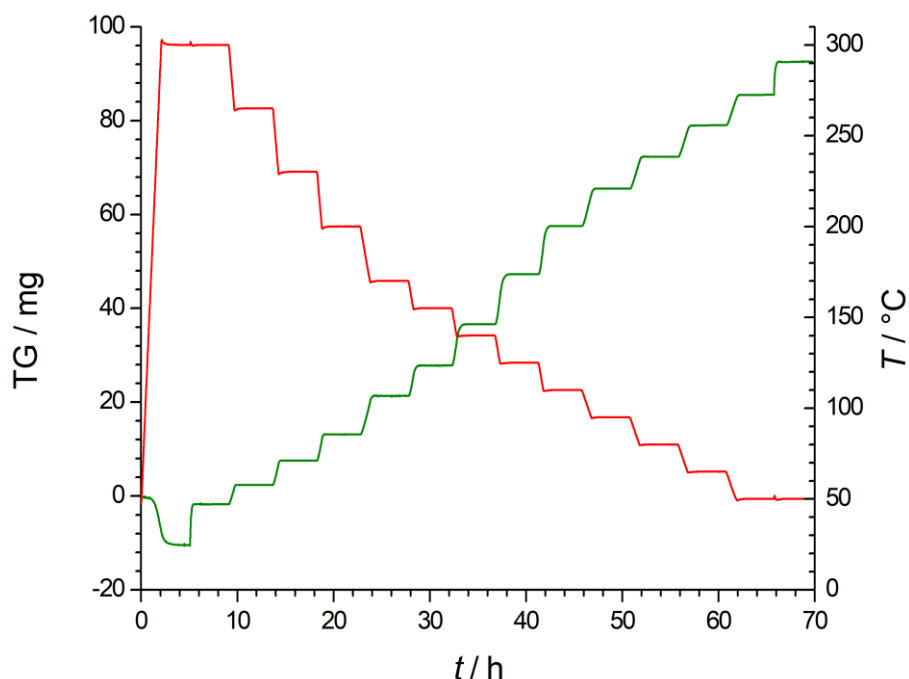
| CWK 13XBFK                     |                                              |                                |                                              |
|--------------------------------|----------------------------------------------|--------------------------------|----------------------------------------------|
| Adsorption                     |                                              | Desorption                     |                                              |
| $\Delta F / \text{kJ kg}^{-1}$ | $W_{\text{ads}} / \text{cm}^3 \text{g}^{-1}$ | $\Delta F / \text{kJ kg}^{-1}$ | $W_{\text{ads}} / \text{cm}^3 \text{g}^{-1}$ |
| 104 ± 3                        | 0.32354 ± 0.00103                            | 105 ± 3                        | 0.32711 ± 0.00110                            |
| 246 ± 3                        | 0.30154 ± 0.00102                            | 247 ± 3                        | 0.30724 ± 0.00109                            |
| 367 ± 4                        | 0.28255 ± 0.00102                            | 368 ± 4                        | 0.28889 ± 0.00109                            |
| 487 ± 4                        | 0.26279 ± 0.00101                            | 488 ± 4                        | 0.26922 ± 0.00108                            |
| 606 ± 4                        | 0.24258 ± 0.00101                            | 608 ± 4                        | 0.24797 ± 0.00108                            |
| 724 ± 4                        | 0.21833 ± 0.00100                            | 725 ± 4                        | 0.22350 ± 0.00107                            |
| 840 ± 4                        | 0.18664 ± 0.00099                            | 841 ± 4                        | 0.19166 ± 0.00106                            |
| 956 ± 4                        | 0.15321 ± 0.00098                            | 957 ± 4                        | 0.15736 ± 0.00105                            |
| 1071 ± 4                       | 0.12534 ± 0.00097                            | 1071 ± 4                       | 0.12855 ± 0.00104                            |
| 1185 ± 4                       | 0.10480 ± 0.00097                            | 1186 ± 4                       | 0.10737 ± 0.00104                            |
| 1412 ± 4                       | 0.07864 ± 0.00097                            | 1413 ± 4                       | 0.08061 ± 0.00104                            |
| 1636 ± 4                       | 0.06088 ± 0.00097                            | 1637 ± 4                       | 0.06263 ± 0.00104                            |
| 1897 ± 5                       | 0.04396 ± 0.00098                            | 1897 ± 5                       | 0.04537 ± 0.00105                            |
| 2162 ± 5                       | 0.03021 ± 0.00099                            | 2162 ± 5                       | 0.03068 ± 0.00106                            |
| 3597 ± 8                       | 0 ± 0.00097                                  | 3496 ± 8                       | 0.00000 ± 0.00104                            |

**Table S 2.** Overview of the results for the adsorption potential  $\Delta F$  and the adsorbed water volume  $W_{\text{ads}}$  for CWK NaYBFK for adsorption and desorption.

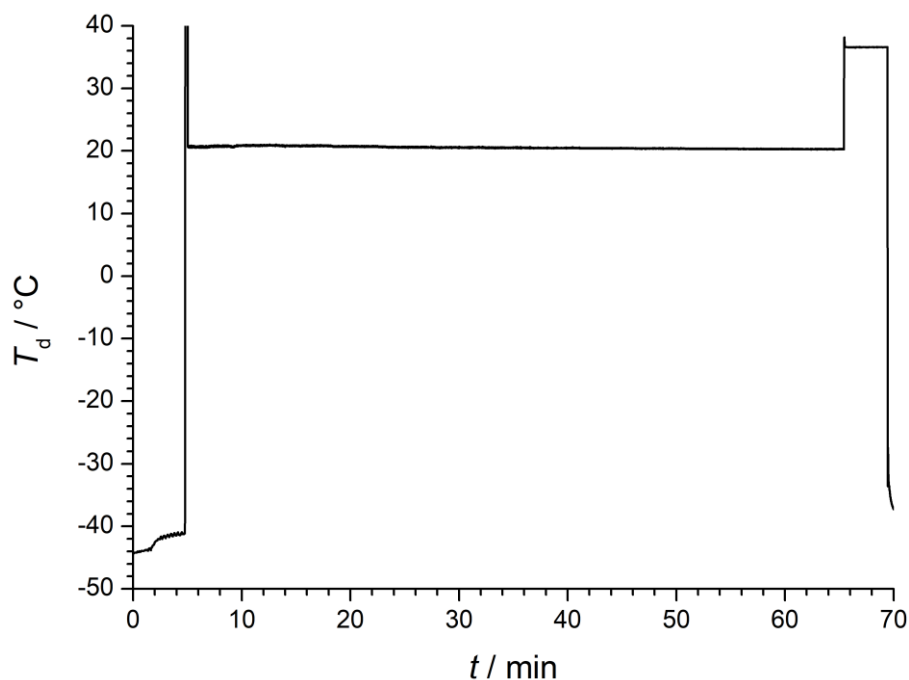
| CWK NaYBFK                     |                                              |                                |                                              |
|--------------------------------|----------------------------------------------|--------------------------------|----------------------------------------------|
| Adsorption                     |                                              | Desorption                     |                                              |
| $\Delta F / \text{kJ kg}^{-1}$ | $W_{\text{ads}} / \text{cm}^3 \text{g}^{-1}$ | $\Delta F / \text{kJ kg}^{-1}$ | $W_{\text{ads}} / \text{cm}^3 \text{g}^{-1}$ |
| $104 \pm 3$                    | $0.32092 \pm 0.00100$                        | $106 \pm 3$                    | $0.31809 \pm 0.00104$                        |
| $247 \pm 3$                    | $0.29706 \pm 0.00098$                        | $248 \pm 3$                    | $0.29740 \pm 0.00103$                        |
| $409 \pm 4$                    | $0.26694 \pm 0.00098$                        | $410 \pm 4$                    | $0.26456 \pm 0.00102$                        |
| $568 \pm 4$                    | $0.20717 \pm 0.00096$                        | $569 \pm 4$                    | $0.20051 \pm 0.00100$                        |
| $725 \pm 4$                    | $0.15110 \pm 0.00094$                        | $725 \pm 4$                    | $0.14817 \pm 0.00098$                        |
| $881 \pm 4$                    | $0.11255 \pm 0.00093$                        | $880 \pm 4$                    | $0.11037 \pm 0.00097$                        |
| $1034 \pm 4$                   | $0.08060 \pm 0.00092$                        | $1034 \pm 4$                   | $0.07878 \pm 0.00096$                        |
| $1263 \pm 4$                   | $0.04931 \pm 0.00092$                        | $1262 \pm 4$                   | $0.04898 \pm 0.00096$                        |
| $1488 \pm 4$                   | $0.03112 \pm 0.00092$                        | $1487 \pm 4$                   | $0.03140 \pm 0.00096$                        |
| $1712 \pm 4$                   | $0.02054 \pm 0.00093$                        | $1711 \pm 4$                   | $0.02108 \pm 0.00097$                        |
| $1936 \pm 5$                   | $0.01407 \pm 0.00094$                        | $1934 \pm 5$                   | $0.01466 \pm 0.00098$                        |
| $2157 \pm 5$                   | $0.00922 \pm 0.00095$                        | $2161 \pm 5$                   | $0.00963 \pm 0.00099$                        |
| $3637 \pm 8$                   | $0 \pm 0.00094$                              | $3524 \pm 8$                   | $0 \pm 0.00098$                              |

### Temperature, dew point temperature and TG evolution for CWK 13XBFK

The evolution of the temperature and the thermogravimetric (TG) signal during the STA measurement in adsorption of CWK 13XBFK are shown in Figure S 1. Figure S 2 additionally shows the evolution of the dew point temperature of the same measurement.

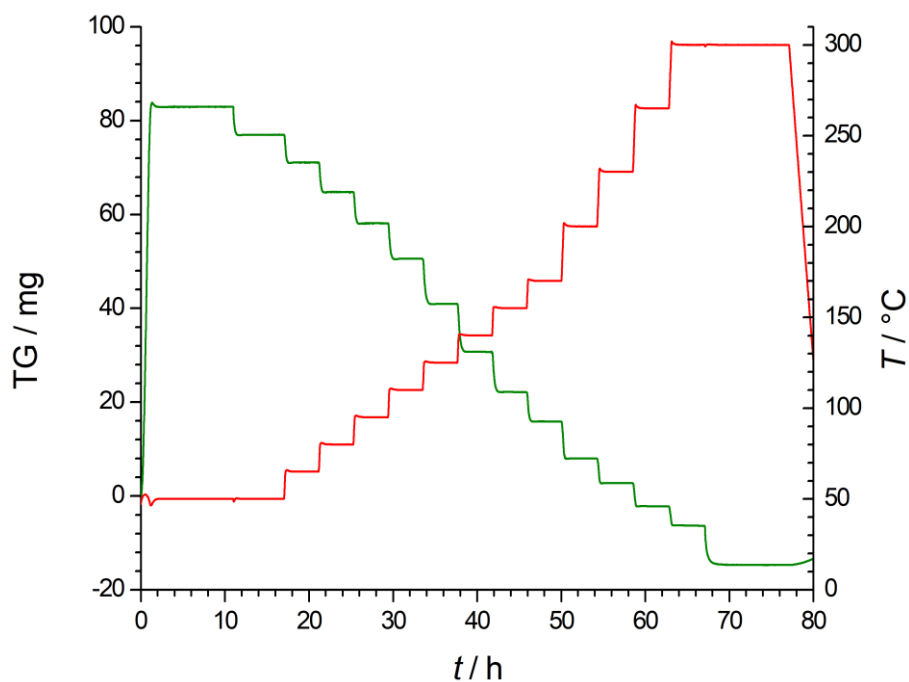


**Figure S 1.** Evolution of the temperature (red line) and TG signal (green line) during the STA measurement in adsorption of CWK 13XBFK.

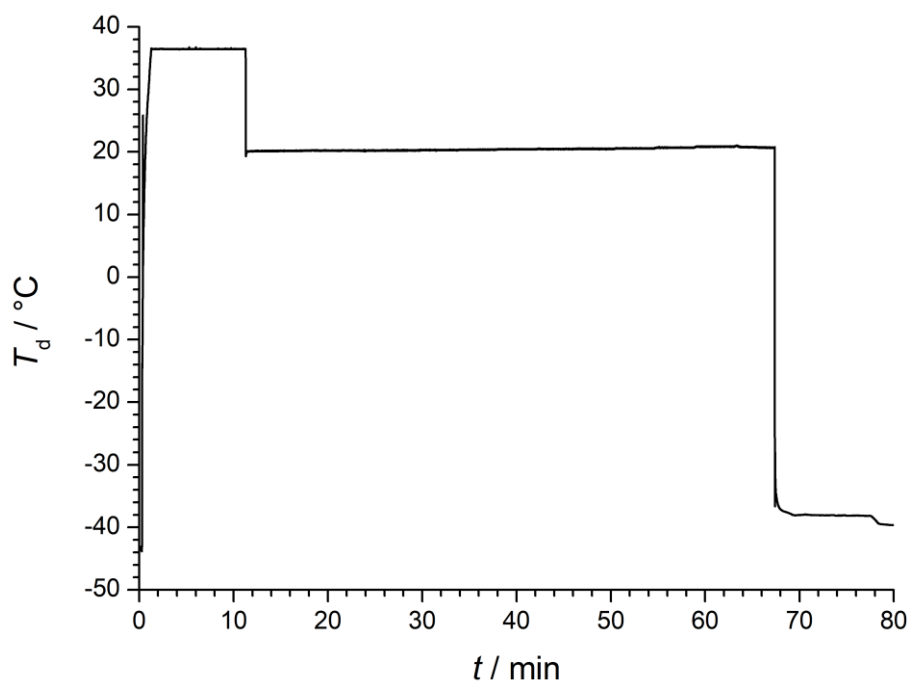


**Figure S 2.** Evolution of the dew point temperature (black line) during the STA measurement in adsorption of CWK 13XBFK.

The evolution of the temperature and the thermogravimetric (TG) signal during the STA measurement in desorption of CWK 13XBFK are shown in Figure S 1. Figure S 2 additionally shows the evolution of the dew point temperature of the same measurement.



**Figure S 3.** Evolution of the temperature (red line) and TG signal (green line) during the STA measurement in desorption of CWK 13XBFK.



**Figure S 4.** Evolution of the dew point temperature (black line) during the STA measurement in desorption of CWK 13XBFK.