Figure A1: Conversion of the exponent $m$ of the Klotz equation (20) to the exponent $s$ of the Sips isotherm (eqn. 12) from non-linear regression in the range of $\theta = 0.2\ldots 0.8$. 
Figure A2: Conversion of the parameter $m$ of the Klotz equation (20) to the adsorption constant $K_{FG}$ and the exponent $n$ of the Fowler-Guggenheim equation (4) from non-linear regression in the range of $\theta = 0.2.... 0.8$.

Figure A3: Conversion of the parameters $m$ of the Klotz equation (20) with $K = 5$ to the energy term $E / RT$ and the exponent $n$ of the Dubinin-Asthakov equation (13) from non-linear regression in the range of $\theta = 0.2.... 0.8$.

$m / n = 2.84 (1-\exp(-0.60 \ m^{0.44}))$; $RT / E = 0.618 (1-\exp(-1.27 \ m^{0.30}))$
Figure A4: Conversion of the parameters $K$ of the Klotz equation (20) with $m = 10$ to the energy term $E/RT$ and the exponent $n$ of the Dubinin-Asthakov equation (13) from non-linear regression in the range of $\theta = 0.2...0.8$.

\[ n = 11.4 \left(1 - \exp(-0.14 K^{0.73})\right); \quad E/RT = 4.4 \left(1 - \exp(-0.16 K^{0.68})\right) \]

Figure A5: Modeling of the adsorption of water on carbon no. 1 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31)
Figure A6: Modeling of the adsorption of water on carbon no. 4 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31).

Figure A7: Modeling of the adsorption of water on carbon no. 6 with the Klotz isotherm (eqn. (24)).
Figure A8: Modeling of the adsorption desorption hysteresis of water on carbon no. 7 with the Klotz isotherm (eqn. (24))

Figure A9: Modeling of the adsorption desorption hysteresis of water on carbon no. 8 with the Klotz isotherm (eqn. (24)), green line: desorption modeled with eqn. (29)
Figure A10: Modeling of the adsorption of water on carbon no. 9 with the Klotz isotherm (eqn. (24)).

Figure A11: Modeling of the adsorption of water on carbon no. 11 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31).
Figure A12: Modeling of the adsorption of water on carbon no. 12 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31).

Figure A13: Modeling of the adsorption of water on carbon no. 13 with the Klotz isotherm (eqn. (24)).
Figure A14: Modeling of the adsorption desorption hysteresis of water on carbon no. 16 with the Klotz isotherm (eqn. (24)).

Figure A15: Modeling of the adsorption of water on carbon no. 17 with the Klotz isotherm (eqn. (24)).
Figure A16: Modeling of the adsorption of water on carbon no. 18 with the Klotz isotherm (eqn. (24)).

Figure A17: Modeling of the adsorption of water on carbon no. 20 with the Klotz isotherm (eqn. (24)).
Figure A18: Modeling of the adsorption of water on carbon no. 21 with the Klotz isotherm (eqn. (24)).

Figure A19: Modeling of the adsorption of water on carbon no. 24 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31)
Figure A20: Modeling of the adsorption of water on carbon no. 25 with the Klotz isotherm (eqn. (24)), green line: modeled with eqn. (31); gray line modeling with DD (eqn. (30)).

Figure A21: Correlation between $K$ and $Q_{\text{max}}$ (all values of Table 1).
Figure A22: Modeling of the adsorption of water on an ferro aluminophosphate molecular sieve (No. 28 in Table 1) at 25°C. Blue: extended Klotz isotherm (eqn. (31)). Red: additive superposition of the original Klotz isotherm (eqn. (24)) with the part of the Sips-isotherm used in the fitting of the same underlying data by the "universal isotherm" [50].

Figure A23: Modeling of the adsorption of water on ferro aluminophosphate molecular sieve (No. 29 in Table 1) at 60°C by the extended Klotz isotherm (eqn. (31))
Figure A24: Modeling of the adsorption of water on aluminophosphate molecular sieve (No. 30 in Table 1) at 45°C by the Klotz isotherm (eqn. (24)).

Figure A25: Unsuccessful fitting of the adsorption of water on aluminophosphate molecular sieve AlPO$_4$-5 (AFI-structure) [6] by the Klotz isotherm (eqn.(24)).