**Supplementary Information**

Table S1. The parameters of the original Song model determined from the single-solute sorption isotherm.

Values in parentheses represent standard errors. The model parameters are obtained from Song and Shin [44].

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Freundlich | Solute | Organoclay | *K****F***(L/g) | *N****F***(mg/L) |  | R2 | SSE |  |  |  |
|  | 2-ChP | HDTMA-M | 0.6626 (0.0563) | 0.5944 (0.0128) |  | 0.9945 | 30.55 |  |  |  |
|  |  | TMA/HDTMA-M | 0.5505 (0.0959) | 0.5517 (0.0252) |  | 0.9918 | 8.976 |  |  |  |
|  | 3-CyP | HDTMA-M | 0.1628 (0.0133) | 0.6660 (0.0115) |  | 0.9972 | 3.484 |  |  |  |
|  |  | TMA/HDTMA-M | 0.1163 (0.0163) | 0.6686 (0.0196) |  | 0.9967 | 1.169 |  |  |  |
|  | 4-NiP | HDTMA-M | 0.4221 (0.0642) | 0.6263 (0.0219) |  | 0.9918 | 23.46 |  |  |  |
|  |  | TMA/HDTMA-M | 0.2509 (0.0272) | 0.6350 (0.0155) |  | 0.9977 | 1.841 |  |  |  |
| Langmuir | Solute | Organoclay | *q*mL (mg/g) | *b*L |  | R2 | SSE |  |  |  |
|  | 2-ChP | HDTMA-M | 65.322 (2.0543) | 1.64×10-3 (1.10×10-4) |  | 0.9944 | 31.26 |  |  |  |
|  |  | TMA/HDTMA-M | 45.113 (2.3344) | 1.38×10-3 (1.59×10-4) |  | 0.9993 | 7.421 |  |  |  |
|  | 3-CyP | HDTMA-M | 43.378 (1.9158) | 6.48×10-4 (4.98×10-5) |  | 0.9952 | 5.467 |  |  |  |
|  |  | TMA/HDTMA-M | 34.354 (1.4846) | 5.66×10-4 (4.21×10-5) |  | 0.9982 | 0.639 |  |  |  |
|  | 4-NiP | HDTMA-M | 70.335 (3.5270) | 8.92×10-4 (8.31×10-5) |  | 0.9939 | 17.41 |  |  |  |
|  |  | TMA/HDTMA-M | 46.791 (3.1446) | 8.23×10-4 (1.02×10-4) |  | 0.9942 | 4.623 |  |  |  |
| Song | Solute | Organoclay | *K*S (L/g) | *bS* (mg/L)-2 | *n*s (−) | R2 | SSE | *ccross* | *K*FS | log *K*oc |
|  | 2-ChP | HDTMA-M | 0.1265 (0.0037) | 1.28×10-4 (2.33×10-5) | 0.5269 (0.0078) | 0.9995 | 2.869 | 88.48 | 1.055 | 3.07 |
|  |  | TMA/HDTMA-M | 0.0763 (0.0111) | 7.92×10-5 (6.19×10-5) | 0.4937 (0.0304) | 0.9968 | 3.526 | 112.3 | 0.833 | 3.09 |
|  | 3-CyP | HDTMA-M | 0.0335 (0.0023) | 4.52×10-5 (2.25×10-5) | 0.6271 (0.0149) | 0.9987 | 1.635 | 148.9 | 0.216 | 2.49 |
|  |  | TMA/HDTMA-M | 0.0204 (0.0020) | 1.32×10-5 (1.07×10-5) | 0.6016 (0.0404) | 0.9980 | 0.703 | 275.7 | 0.192 | 2.52 |
|  | 4-NiP | HDTMA-M | 0.0695 (0.0086) | 3.27×10-5 (2.71×10-5) | 0.5635 (0.0358) | 0.9954 | 13.21 | 174.9 | 0.662 | 2.81 |
|  |  | TMA/HDTMA-M | 0.0497 (0.0031) | 8.69×10-5 (3.47×10-5) | 0.6006 (0.0103) | 0.9997 | 0.273 | 107.3 | 0.321 | 2.91 |

Table S2. Physicochemical properties of phenolic compounds used.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Solute | MW | Solubility(mg/L)\* | log *K*ow \* | pKa at 25 oC \* |
| 2-ChP | 128.56 | 11,300 | 2.15 | 8.56 |
| 3-CyP | 119.12 | 7,379 | 1.70 | 8.51 |
| 4-NiP | 139.11 | 11,600 | 1.91 | 7.16 |

\*Data obtained from SRC PhysProp database (<http://www.syrres.com>).