**SUPPLEMENTARY MATERIALS**

**Highly Efficient of TiO2 Pillared Smectite Clay with Ni and Co Doping for Rhodamine B Removal: Kinetics of Adsorption and Photodegradation**

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| a |  | b | Chart, line chart  Description automatically generated |
| c | Chart, line chart  Description automatically generated | d | Chart, line chart  Description automatically generated |
| e |  |  |  |

Figure S1. Deconvulation of the FTIR spectra of (a) Clay (b) Clay + EtOH (c) Ti/Clay (d) Ni-Ti/Clay and (e) Co-Ti/Clay

|  |  |  |  |
| --- | --- | --- | --- |
| a |  | b |  |

Figure S2. RhB adsorption kinetics curves on Clay, Clay + EtOH, Ti/Clay, Ni-Ti/Clay, and Co-Ti/Clay (a) pseudo-first order and (b) pseudo-second order

Table S1. Adsorption isotherm model and correlation coefficient (R) for RhB in Clay, Clay + EtOH, Ti/Clay, Ni-Ti/Clay, and Co-Ti/Clay at 298 K

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| --- | --- | --- | --- | --- | --- |
| Isotherm Model | Linear form equation | Figure axis | Correlation coefficient (r) |  |  |
| Clay | Clay + EtOH | Ti/Clay | Ni-Ti/Clay | Co-Ti/Clay |
| Langmuir | $$\frac{C\_{e}}{Q\_{e}}=\frac{1}{b Q\_{max}}+ \frac{C\_{e}}{Q\_{max}}$$ | $\frac{C\_{e}}{Qe}$ vs Ce | 0.998 | 0.999 | 0.998 | 0.997 | 0.999 |
| Freundlich | log Qe = n log Ce + log Qmax | log Qe vs log Ce | 0.98 | 0.985 | 0.997 | 0.997 | 0.996 |
| Temkin | Qe = $(\frac{2.303}{a})($log Qmax) + log Ce | Qe vs log Ce | 0.955 | 0.946 | 0.905 | 0.904 | 0.908 |

Table S2. Kinetic order model and correlation coefficient (r) for RhB in Clay, Clay + EtOH, Ti/Clay, Ni-Ti/Clay, and Co-Ti/Clay at 298 K

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| --- | --- | --- | --- |
| Sampel | Linear form equation | Figure axis | Correlation coefficient (r) |
| Clay | Clay + EtOH | Ti/Clay | Ni-Ti/Clay | Co-Ti/Clay |
| Pseudo-first-order | $$\frac{1}{q\_{t}}=\left(\frac{k\_{1}}{q\_{1}}\right)\left(\frac{1}{t}\right)+ \frac{1}{q\_{1}}$$ | $\frac{1}{qt}$ vs $\frac{1}{t}$ | 0.999 | 0.999 | 0.999 | 0.999 | 0.999 |
| Pseudo-second-order | $$\frac{t}{q\_{t}}=(\frac{1}{q\_{2}})t+\frac{1}{k\_{2}.q\_{2}^{2}}$$ | $\frac{t}{q\_{t}}$ vs t | 0.944 | 0.954 | 0.985 | 0.952 | 0.98 |