**SUPPLEMENTARY MATERIALS**

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

Adi Darmawan 1,\*, Setyo Sulaksono 1, Muhamad Samsul Arifin 1, Hasan Muhtar 1, Sriyanti 1

1 Department of Chemistry, Diponegoro University, Tembalang, Semarang 50275, Indonesia

\* Corresponding author: Tel: +62-822-2121-9817, email: [adidarmawan@live.undip.ac.id](mailto:adidarmawan@live.undip.ac.id)

|  |  |  |  |
| --- | --- | --- | --- |
| 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

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Isotherm Model | Linear form equation | Figure axis | Correlation coefficient (r) | | | |  | |  |
| Clay | Clay + EtOH | Ti/Clay | Ni-Ti/Clay | | Co-Ti/Clay | |
| Langmuir |  | 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 = 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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sampel | Linear form equation | Figure axis | Correlation coefficient (r) | | | | |
| Clay | Clay + EtOH | Ti/Clay | Ni-Ti/Clay | Co-Ti/Clay |
| Pseudo-first-order |  | vs | 0.999 | 0.999 | 0.999 | 0.999 | 0.999 |
| Pseudo-second-order |  | vs t | 0.944 | 0.954 | 0.985 | 0.952 | 0.98 |