**Supplementary information**



**Figure S1: EDS of GO-Br**

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**Figure S2: 13C CP MAS NMR spectrum**



**Figure S3: Point of zero charge (pH PZC) for GO-GLU 100.**

**(a)**

  

**(b)**

**Figure S4: The cycles of reusability for TFN-3; MB (a) and MO (b).**

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**(b)**

**(a)**

**Figure S5: TFC and TFN-3 membranes application in real water remediation for MB (a) and MO (b).**

**Table S1: Comparison of Dye Separation Performance between GO-GLU TFN with Existing Studies.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Membrane** | **Loading concentration (wt%)** | **Dye** | **Permeability** | **Dye rejection (%)** | **Reference** |
| GO-TETA TFN  | 0.03 wt% (GO-TETA) | direct red congo red | 73 L/m2h | 99.6 |  [1] |
| f-GO PSU | 2 wt%(GO-aminated heterocyclic compound; f-GO) | Congo redMethylene blue | ~8 L/m2h | >99 |  [2] |
| GO-TFN | 10 mL (1 ppm GO solution) | Disperse Blue 1 | 40 L/m2h.bar | 99.97 |  [3] |
| MTFN | 0.2 wt%(rGO@TiO2@Ag) | rose bengal | 52 L/m2h | 98 |  [4] |
| TFN-AA/GO | 0.03 g/m2 (AA-functionalized GO)  | Rhodamine BAcid red 1Rose bengal | 11.34 L/m2h.bar | >98 |  [5] |
| PDA-rGOC3/HPAN | 0.16 wt%(rGOC) | Reactive blue 2 | 22.8 L/m2h.bar | 99.4 |  [6] |
| CSGO-PEBA/PES | * 1. wt%

1 wt%(CSGO) | Malachite green | 17.068 L/m2h8.58 L/m2h | 98.5499.63 |  [7] |
| PA@GO-60 | 60 mg SA(GO/SA) | Trypan blue |  75.7 L/m2h.bar | 99.8 |  [8] |
| TFN-3 | 0.10 wt% (GO-GLU 100) | MBMO | 14.11 L/m2h | 99.1867.18 | This study |

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