# Supporting Information

## Functionalized graphene sheets embedded chitosan nanocomposite membranes for ethanol and isopropanol dehydration *via* pervaporation

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**Table S-1: Relevant data on membrane performance for IPA-water mixture.**

| Membrane Type | Feed water (%) | *ES* (%) | $J_w$ (Barrer) | $J_e$ (Barrer) | Total permeability (Barrer) | $\alpha_{ij}$ | $D_w \times 10^{13}$ ($m^2s^{-1}$) | $D_{IPA} \times 10^{16}$ ($m^2s^{-1}$) |
|---|---|---|---|---|---|---|---|---|
| Nascent CS | 10 | 22 | 78 | 0.20 | 78 | 381 | 3.50 | 11 |
| | 20 | 30 | 93 | 0.33 | 94 | 283 | 4.68 | 19 |
| | 30 | 36 | 109 | 0.61 | 110 | 178 | 6.37 | 42 |
| | 40 | 44 | 125 | 0.88 | 126 | 142 | 8.66 | 71 |
| CS-1 | 10 | 28 | 87 | 0.07 | 88 | 1209 | 3.84 | 4 |
| | 20 | 34 | 102 | 0.15 | 102 | 681 | 4.97 | 8 |
| | 30 | 39 | 116 | 0.33 | 117 | 357 | 6.51 | 21 |
| | 40 | 47 | 137 | 0.62 | 138 | 223 | 9.07 | 48 |
| CS-2 | 10 | 34 | 101 | 0.03 | 101 | 3221 | 4.39 | 1 |
| | 20 | 39 | 120 | 0.22 | 121 | 538 | 5.88 | 10 |
| | 30 | 43 | 135 | 0.45 | 136 | 298 | 7.53 | 23 |
| | 40 | 50 | 148 | 0.71 | 149 | 211 | 9.67 | 42 |
| CS-2.5 | 10 | 36 | 103 | 0.02 | 103 | 7711 | 4.49 | 0.6 |
| | 20 | 41 | 125 | 0.18 | 125 | 725 | 6.10 | 9 |
| | 30 | 45 | 144 | 0.37 | 145 | 396 | 8.03 | 24 |
| | 40 | 52 | 157 | 0.55 | 157 | 283 | 10.17 | 42 |
| CS-3 | 10 | 38 | 114 | 0.04 | 115 | 4202 | 5.00 | 1 |
| | 20 | 44 | 134 | 0.19 | 135 | 703 | 6.56 | 11 |
| | 30 | 48 | 153 | 0.40 | 154 | 382 | 8.55 | 26 |
| | 40 | 54 | 175 | 0.65 | 176 | 269 | 11.37 | 50 |

**Table S-2: Relevant data on membrane performance for EtOH-water mixture.**

| Membrane Type | Feed water (%) | *ES* (%) | $J_w$ (Barrer) | $J_e$ (Barrer) | Total permeability (Barrer) | $\alpha_{ij}$ | $D_w \times 10^{13}$ ($m^2s^{-1}$) | $D_{IPA} \times 10^{15}$ ($m^2s^{-1}$) |
|---|---|---|---|---|---|---|---|---|
| Nascent CS | 10 | 19 | 54 | 0.23 | 54 | 237 | 2.48 | 12 |
| | 20 | 24 | 64 | 0.31 | 64 | 207 | 3.27 | 18 |
| | 30 | 29 | 79 | 0.43 | 80 | 182 | 4.61 | 29 |
| | 40 | 34 | 102 | 0.60 | 103 | 171 | 6.93 | 47 |
| CS-1 | 10 | 23 | 71 | 0.14 | 72 | 493 | 3.18 | 7 |
| | 20 | 28 | 81 | 0.19 | 82 | 435 | 4.03 | 11 |
| | 30 | 32 | 93 | 0.27 | 94 | 352 | 5.24 | 17 |
| | 40 | 36 | 109 | 0.38 | 110 | 288 | 7.08 | 29 |
| CS-2 | 10 | 26 | 79 | 0.14 | 79 | 547 | 3.49 | 6 |
| | 20 | 30 | 87 | 0.24 | 88 | 360 | 4.31 | 10 |
| | 30 | 34 | 101 | 0.34 | 101 | 298 | 5.62 | 16 |
| | 40 | 39 | 118 | 0.50 | 119 | 235 | 7.66 | 28 |
| CS-2.5 | 10 | 29 | 84 | 0.07 | 84 | 1093 | 3.68 | 4 |
| | 20 | 32 | 90 | 0.18 | 90 | 510 | 4.42 | 9 |
| | 30 | 36 | 107 | 0.28 | 107 | 379 | 6.00 | 18 |
| | 40 | 42 | 123 | 0.39 | 123 | 318 | 7.94 | 29 |
| CS-3 | 10 | 32 | 97 | 0.15 | 97 | 624 | 4.31 | 8 |
| | 20 | 34 | 106 | 0.23 | 106 | 462 | 5.22 | 13 |
| | 30 | 38 | 117 | 0.32 | 117 | 369 | 6.52 | 20 |
| | 40 | 44 | 132 | 0.45 | 133 | 296 | 8.55 | 34 |