Supplementary Material

A facile preparation of ambient pressure dried hydrophilic silica aerogels and their application in aqueous dye removal

Xianghua Yanga, \*, Zhixu Wua, Haifeng Chena, Qixuan Dua, Lin Yua, Ruiyang Zhangb, Ying Zhoub, \*

## a Key Laboratory of Clean Chemistry Technology of Guangdong Regular Higher Education Institutions,

## School of Chemical Engineering and Light Industry,

## Guangdong University of Technology,

## Guangzhou, 510006

## b State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation,

## Southwest Petroleum University,

## Chengdu, 610500



**Figure S1** Photographs of hydrophobicity/hydrophilicity of S6 (Mg2+) and S7 (TMCS) sample.

**Table S1** Dynamic parameters for adsorption of RhB or MB onto SAs samples.

Pseudo-first-order

|  |  |  |
| --- | --- | --- |
| Sample | MB | RhB |
| qe (mg g−1) | k1 (min−1) | R2 | qe (mg g−1) | k1` (min−1) | R2 |
| S1 | $$3.77×10^{1}$$ | $$6.87×10^{-2}$$ | 0.8752 | 1.77 | $$5.18×10^{-2}$$ | 0.8263 |
| S2 | $$3.64×10^{1}$$ | $$4.95×10^{-2}$$ | 0.7500 | 2.91 | $$5.56×10^{-2}$$ | 0.6777 |
| S3 | $$1.07×10^{1}$$ | $$7.75×10^{-2}$$ | 0.8489 | 2.00 | $$7.67×10^{-2}$$ | 0.9905 |
| S4 | $$4.04×10^{1}$$ | $$8.36×10^{-2}$$ | 0.9571 | 2.55 | $$1.70×10^{-2}$$ | 0.8048 |
| S5 | $$3.87×10^{1}$$ | $$6.87×10^{-2}$$ | 0.9784 | 1.43 | $$7.20×10^{-2}$$ | 0.6205 |
| S6 | $$3.83×10^{1}$$ | $$4.17×10^{-2}$$ | 0.7174 | 2.81 | $$1.09×10^{-1}$$ | 0.7192 |
| S7 | 3.63 | $$5.60×10^{-2}$$ | 0.8184 | 0.68 | $$5.95×10^{-2}$$ | 0.5890 |

Pseudo-second-order

|  |  |  |
| --- | --- | --- |
| Sample | MB | RhB |
| qe (mg g−1) | k2 (gmg−1 min−1) | R2 | qe (mg g−1) | k2` (gmg−1 min−1) | R2 |
| S1 | $$3.77×10^{1}$$ | $$2.10×10^{-2}$$ | 0.9999 | 1.77 | $$4.36×10^{-2}$$ | 0.9718 |
| S2 | $$3.64×10^{1}$$ | $$1.42×10^{-2}$$ | 0.9990 | 2.91 | $$4.32×10^{-1}$$ | 0.9997 |
| S3 | $$1.07×10^{1}$$ | $$1.99×10^{-2}$$ | 0.9982 | 2.00 | $$1.40×10^{-1}$$ | 0.9995 |
| S4 | $$4.04×10^{1}$$ | $$9.80×10^{-3}$$ | 0.9999 | 2.55 | $$1.10×10^{-1}$$ | 0.9990 |
| S5 | $$3.87×10^{1}$$ | $$2.59×10^{-2}$$ | 0.9999 | 1.43 | $$2.00×10^{-1}$$ | 0.9982 |
| S6 | $$3.83×10^{1}$$ | $$4.97×10^{-2}$$ | 0.9999 | 2.81 | $$9.52×10^{-2}$$ | 0.9981 |
| S7 | 3.63 | \* | \* | 0.68 | $$4.39×10^{-2}$$ | 0.9379 |

Intra-particle diffusion

|  |  |  |
| --- | --- | --- |
| Sample | MB | RhB |
| qe (mg g−1) | kid (mg g−1 min−0.5) | R2 | qe (mg g−1) | kid` (mg g−1 min−0.5) | R2 |
| S1 | $$3.77×10^{1}$$ | $$6.81×10^{-1}$$ | 0.7700 | 1.77 | $$1.63×10^{-1}$$ | 0.7232 |
| S2 | $$3.64×10^{1}$$ | $$7.50×10^{-1}$$ | 0.7497 | 2.91 | $$3.49×10^{-2}$$ | 0.6378 |
| S3 | $$1.07×10^{1}$$ | $$4.61×10^{-1}$$ | 0.892 | 2.00 | $$7.96×10^{-2}$$ | 0.8645 |
| S4 | $$4.04×10^{1}$$ | $$1.23$$ | 0.8376 | 2.55 | $$9.93×10^{-2}$$ | 0.8558 |
| S5 | $$3.87×10^{1}$$ | $$5.23×10^{-1}$$ | 0.8168 | 1.43 | $$6.18×10^{-2}$$ | 0.6574 |
| S6 | $$3.83×10^{1}$$ | $$2.64×10^{-1}$$ | 0.8078 | 2.81 | $$1.28×10^{-1}$$ | 0.7389 |
| S7 | 3.63 | $$8.11×10^{-1}$$ | 0.8308 | 0.68 | $$7.87×10^{-2}$$ | 0.8792 |

\* represent the values of adsorption are negative.