

Figure S1. XRD of natural muscovite ^{S1}

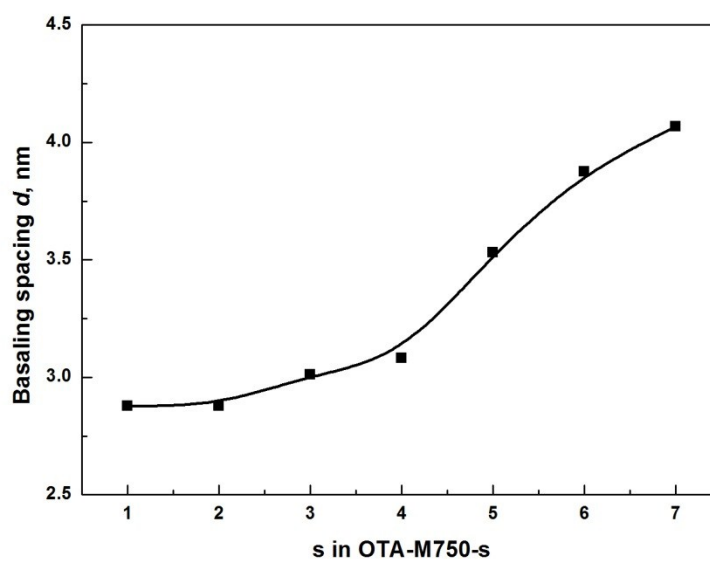


Figure S2. Basal spacing of OTA-M750-s

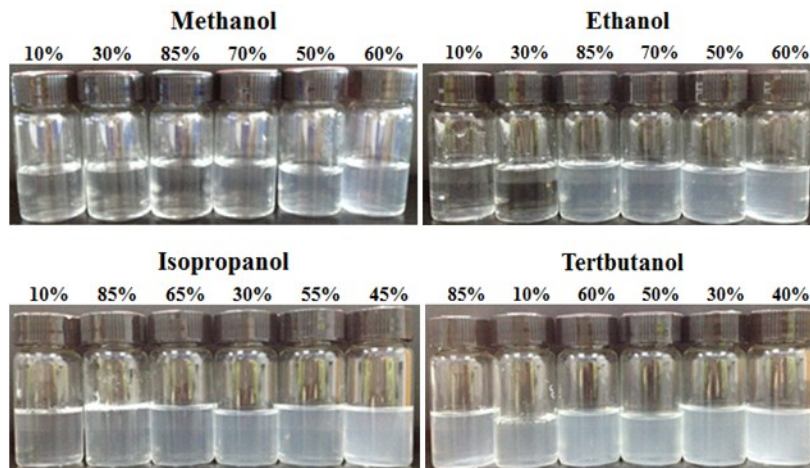


Figure S3. Exfoliated OTA-M750-7 in alcohol/water mixtures with different alcohol concentrations. The suspensions were stable for at least 2 months

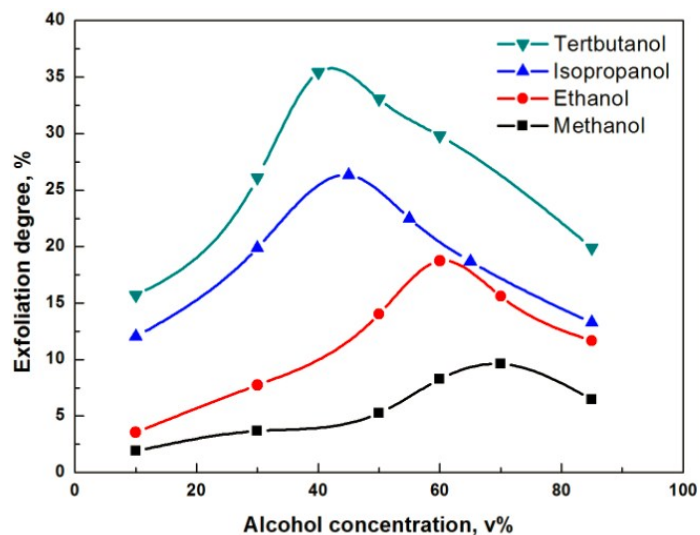


Figure S4. Exfoliation degree of OTA-M750-7 as a function of alcohol concentration in volume percentage

Table S1 Chemical composition of muscovite

K(%)	Na(%)	Ca(%)	Mg(%)	Fe(%)	Si(%)	Al(%)	Sn(%)	Ti(%)	O(%)	Others(%)	Loss on ignition
5.873	0.345	0.345	0.173	1.843	15.950	13.646	0.127	0.081	59.123	1.487	1.007

Note: loss on ignition was obtained from thermogravimetric analysis in the range from room temperature to 1100°C.

Table S2 Exfoliation degree of OTA-M750-s in 40% tertbutanol /water mixture

Sample	Absorbance of suspension before centrifugation	Absorbance of supernatant after centrifugation	Exfoliation degree (%)
OTA-M750-1	1.254	0.087	6.9378

OTA-M750-2	1.255	0.091	7.2501
OTA-M750-3	1.257	0.107	8.5123
OTA-M750-4	1.258	0.138	10.9698
OTA-M750-5	1.258	0.284	22.5755
OTA-M750-6	1.260	0.375	29.7619
OTA-M750-7	1.263	0.447	35.3919

Table S3 Exfoliation degree of OTA-M750-7 in alcohol/water mixtures with different alcohol concentrations

Alcohol	Concentration (%)	Surface tension (mJ/m²)	Exfoliation degree (%)
Methanol	10	62.13	1.90093
	30	46.12	3.67287
	50	37.19	5.25938
	60	32.7	8.2623
	70	27.8	9.60533
	85	23.8	6.44117
Ethanol	10	51.46	3.54472
	30	35.69	7.73481
	50	28.55	14.0388
	60	26.11	18.73116
	70	25.44	15.6066
	85	23.65	11.66296
Isopropanol	10	50.08	12.00817
	30	31.52	19.89256
	45	25.57	26.33276
	55	24.84	22.49922
	65	24.55	18.69159
	85	23.16	13.26236
Tertbutanol	10	43.69	15.69507
	30	28.65	26.09925
	40	25.78	35.40773
	50	25.54	33.04248
	60	25.19	29.80453
	85	24.04	19.89893

Table S4 θ and basal spacing of sample OTA-M750-s

Sample	θ (°)	Basal spacing (nm)
OTA-M750-1	1.53	2.8784
OTA-M750-2	1.53	2.8786
OTA-M750-3	1.47	3.01
OTA-M750-4	1.43	3.0803
OTA-M750-5	1.25	3.5308

OTA-M750-6	1.14	3.8743
OTA-M750-7	1.09	4.0671

Bragg's equation:

$$n\lambda = 2d \sin \theta \quad \text{Eq. (S1)}$$

where d is the basal spacing, and λ is the wavelength of the incident X-ray beam, n is an integer, and θ is the diffraction angle.

References:

- S1. F. Friedrich, S. Heissler, W. Faubel, R. Nuesch, P.G. Weidler, Cu(II)-intercalated muscovite: An infrared spectroscopic study, *Vibrational Spectroscopy*, 2007, **43**: 427-434.