Supplementary Information

For

Characterizations of nanoporous structures: from three dimensions to two dimensions

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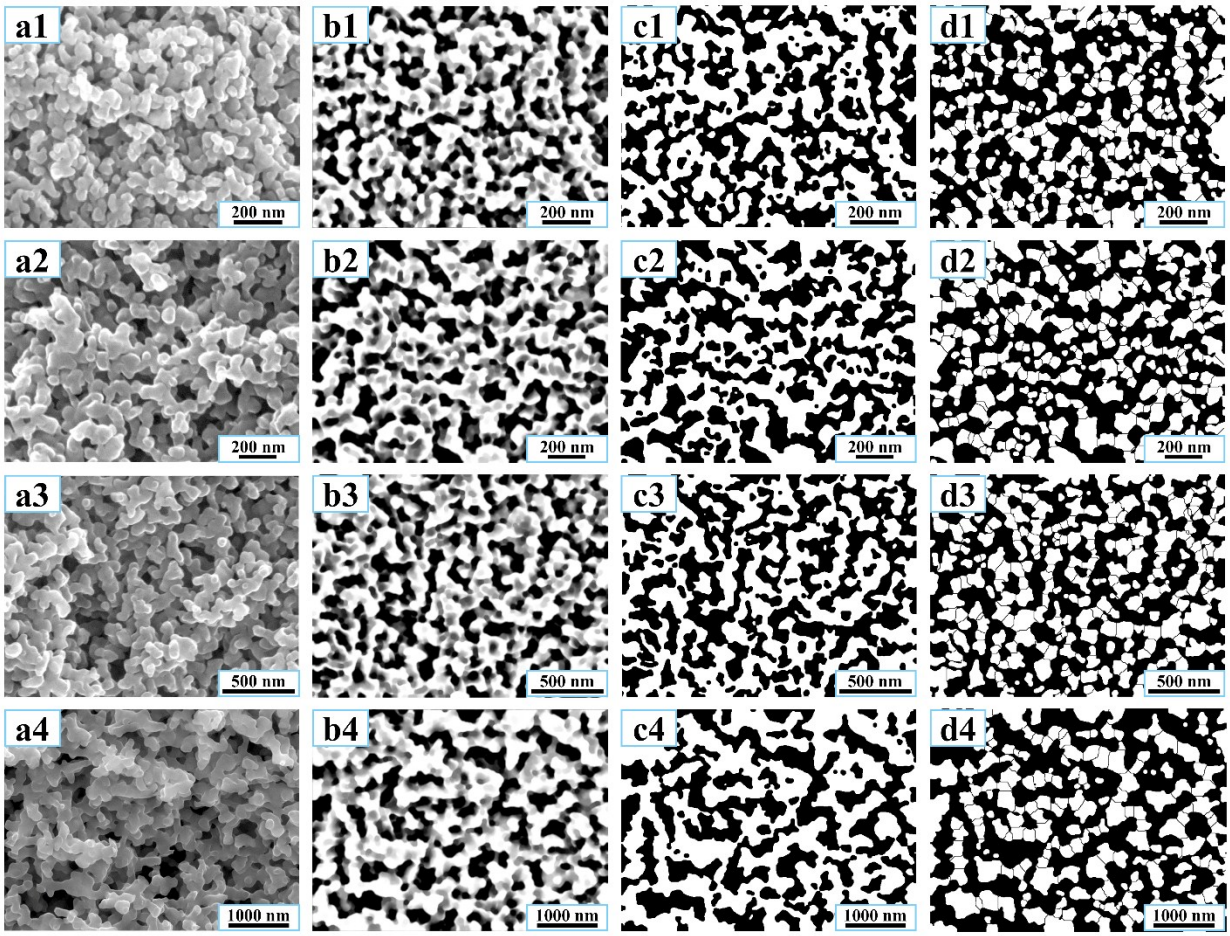

Fig.S1. Quantitative SEM image analysis of nanoporous silica. (a1)-(a4) Original SEM images with the average pore size of (a1) 50 nm, (a2) 85 nm, (a3) 120 nm and (a4) 315 nm, respectively. (b1)-(b4) Enhanced images using the image filtering techniques. (c1)-(c4) Binary images converted from the enhanced images. (d1)-(d4) Segmented pore particles using the Watershed method on the inversed binary images.

Table S1. Quantitative SEM image analysis results of nanostructures in literature

Fig.S2	a1	a2	a3	a4
Source	Ref. [1]	Ref. [2]	Ref. [3]	Brian A. Korgel
Material	Nanoporous alumina	Nanoporous alumina	Nanoporous titania	Gold nanorods (white color)
Correlation length (nm) (FFT method)	35	235	335	25
Average pore size (nm) (Watershed method)	25±5	155±30	215±40	30±10*
Porosity (%)	39.9	39.8	29.0	44.9**
Fractal dimension	1.057±0.007	1.059±0.014	1.061±0.014	1.072±0.024

* Average rod size of gold nanorods
** Percentage of gold nanorods in the image box

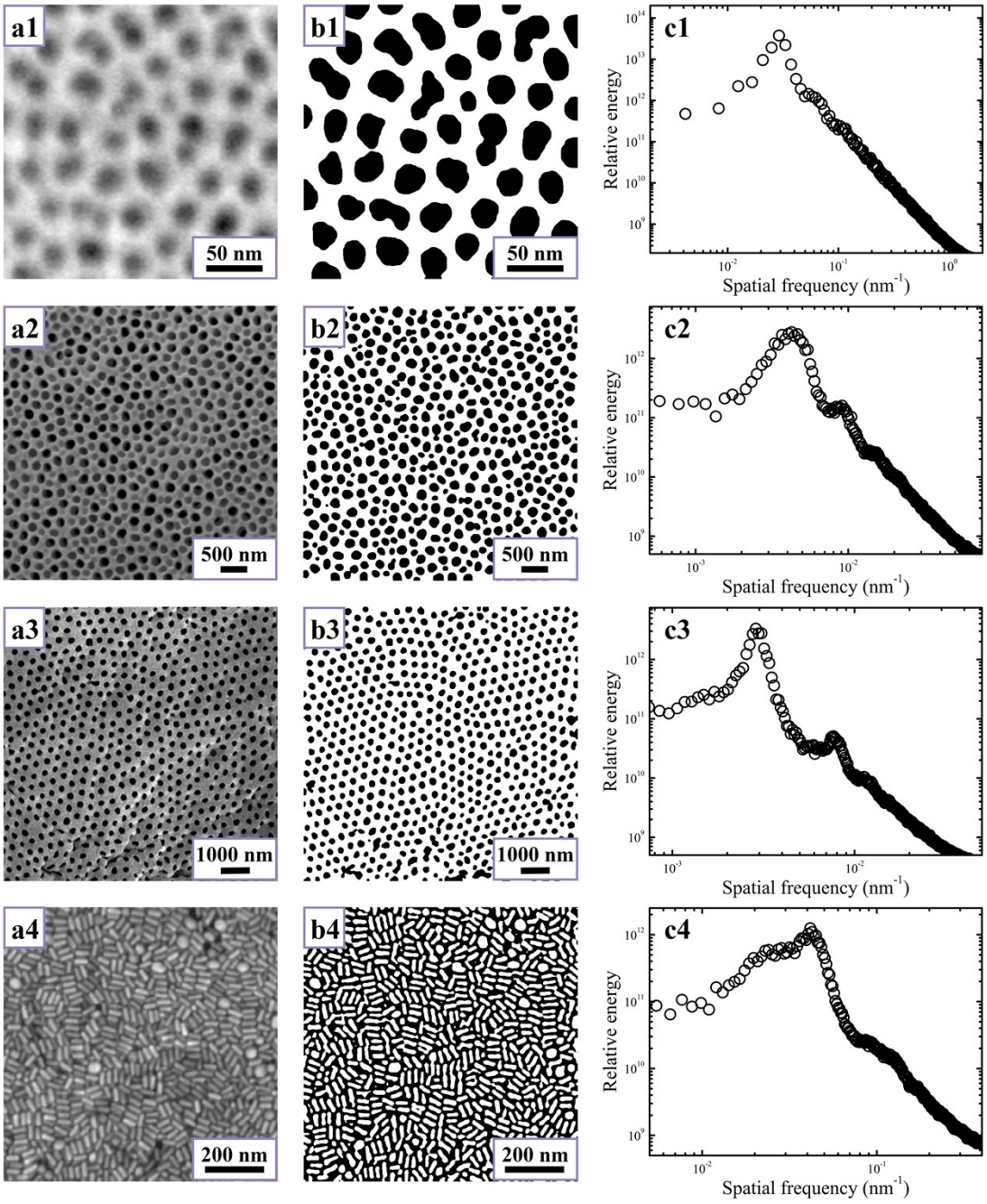

Fig.S2. Quantitative SEM image analysis of nanostructured materials. (a1)-(a4) Original SEM images: (a1) Nanoporous alumina (Reproduced from Ref. [1] with permission from the Royal Society of Chemistry); (a2) Nanoporous alumina (Reproduced from Ref. [2] with permission from the Elsevier); (a3) Nanoporous titania (Reproduced from Ref. [3] with permission from the Nature Publishing Group); (a4) Gold nanorods (Reproduced with permission from Dr. Brian A. Korgel). (b1)-(b4) SIP enhanced images. (c1)-(c4) Rotational averages of the Fourier energy spectrums. The peaks in the Fourier energy spectrums indicate the correlation lengths of the short-range orders in the nanostructures.

References

1. F. Casanova, C. Chiang, E., C.-P. Li, I. Roshchin, V., A. Ruminski, M., M. Sailor, J. and I. Schuller, K., *EPL*, 2008, **81**, 26003.
2. D. S. Raimundo, P. B. Calíope, D. R. Huanca and W. J. Salcedo, *Microelectronics Journal*, 2009, **40**, 844-847.
3. A. Imhof and D. Pine, *Nature*, 1997, **389**, 948-951.