

†Electronic Supplementary Information for

Ordered Mesoporous Crystalline Aluminas from Self-Assembly of ABC Triblock Terpolymer–Butanol–Alumina Sols

Kwan Wee Tan,^a Hiroaki Sai,^a Spencer W. Robbins,^{ab} Jörg G. Werner,^{ab} Tobias N. Hoheisel,^a
Sarah A. Hesse,^{ab} Peter A. Beaucage,^a Francis J. DiSalvo,^b Sol M. Gruner,^{cd} Martin Murtagh,^a
and Ulrich Wiesner^{*a}

^a*Department of Materials Science and Engineering, Cornell University, Ithaca, New York 14853, USA.*

E-mail: ubw1@cornell.edu

^b*Department of Chemistry and Chemical Biology, Cornell University, Ithaca, New York 14853, USA.*

^c*Department of Physics, Cornell University, Ithaca, New York 14853, USA.*

^d*Cornell High Energy Synchrotron Source, Cornell University, Ithaca, New York 14853, USA.*

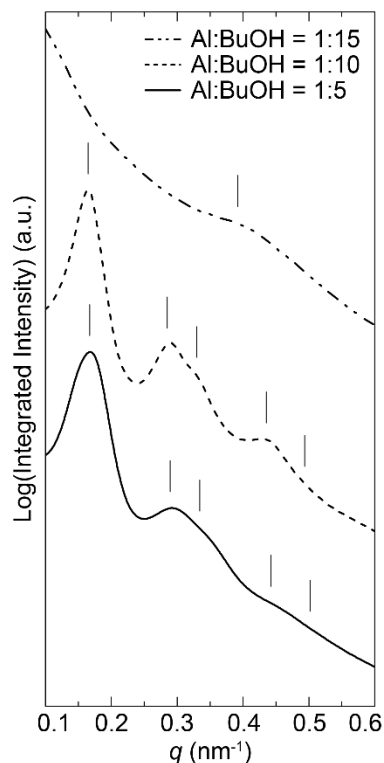


Fig. S1. Azimuthally integrated SAXS patterns of ISO- Al_2O_3 hybrids derived from different molar ratios of $\text{Al}:n\text{-BuOH}$ as indicated. The molar ratio of $\text{Al}(\text{O}^i\text{Bu})_3$ to HNO_3 was maintained at 1:2 for all of these samples. The data sets are offset vertically for clarity. Tick marks on the lowest (solid) and middle (dashed) curves correspond to the hexagonal ($p6mm$) lattice with $q^* = 0.167 \text{ nm}^{-1}$ and $q^* = 0.164 \text{ nm}^{-1}$, respectively. The top (dash-dotted) curve suggests micellar aggregate formation with $q^* = 0.392 \text{ nm}^{-1}$.

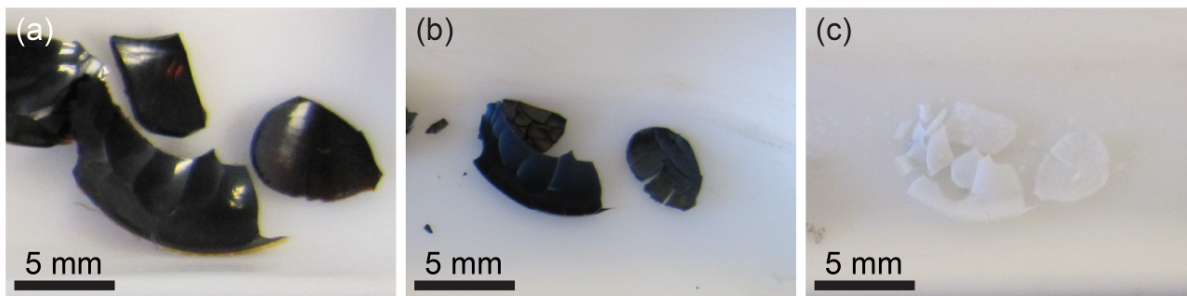


Fig. S2. Optical images of (a) ISO- Al_2O_3 hybrid, (b) MCA-C-1200 composite, and (c) all- Al_2O_3 MCA-CASH-1200 monolithic samples after carbon removal.

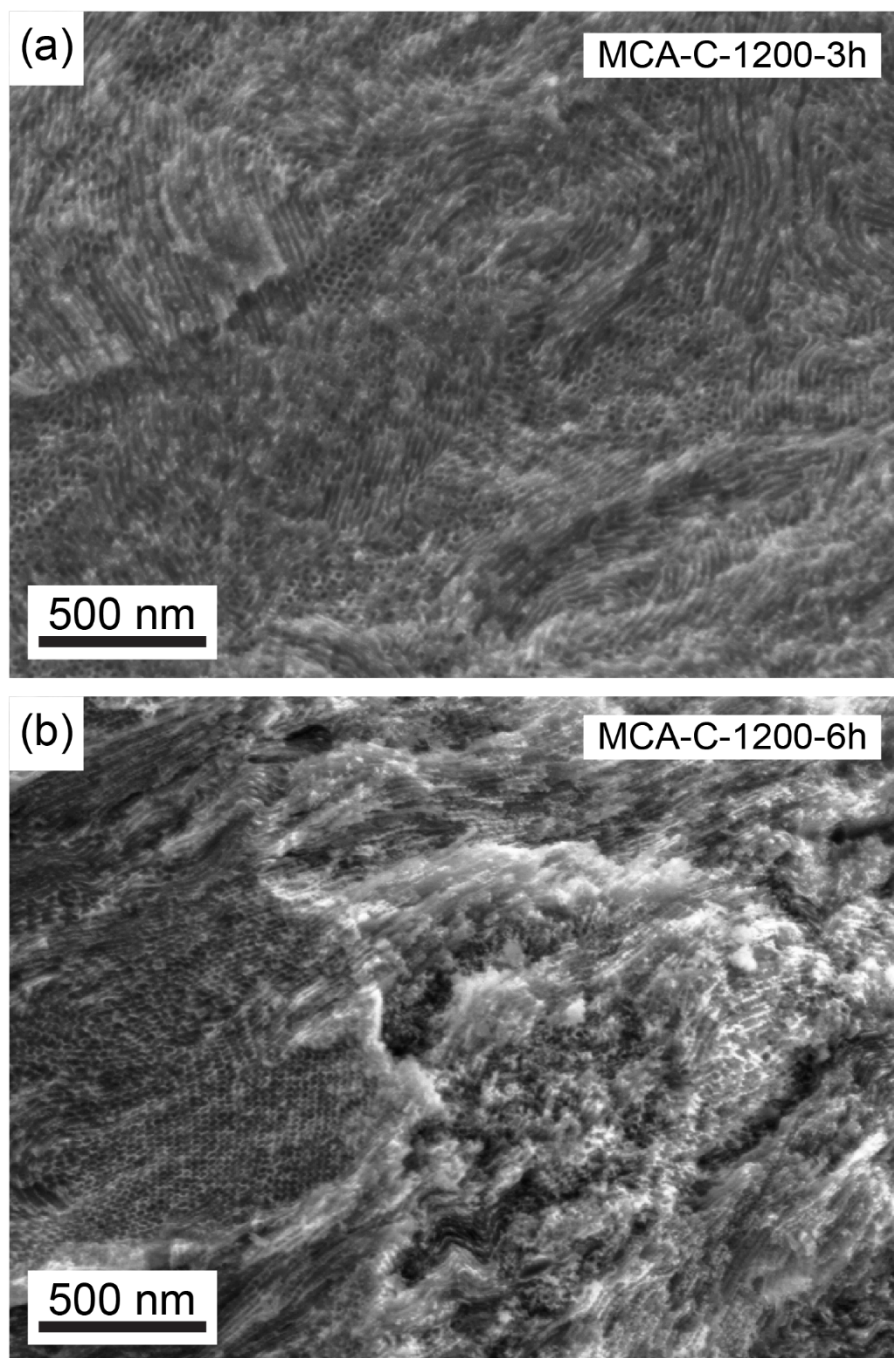


Fig. S3. Lower magnification SEM micrographs of (a) MCA-C-1200-3h and (b) MCA-C-1200-6h composites.

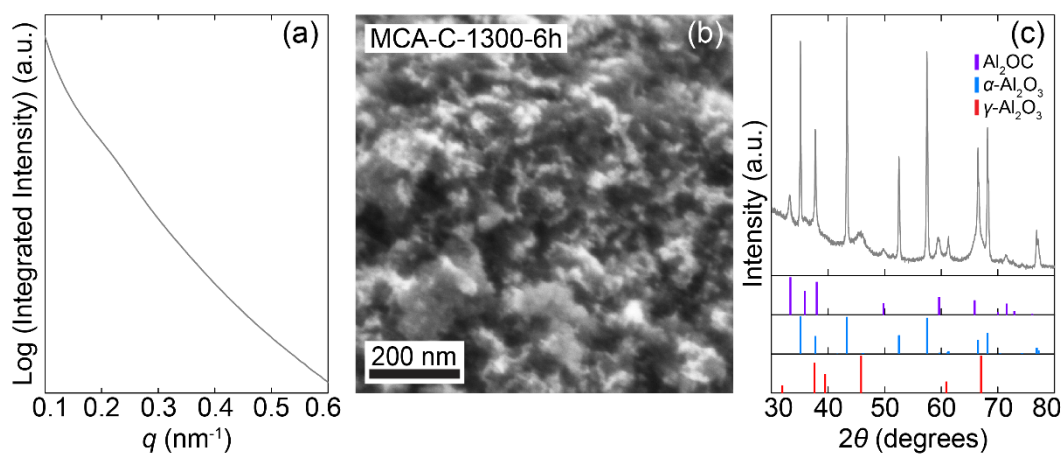


Fig. S4. (a) Azimuthally integrated SAXS pattern, (b) SEM micrograph, and (c) corresponding PXRD pattern of MCA-C-1300-6h composite. PXRD peak markings and relative intensities for Al_2OC (purple, PDF 01-072-3584), $\alpha\text{-Al}_2\text{O}_3$ (sky blue, PDF 04-004-2852), and $\gamma\text{-Al}_2\text{O}_3$ (red, PDF 00-010-0425) are shown in (c).

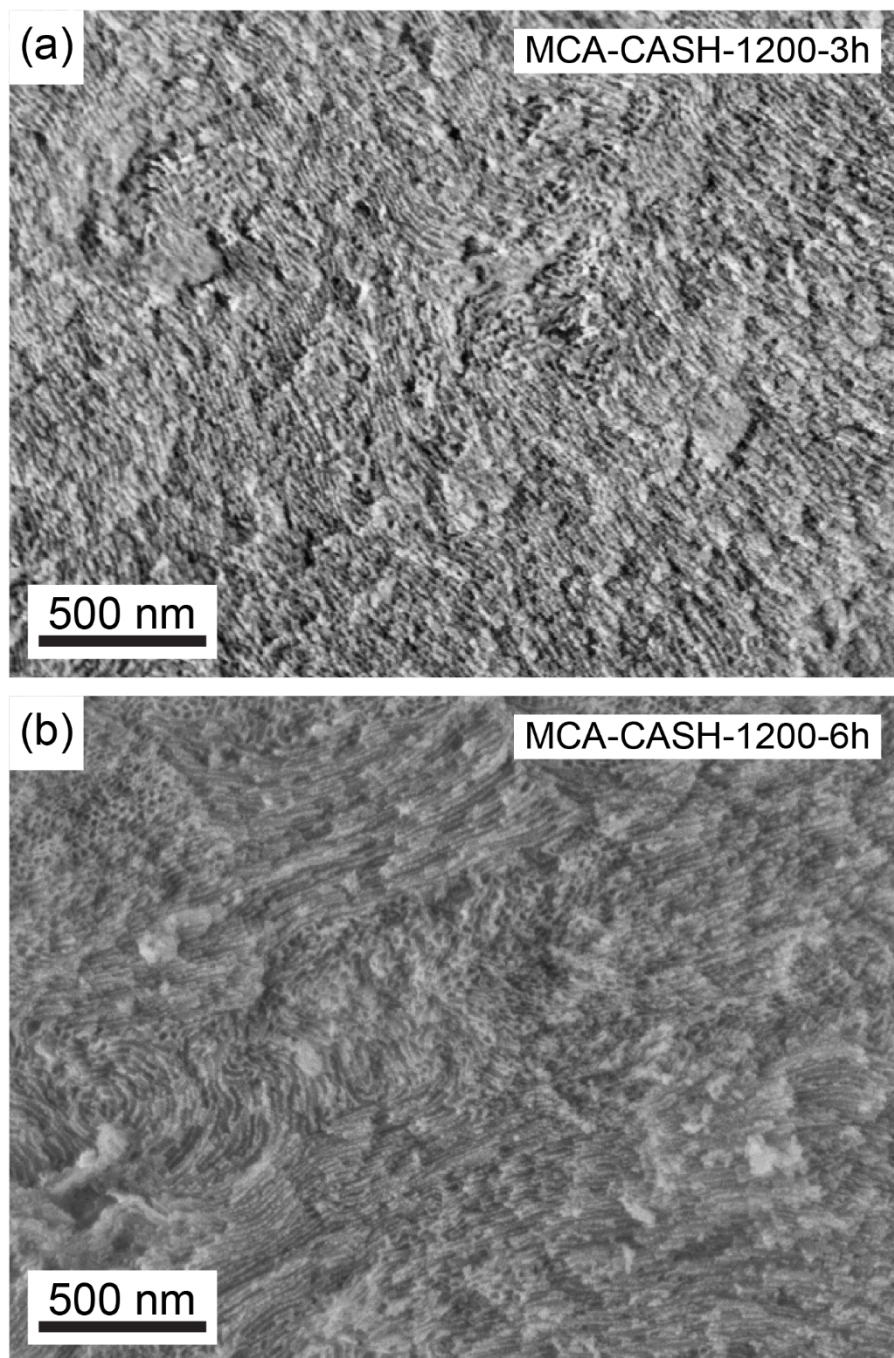


Fig. S5. Lower magnification SEM micrographs of all- Al_2O_3 samples after carbon removal: (a) MCA-CASH-1200-3h and (b) MCA-CASH-1200-6h.