

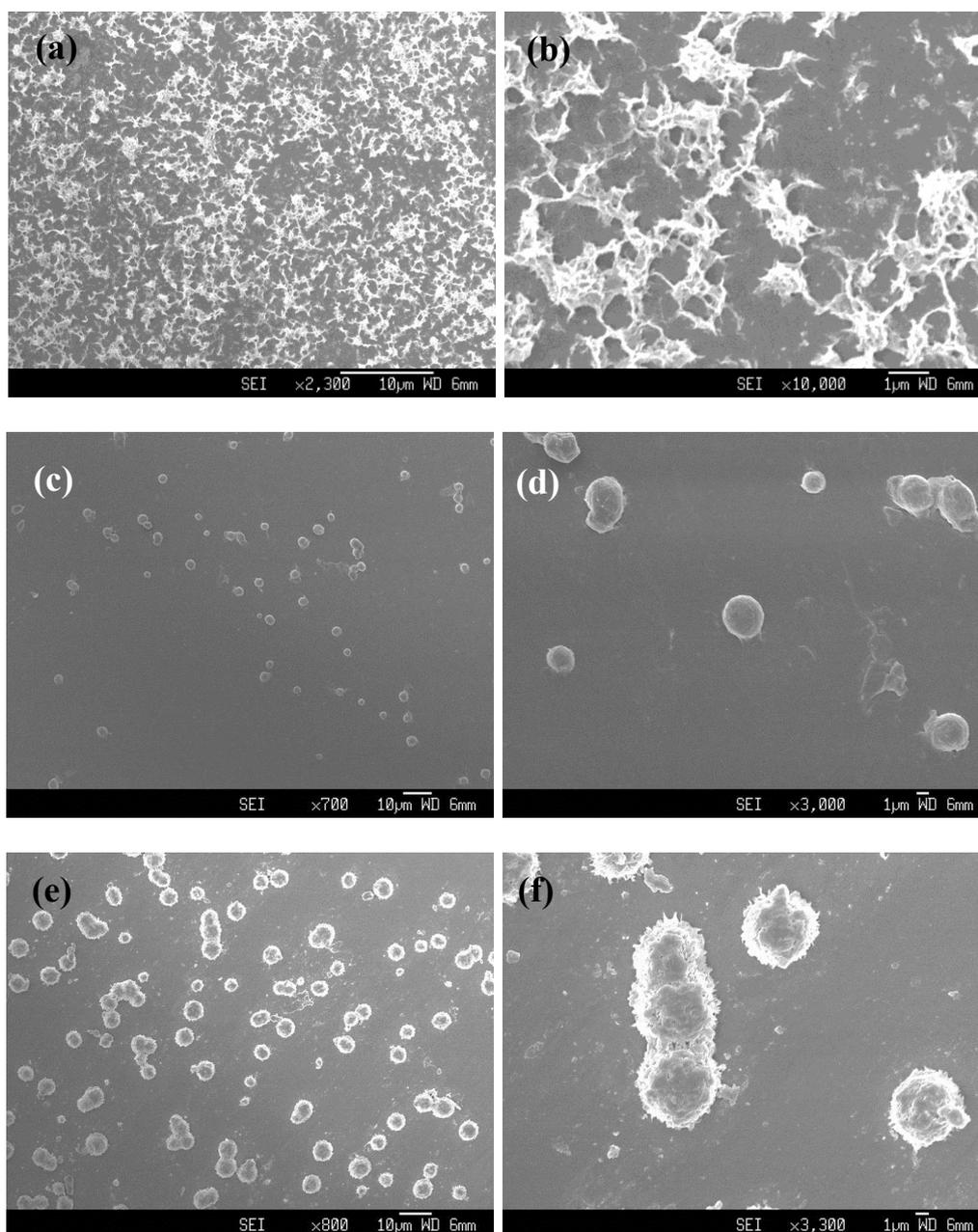
Electronic Supporting Information (ESI)

Hierarchical Assembly of Mesoporous ZnO Hemisphere Array and Hollow Microspheres for Concurrent Photocatalysis and Membrane Water Filtration

Jia Hong Pan, * Xiwang Zhang, Alan J. Du, Hongwei Bai, Jiawei Ng, and Darren Sun*

School of Civil and Environmental Engineering, Nanyang Technological University, Singapore 639798, Singapore

*E-mail: jhpan@ntu.edu.sg



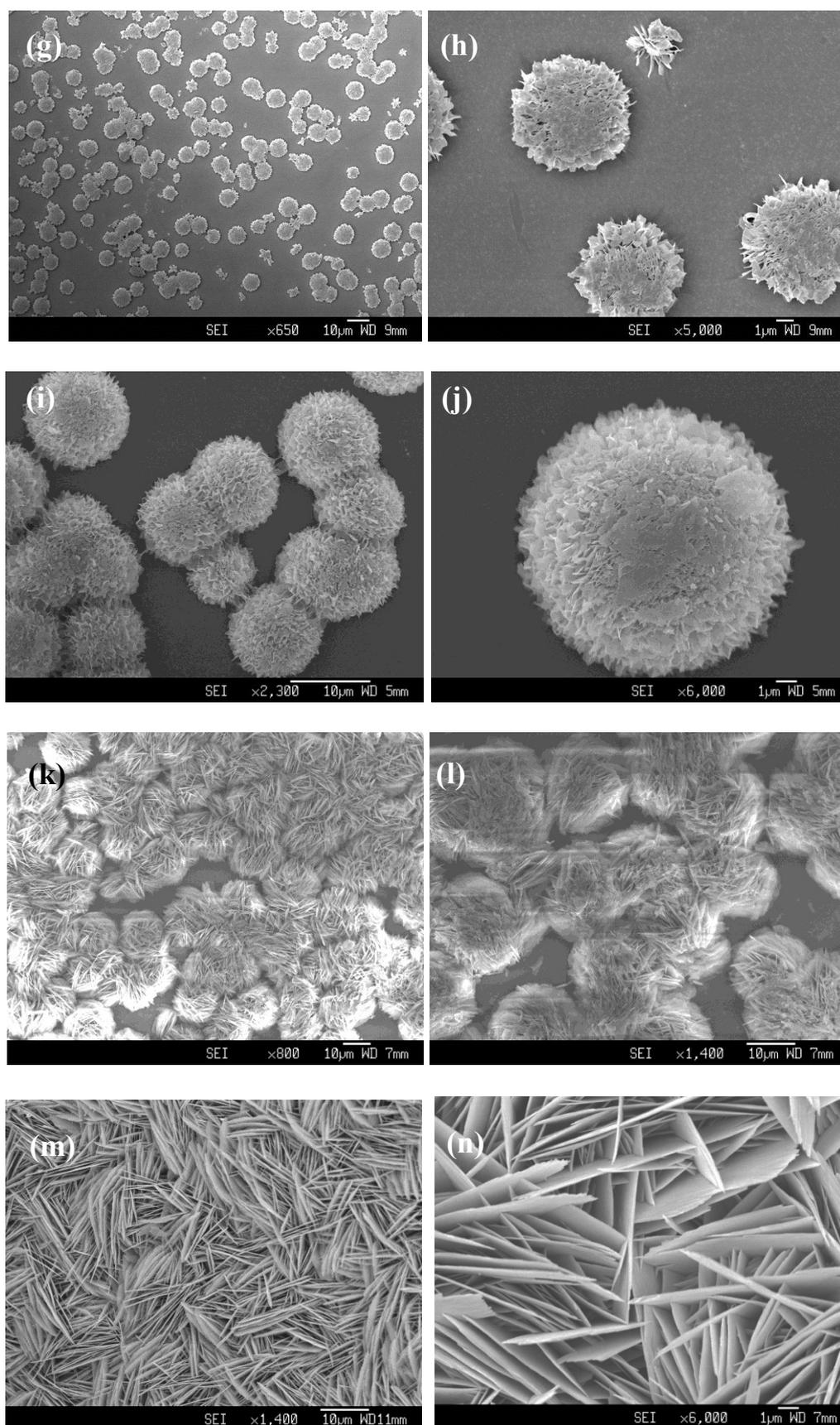


Fig. S1. SEM micrographs of $\text{Zn}_4\text{CO}_3(\text{OH})_6 \cdot \text{H}_2\text{O}$ (ZCHH) grown on substrates at different reaction times of 0.5 h (a,b), 1 h (c,d), 1.5 h (e,f), 2 (g,h), 4 h (i, j), 6 h (k, l), and 8 h (m, n). Figures on the right are the magnified versions of Figures on the left. **Note:** At the reaction

time of 0.5 h, the aqueous nutritive solution was still clear, and no observable precipitation presented. The glass slide, dried at 100 °C, was directly used for SEM measure without wash. The cooled ZCHH nucleus deposited on slide shows an ultrafine flake-like structure. This observation is consistent with the fact that ZCHH prefers to form layered molecular structure, a typical morphology of layered brucite-like minerals. For the synthesis of mesoporous ZnO microspheres, the ultrafine flake-like ZCHH nucleus in solution also act as the building blocks for the hierarchical assembly of ZCHH microspheres.

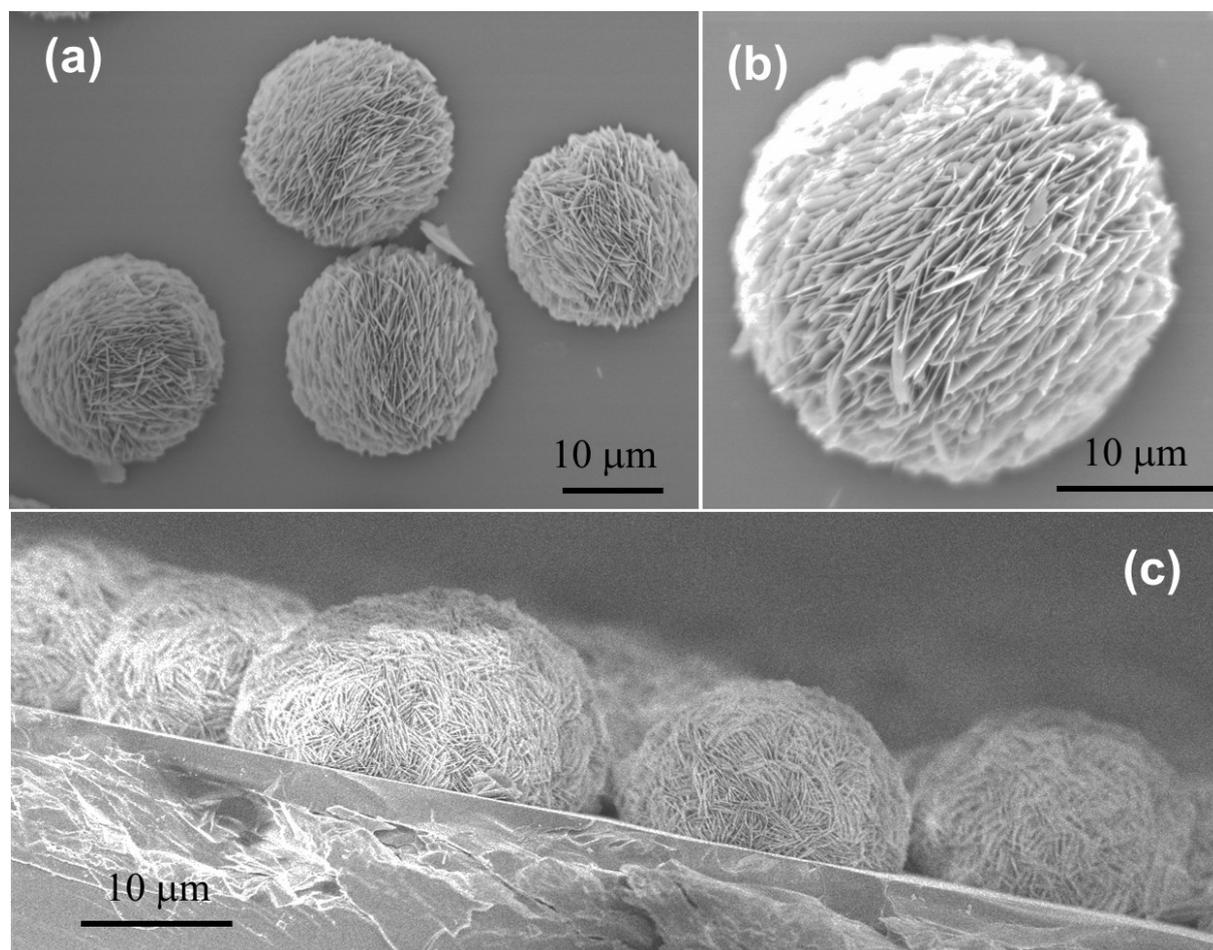


Fig. S2. Enlarged Figure for Fig. 3.

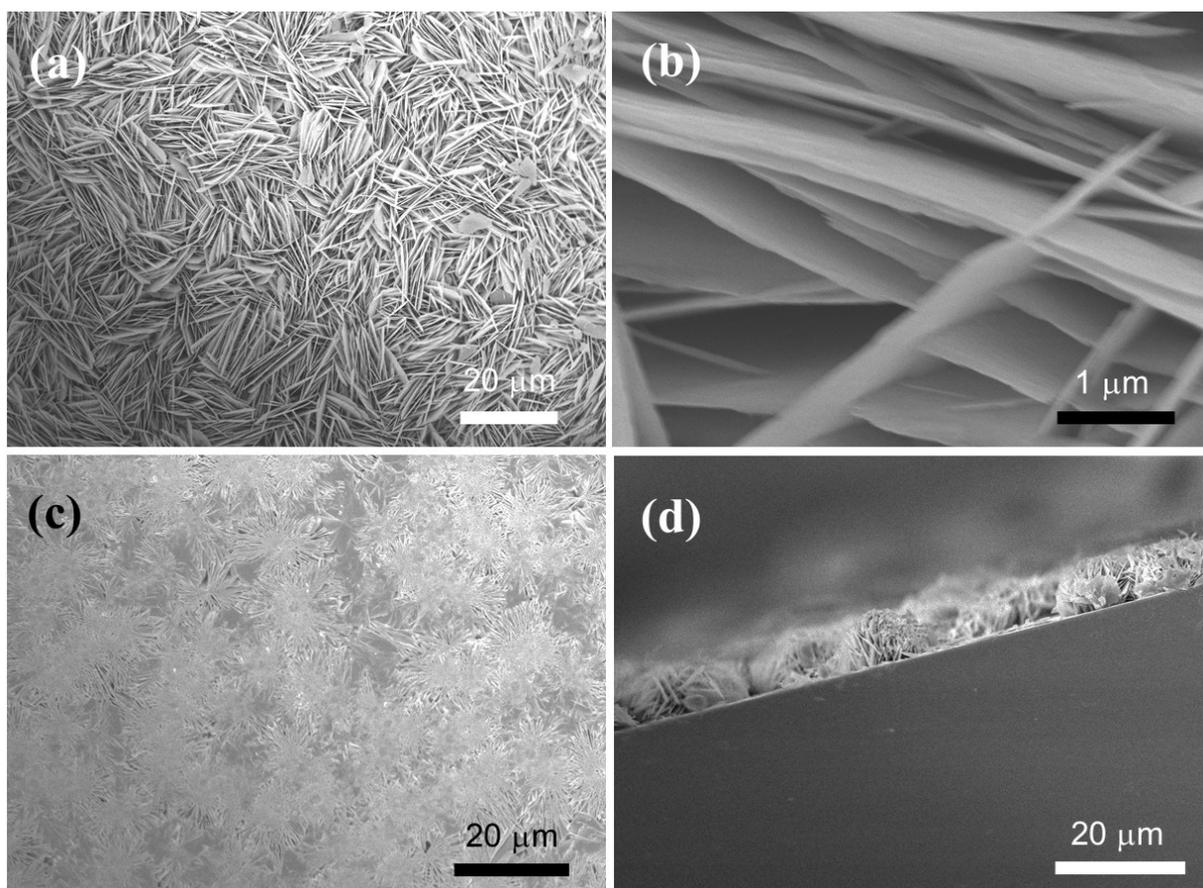


Fig. S3. Enlarged Figure for Fig. 4.

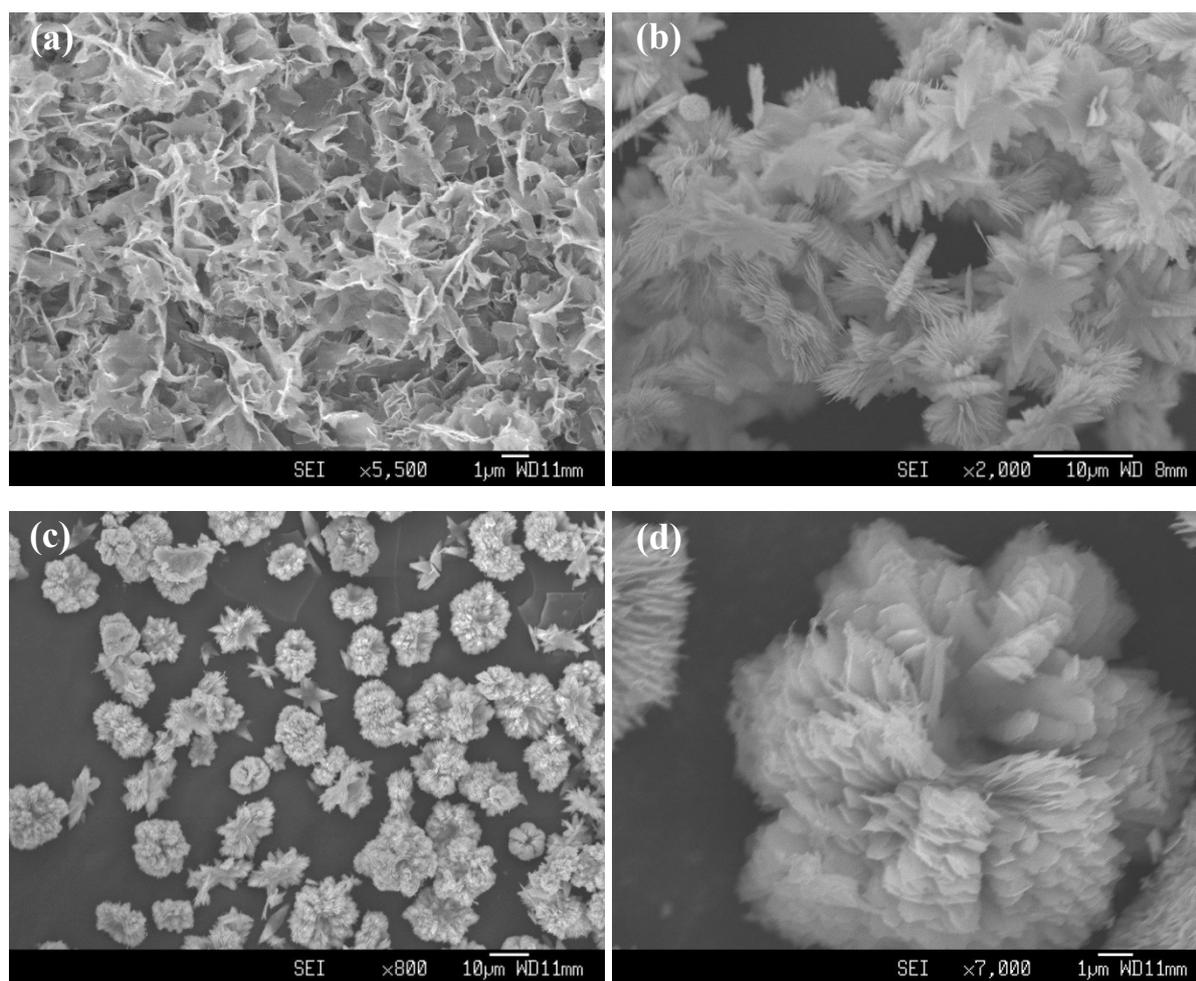


Fig. S4. SEM micrographs of ZnO derived from chemical bath at different hydrothermal reaction of 4 h (a), 8 h (b), and 12 h (c,d).