

# ADVANCED MATERIALS

## Supporting Information

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Template-Directed Directionally Solidified 3D Mesostructured  
AgCl–KCl Eutectic Photonic Crystals

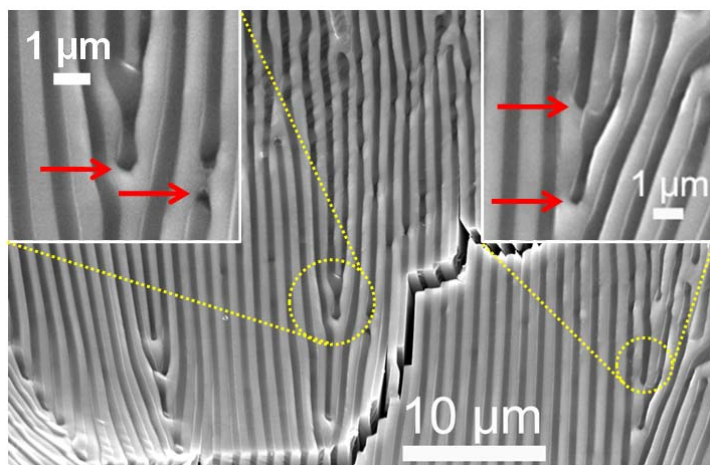
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Ha Seong Kim, Jinyun Liu, Chae-Ryong Cho, Jin Gu Kang,  
Ali Ramazani, Katsuyo Thornton,, and Paul V. Braun,*

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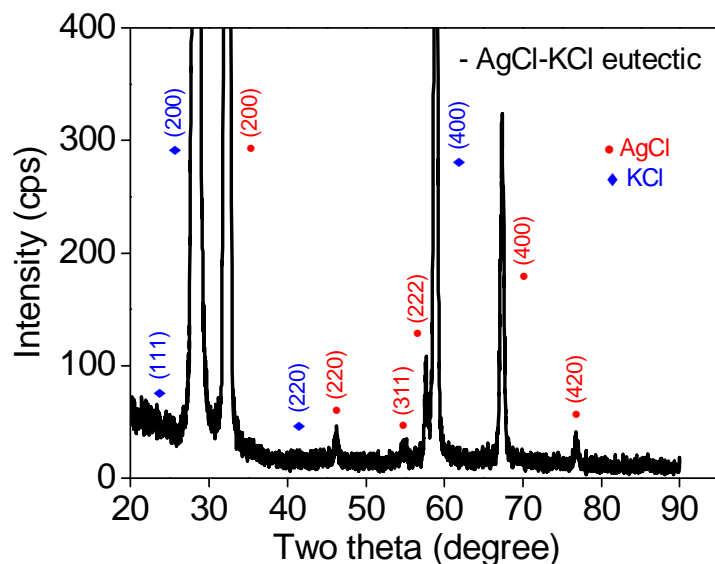
Supporting Information

### Template-Directed Directionally Solidified Three-Dimensionally Mesostructured AgCl-KCl Eutectic Photonic Crystals

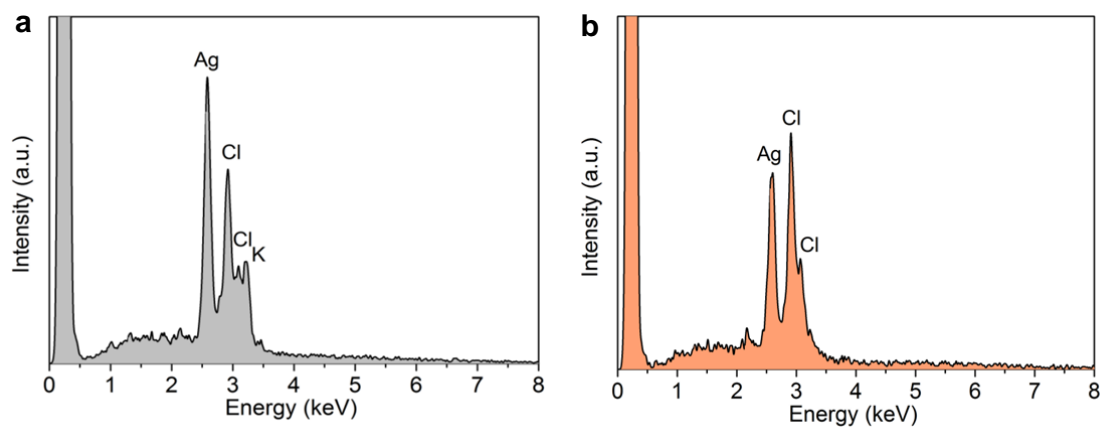
By Jinwoo Kim, Larry K. Aagesen, Jun Hee Choi, Jaewon Choi, Ha Seong Kim, Jinyun Liu, Chae-Ryong Cho, Jin Gu Kang, Ali Ramazani, Katsuyo Thornton\*, and Paul V. Braun\*



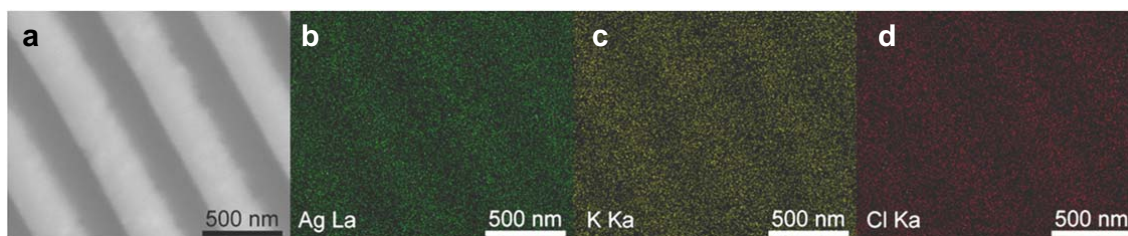
**Figure S1.** Cross section SEM image of the solidified AgCl-KCl eutectic. In the insets, the arrows indicate regions showing partially faceted growth of KCl.



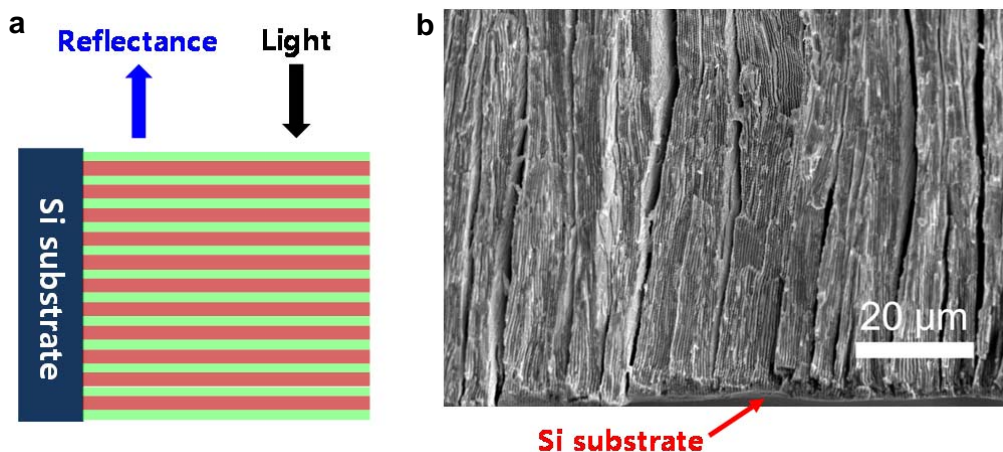
**Figure S2.** XRD spectrum of approximately 15  $\mu\text{m}$  thick as-solidified AgCl-KCl eutectic. Both AgCl (Fm3m,  $a=5.5491 \text{ \AA}$ , JCPDS file No.31-1238) and KCl (Fm3m,  $a=6.2917 \text{ \AA}$ , JCPDS file No.41-1476) peaks are observed.



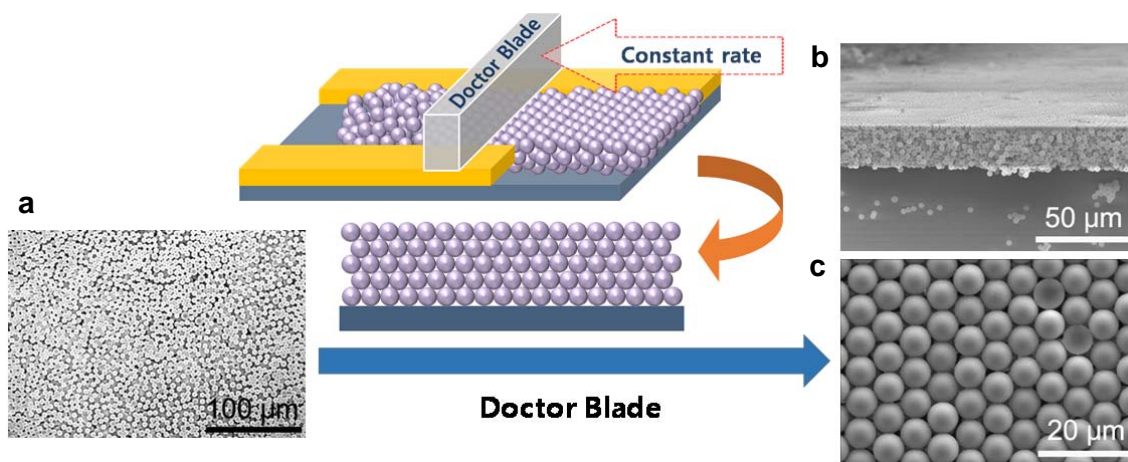
**Figure S3.** (a) EDX collected from this sample shows Ag, Cl, and K peaks. (b) EDX confirms the absence of K after KCl removal.



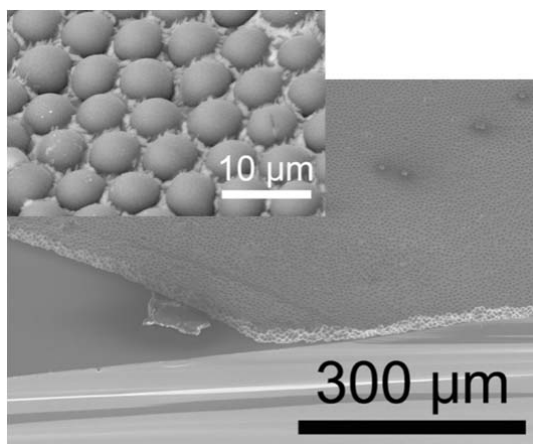
**Figure S4.** Cross section SEM image of as melted AgCl (bright)-KCl (dark) eutectic (a) and elemental mappings of (b) Ag L $\alpha$ , (c) K K $\alpha$ , and (d) Cl K $\alpha$ , respectively.



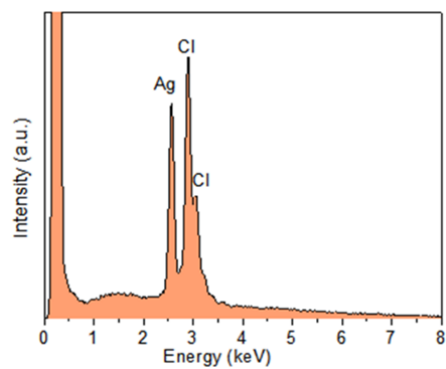
**Figure S5.** (a) Schematic illustration of the sample orientation respect to the normal incident light for FT-IR. (b) Lower magnification SEM image of AgCl-KCl eutectic grown on Si substrate.



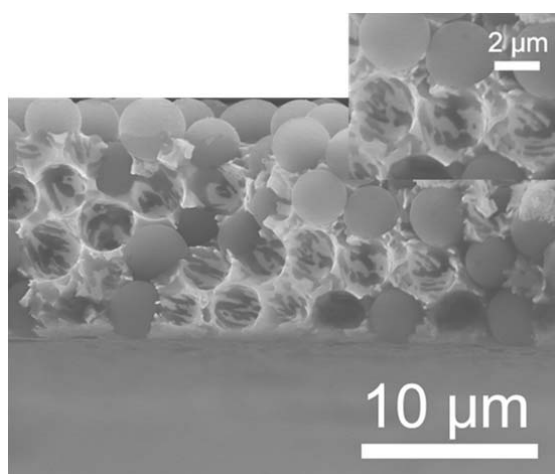
**Figure S6.** (a) SEM image of 6  $\mu\text{m}$  diameter colloidal particles cast on a Si substrate. Cross sectional (b) and plan view (c) SEM images of 6  $\mu\text{m}$  diameter silica opal template assembled using the doctor blade method. Schematic illustration shows the experimental procedure for assembling the 6  $\mu\text{m}$  diameter colloidal particles.



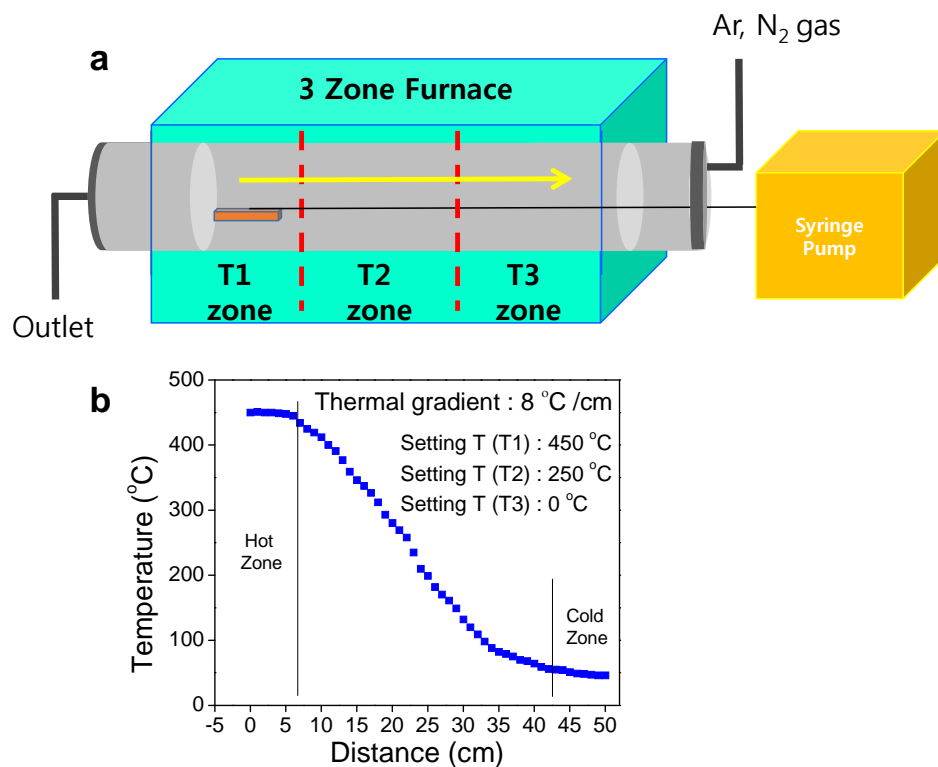
**Figure S7.** Angled view SEM image of AgCl-KCl eutectic infilled in 6  $\mu\text{m}$  silica opal template. The inset shows a higher magnification image of the AgCl-KCl eutectic infilled in 6  $\mu\text{m}$  silica opal template.



**Figure S8.** EDX spectrum of the 3D mesoporous inverse AgCl opal.



**Figure S9.** Cross sectional SEM image of 3D mesostructured AgCl-KCl eutectic grown in a template formed from a 3  $\mu\text{m}$  diameter silica template. The inset shows a higher magnification SEM of the templated eutectic.



**Figure S10.** (a) Schematic illustration of the experimental setup used for directional solidification and (b) temperature profile in the modified three zone furnace.