

Supporting Information:

**Direct Imaging the Layer-by-Layer Growth and Rod-Unit Repairing Defects of
Mesoporous Silica SBA-15 by Cryo-SEM**

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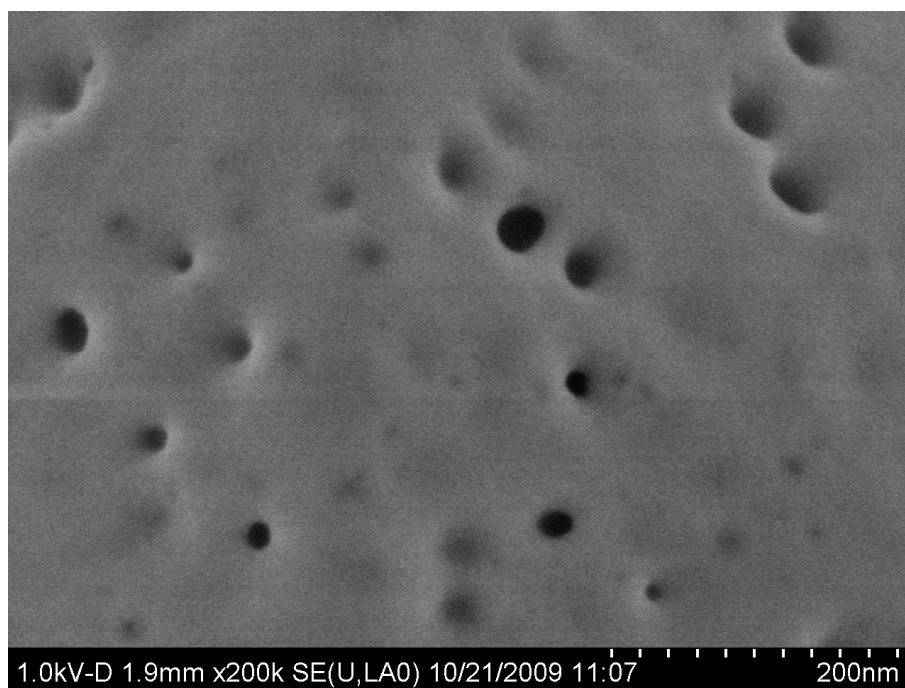


Figure S1. The cryo-SEM image of the specimen captured at 4.0 min after TEOS addition, showing the structure without well-defined mesophase and the hole-like feature.

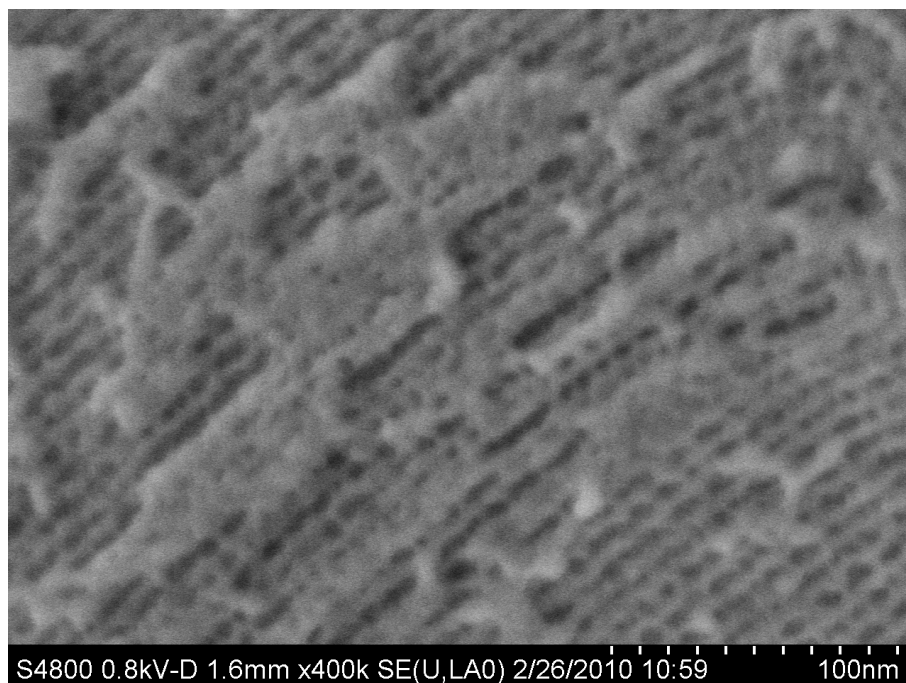


Figure S2. The high-resolution cryo-SEM image (magnification value: 400,000) of the specimen captured at 7.6 min after TEOS addition, showing both the defects and the “P123/silica” flocs existing on the surface of SBA-15 rods.

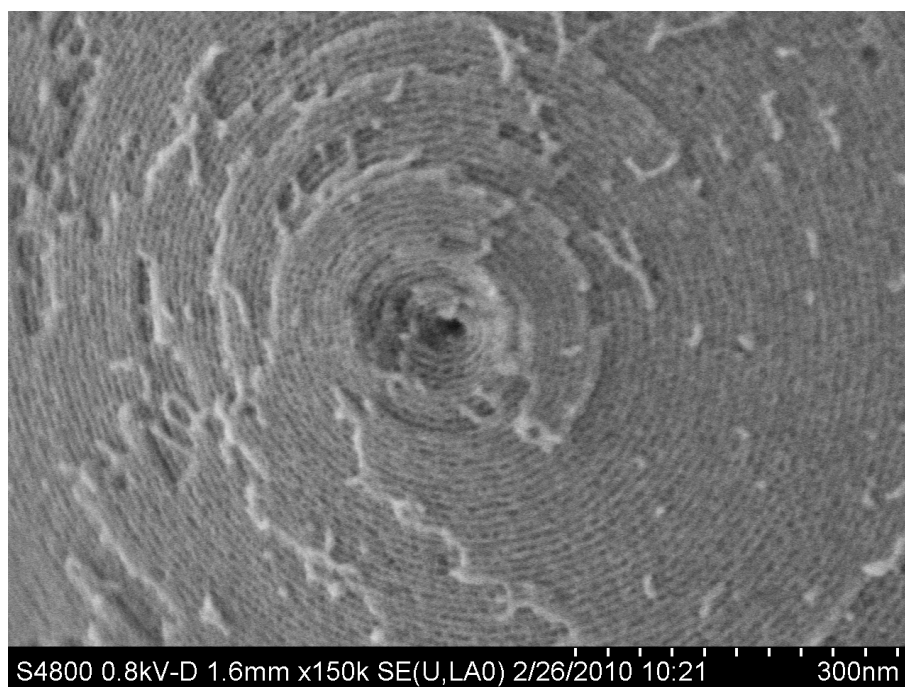


Figure S3. The cryo-SEM image of the specimen captured at 8.3 min after TEOS addition, showing the threadlike “P123/silica” flocs distributed on a terminal end of SBA-15 rods.

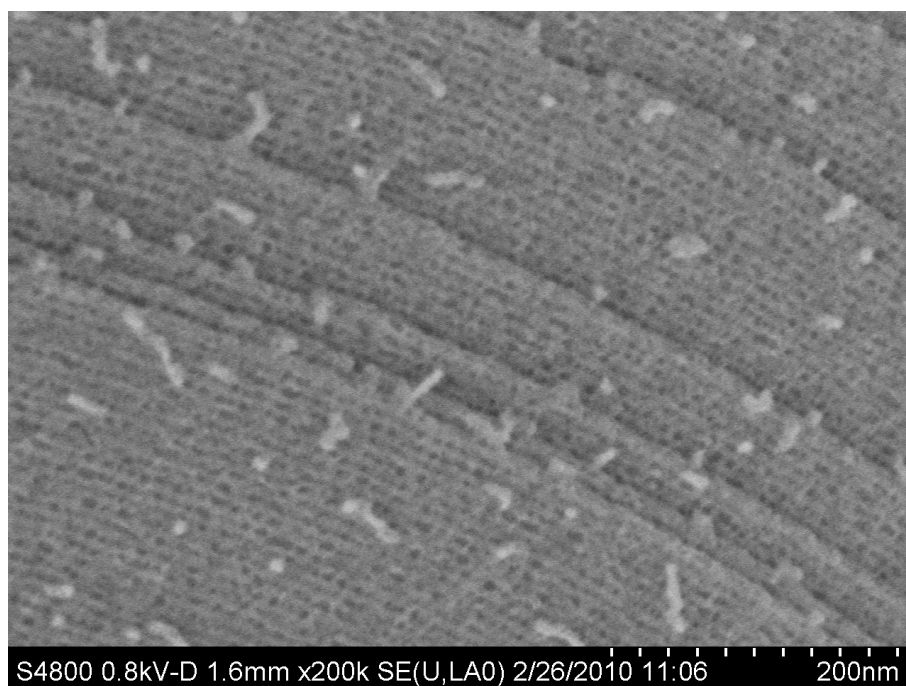


Figure S4. The cryo-SEM image of the specimen captured at 8.5 min after TEOS addition, showing the “P123/silica” repairing-units distributed on the surface of SBA-15 rods. The image also shows that the density of flocs is reduced.

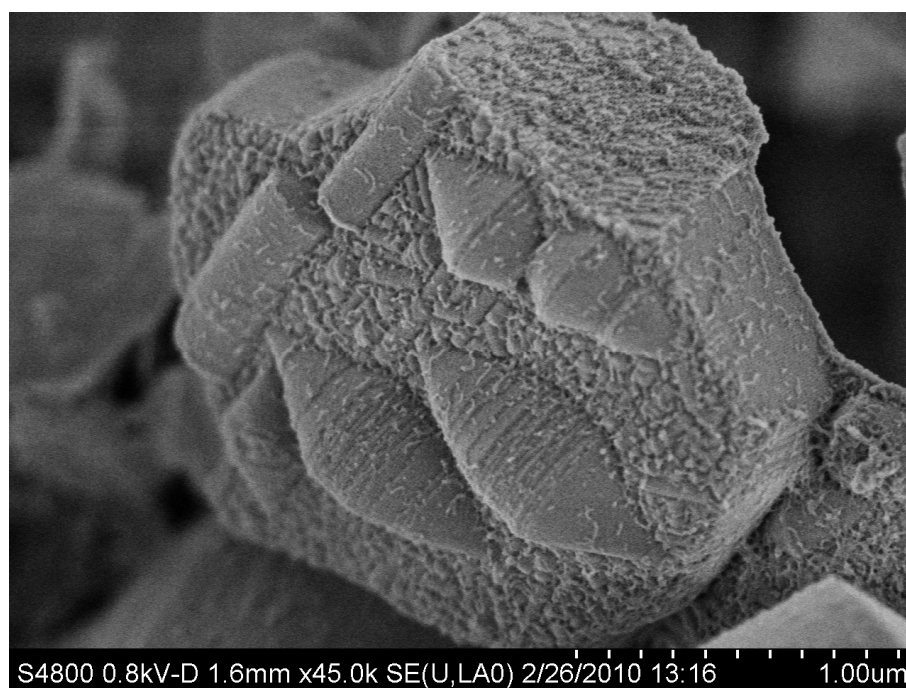


Figure S5. The cryo-SEM image of the specimen captured at 8.2 min after TEOS addition for the subsequent hydrothermal treatment without original solution, showing the “P123/silica” flocs distributed on the surface of SBA-15 rods.

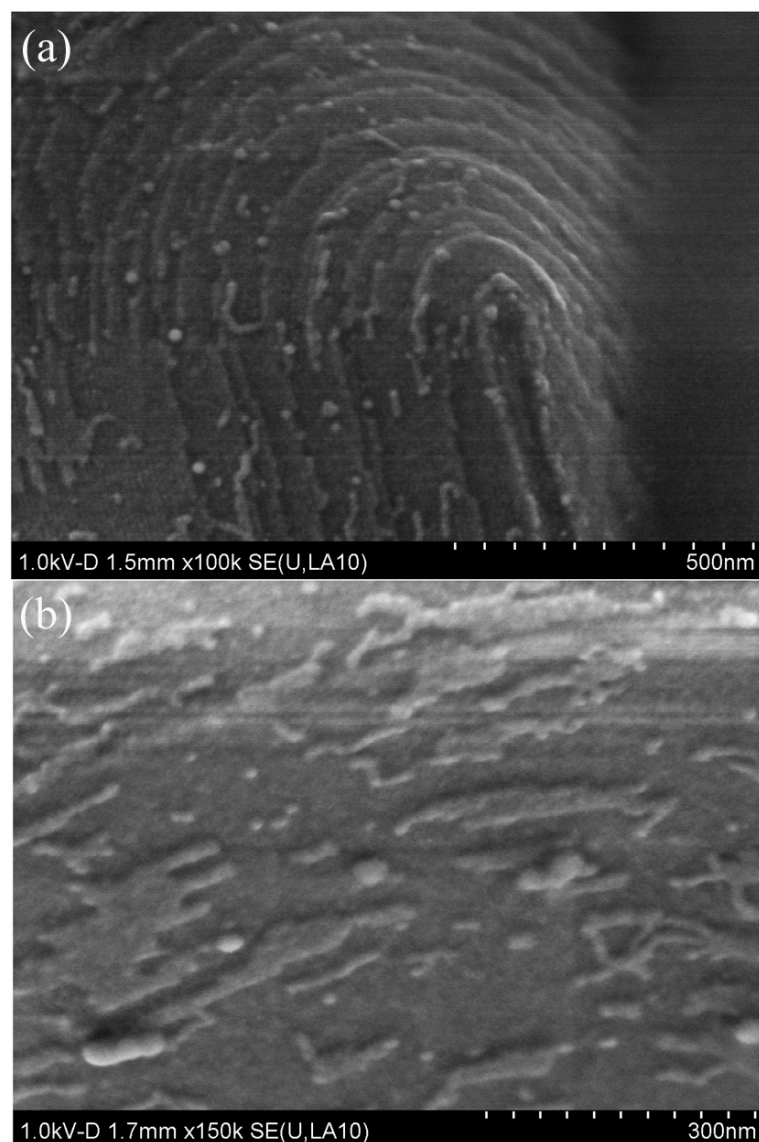


Figure S6. High-resolution cryo-SEM images of the mesoporous silica SBA-15 samples separated at 7.3 min after TEOS addition. Rod-like silica/P123 composite unit micelles, adsorbed on the surface of SBA-15 particle, are showed clearly.