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Controlled Porous Nanostructure on Gold-Decorated Block Copolymer Microspheres MINSOO KIM, KANG HEE KU, HYEONG JUN KIM, KAIST, GI-RA YI, Sungkyunkwan University, BUMJOON KIM, KAIST, GI-RA YI COLLABORATION — Hollow block copolymer microspheres (HPMs) with controlled porous nanostructures were simply prepared from gold decorated block copolymer microspheres (GPMs). First, the GPMs were fabricated by emulsifying polystyrene-*b*-poly(4-vinylpyridine) (PS-*b*-P4VP) micelle solution with gold precursors into surfactant solution. Then, the HPMs were prepared by adding cetyl trimethylammonium bromide (CTAB) into the GPMs suspension. Selective dissolution of gold precursors by CTAB resulted in the formation of porous nanostructures on the GPMs. The porous nanostructures can be controlled by molecular weight of block copolymers and the amounts of gold precursors incorporated to P4VP core in the micelle, of which both factors tuned sizes of the surface nanostructures in the HPMs. In addition, we demonstrated that increasing amounts of gold precursors resulted in increasing the pore depth. The detail pore morphology in the HPMs was investigated by SEM, AFM and cross-sectional TEM measurements.

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