Supporting Information

Dynamic Manipulation of Local pH within Nanopore Triggered by Surface-Induced Phase Transition

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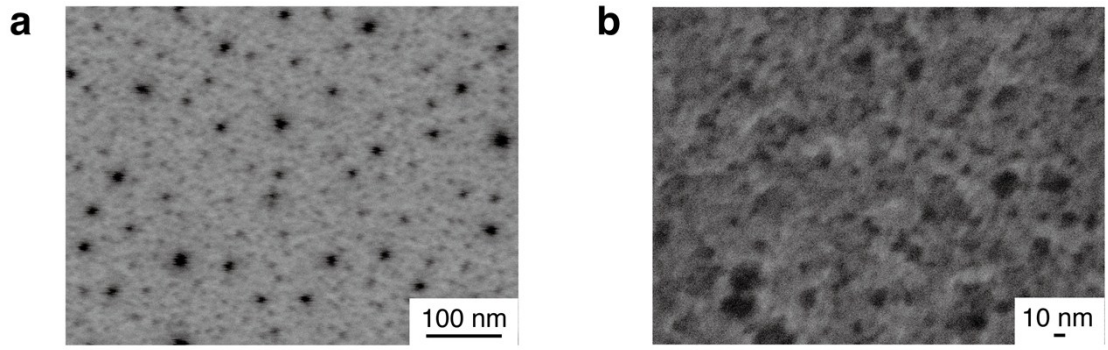

Figure S1. Surface images of porous silicon with the pore sizes of (a) ~10 nm and (b) ~2 nm.

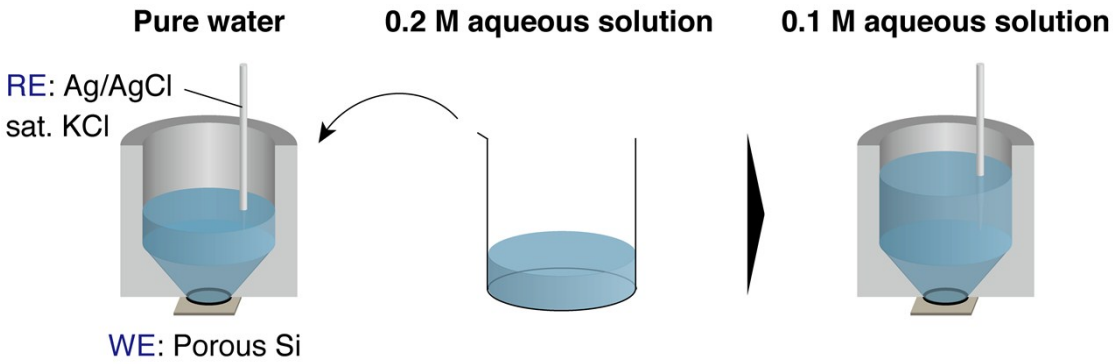

Figure S2: Illustration of experimental procedure for the measurement of temporal potential profile. The potential measurement for porous silicon started before adding the 0.2 M aqueous solution into the pure water in the cell. The time of 0 s in the figures of temporal potential profiles for porous silicon indicates the moment of the addition of 0.2 M aqueous solution.

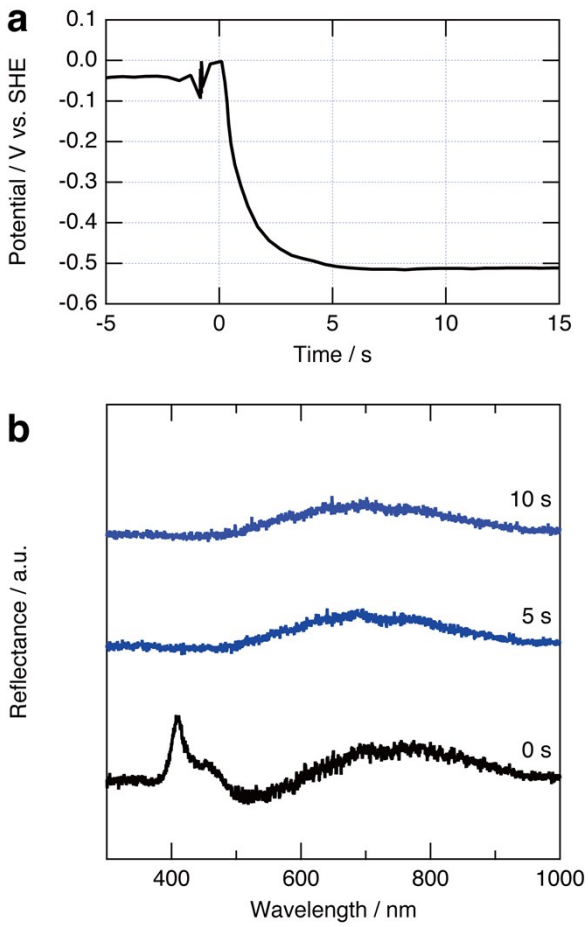

Figure S3. (a) Temporal profiles of the potentials of porous-silicon rugate filter with the pore size of ~2 nm (2-nm PSiRF) in the aqueous solution of 0.1 M TBACl. (b) Reflectance spectra of 2-nm PSiRF in the aqueous solution of 0.1 M TBACl at various times after adding the 0.2 M aqueous solutions into the cell.

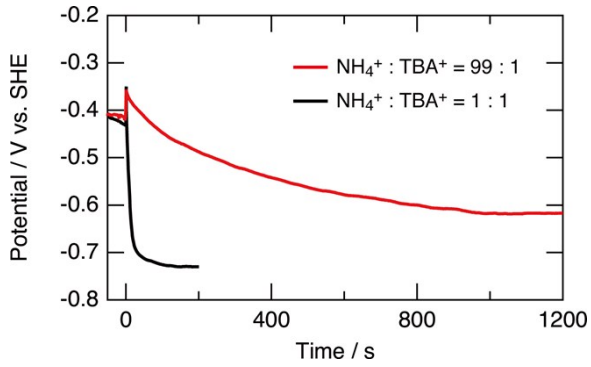

Figure S4. Temporal profiles of the potential measured using the 10-nm porous silicon in aqueous solution containing NH_4Cl mixed with TEACl or TBACl at the mixing ratios of 99:1 and 1:1 while fixing the total ion concentration at 0.1 M.