

Supporting Information

Indium-Doped Rutile Titanium Oxide with Reduced Particle- Length and Its Sodium Storage Properties

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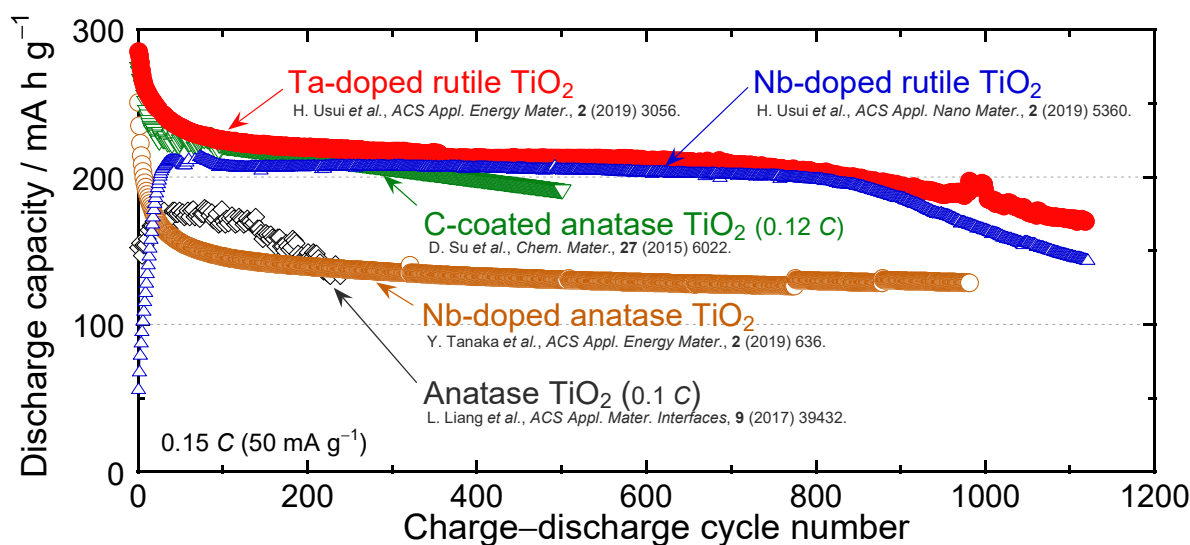


Figure S1 Long-term cycling performances of electrodes prepared using single-crystalline particles of impurity-element-doped rutile TiO_2 . For comparison, this figure shows the results for electrodes consisted of carbon-coated anatase TiO_2 and Nb-doped anatase TiO_2 . Even after 800 cycles, the high capacity of 200 mA h g^{-1} were achieved by 7 at.% Ta-doped rutile TiO_2 anode and 6 at.% Nb-doped rutile TiO_2 anode.

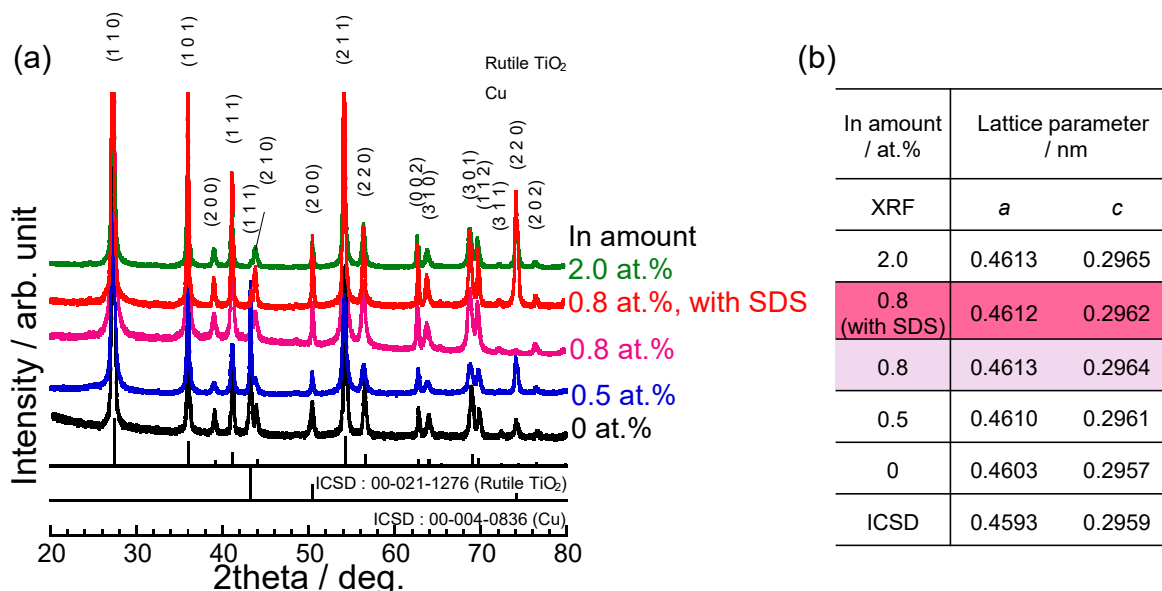


Figure S2 (a) XRD patterns of In-doped TiO_2 with various In amounts. (b) Lattice parameters a and c of In-doped TiO_2 with various In amounts.

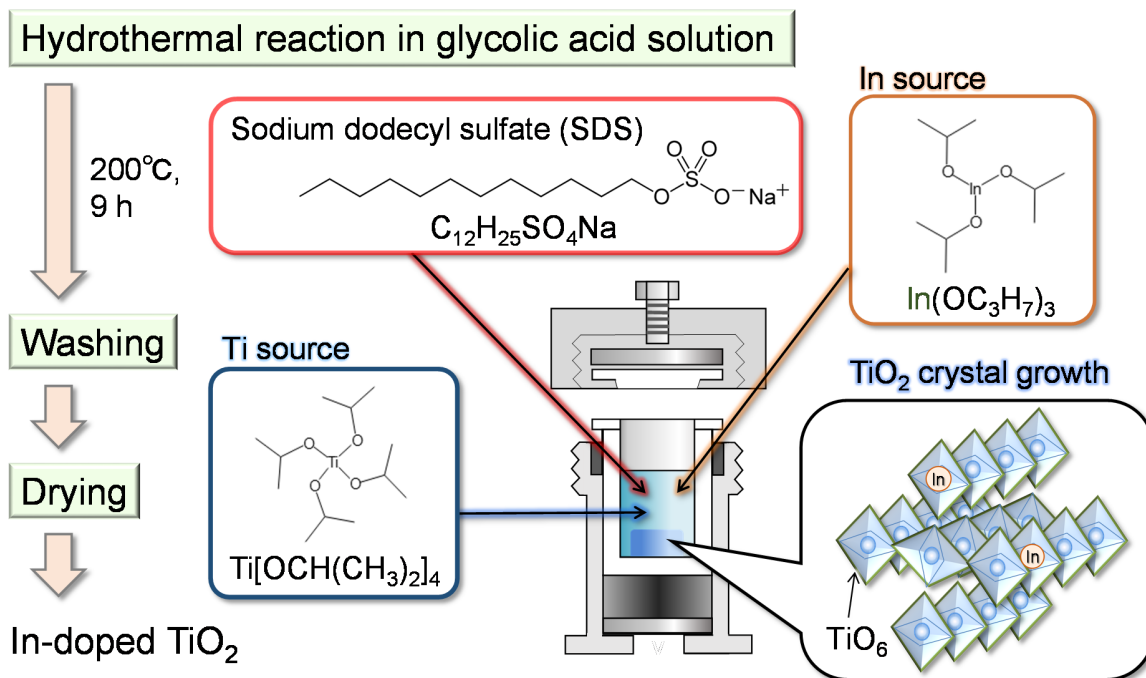


Figure S3 Procedures of hydrothermal synthesis of In-doped rutile TiO₂ particles in surfactant solution.

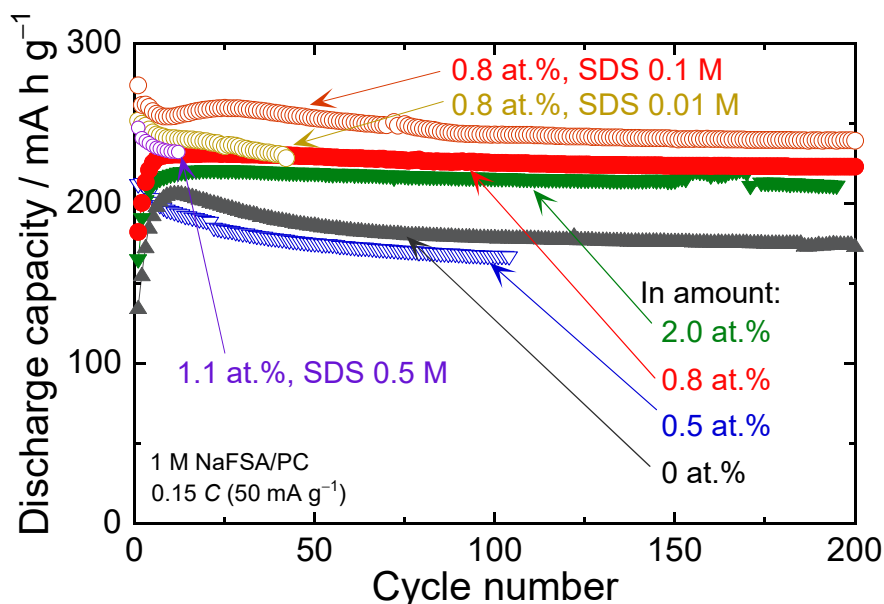


Figure S4 Dependence of doping amount on cycling performances of In-doped TiO₂. the doping amount of 0.5 at.% was insufficient for improving the performance, whereas an excessive doping of 2.0 at.% degraded the performance. The figure shows SDS concentration dependence of the performance. The 0.01 M SDS could enhance the initial capacity though the capacity decay was observed.

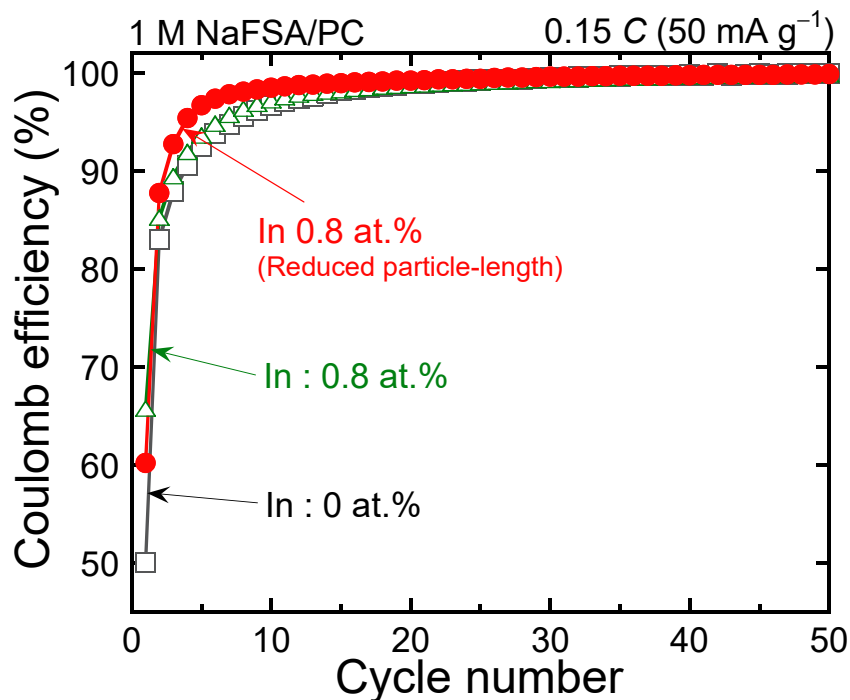


Figure S5 Coulombic efficiencies of electrodes using In-doped prepared in solutions with and without SDS surfactant.

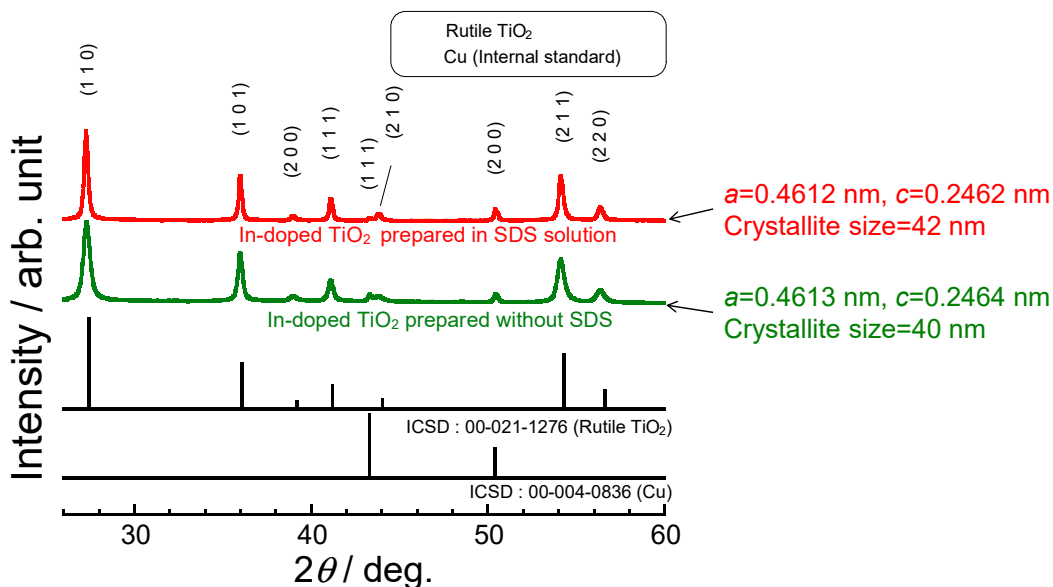


Figure S6 Comparison of XRD analysis results obtained for 0.8 at.% In-doped TiO_2 prepared in solutions with and without SDS surfactant. The lattice parameters and the crystallite sizes of In-doped TiO_2 prepared in SDS solution were almost equivalent to those in solution without SDS. This indicates that the Na-storage properties can be mainly discussed by the difference in the morphology of the In-doped TiO_2 particles.