Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Two-step synthesis of Sillén-Aurivillius type oxychlorides to enhance the photocatalytic activity for visible-light-induced water splitting

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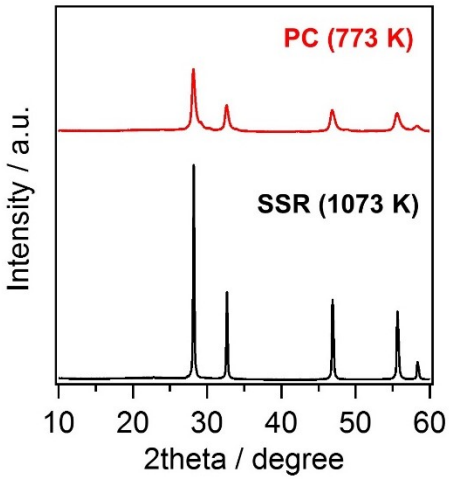

Fig. S1 XRD patterns of Bi_3TaO_7 samples prepared by PC and SSR methods.

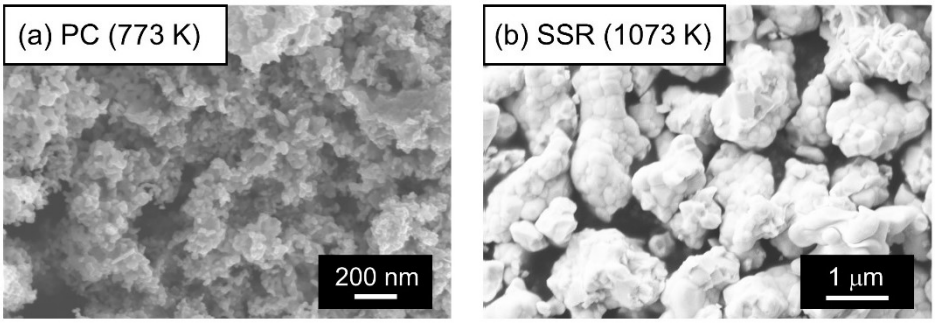

Fig. S2 SEM images of Bi_3TaO_7 samples prepared by PC and SSR methods.

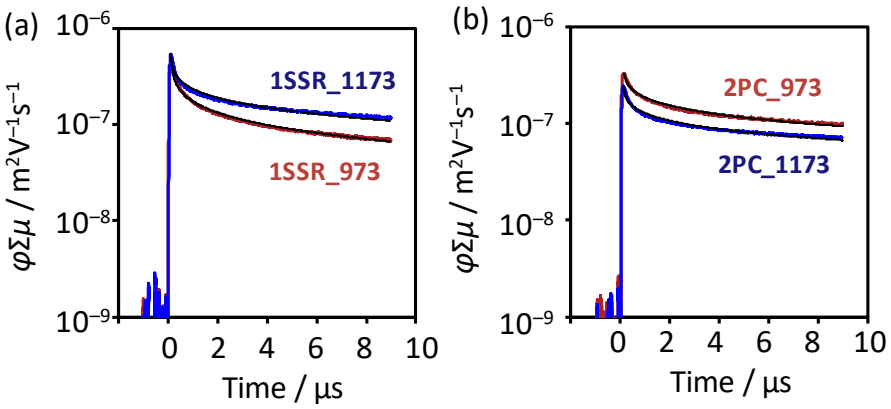

Fig. S3 Fitting of TRMC transients of (a) 1SSR_973 and 1SSR_1173 and (b) 2PC_973 and 2PC_1173 using a stretched exponential function (black solid lines), $\alpha \exp(-(kt)^{\beta})$, where α, k, and β are the coefficient, the rate constant, and the power factor of the exponent, respectively. The β was fixed at 0.20 to secure the consistency in the comparison of the decays. The lifetime (τ) is defined by the inverse of k ($\tau = 1/k$). The obtained τ values were 0.08, 0.23, 0.42, and 0.59 μs for (a) 1SSR_973 and 1SSR_1173, and (b) 2PC_973 and 2PC_1173, respectively.

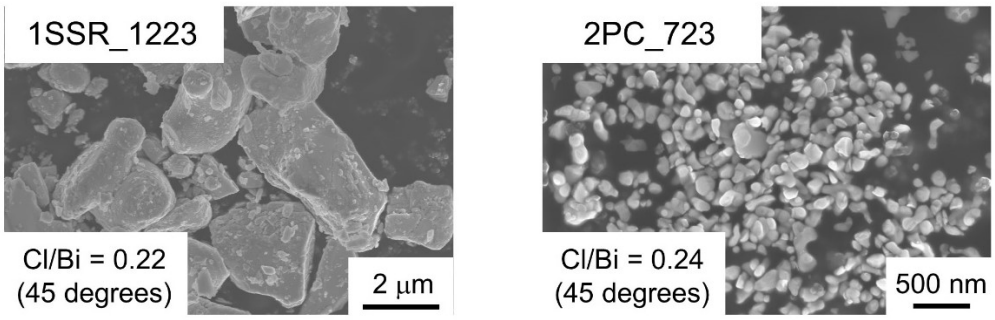

Fig. S4 SEM images of 1SSR_1223 and 2PC_923.

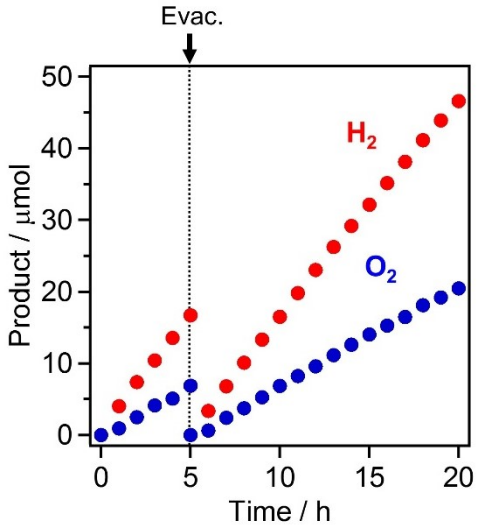

Fig. S5 Time courses of photocatalytic water splitting into H_2 and O_2 from a mixture of Bi_4TaO_8Cl (2PC_973) and Ru/$SrTiO_3$:Rh in aqueous solution (pH = 2.5 adjusted by HCl) without $FeCl_3$ under visible-light irradiation ($\lambda > 400$ nm).

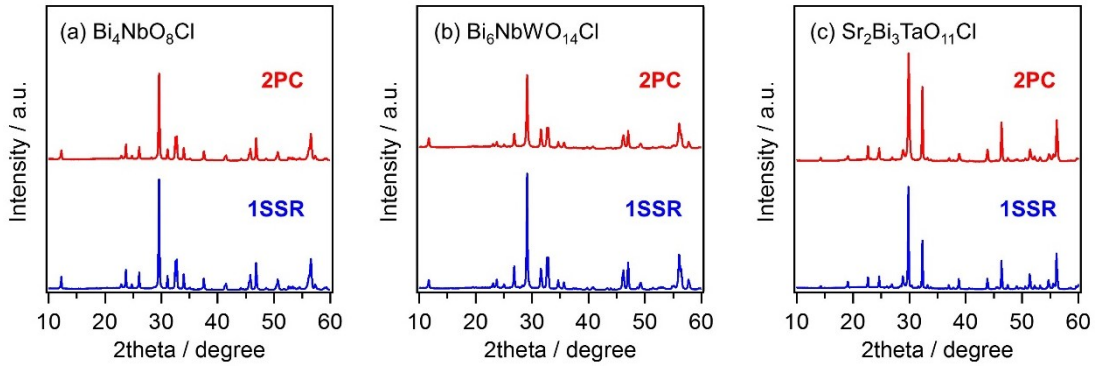

Fig. S6 XRD patterns of Bi_4NbO_8Cl, $Bi_6NbWO_{14}Cl$ and $Sr_2Bi_3Ta_2O_{11}Cl$.