Supporting Information

Effects of Se incorporation in $La_5Ti_2CuS_5O_7$ by annealing on physical properties and photocatalytic H_2 evolution activity

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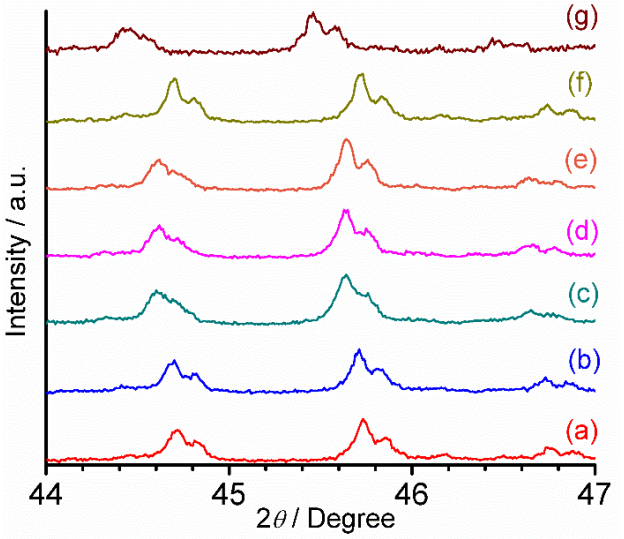

Figure S1. Magnified XRD patterns for (a) pristine LTCSO, LTCSO samples heated with Se at (b) 873, (c) 973 and (d) 1073 and (e) 1273 K, (f) LTCSO heated without Se at 973 K, and (g) $LTCS_{0.8}Se_{0.2}O$ solid solution (presented for comparison purposes).

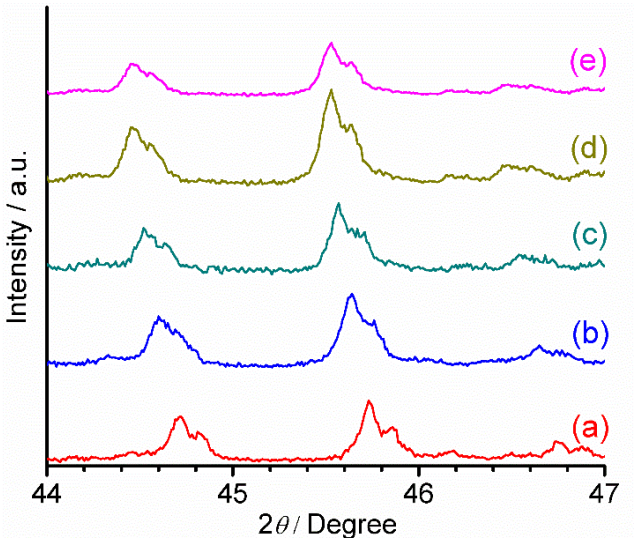

Figure S2. Magnified XRD patterns of (a) pristine LTCSO, LTCSO heated with Se at 973 K (b) once, (c) twice and (d) thrice, and (e) $LTCS_{0.8}Se_{0.2}O$ solid solution (presented for comparison purposes).

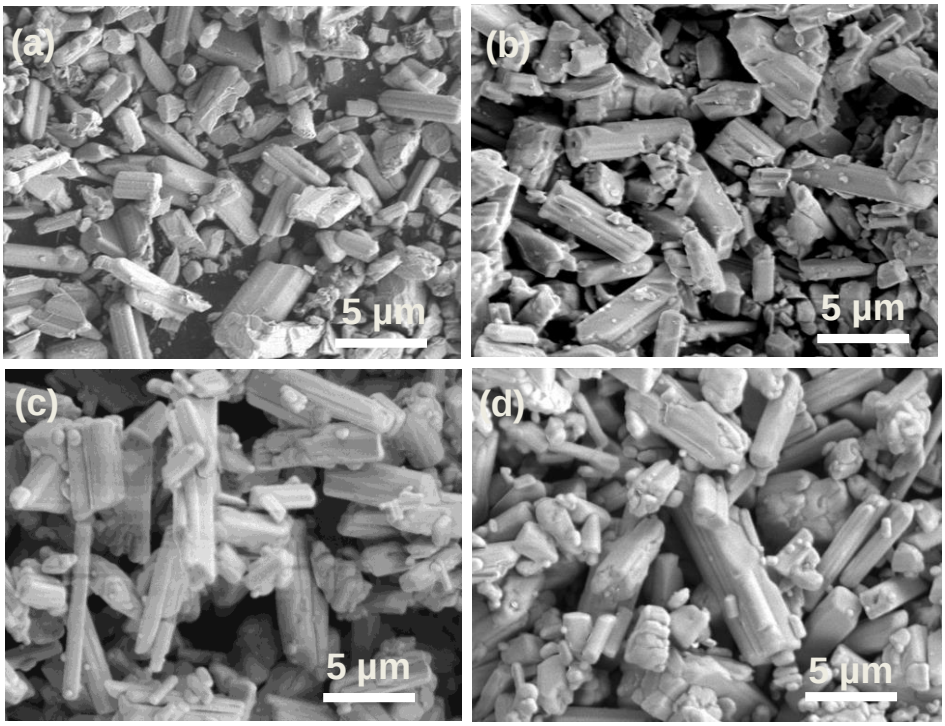

Figure S3. SEM images of (a) LTCSO and (b-d) LTCSO:Se samples heated with Se at 973 K (b) once, (c) twice, (d) and thrice, respectively.

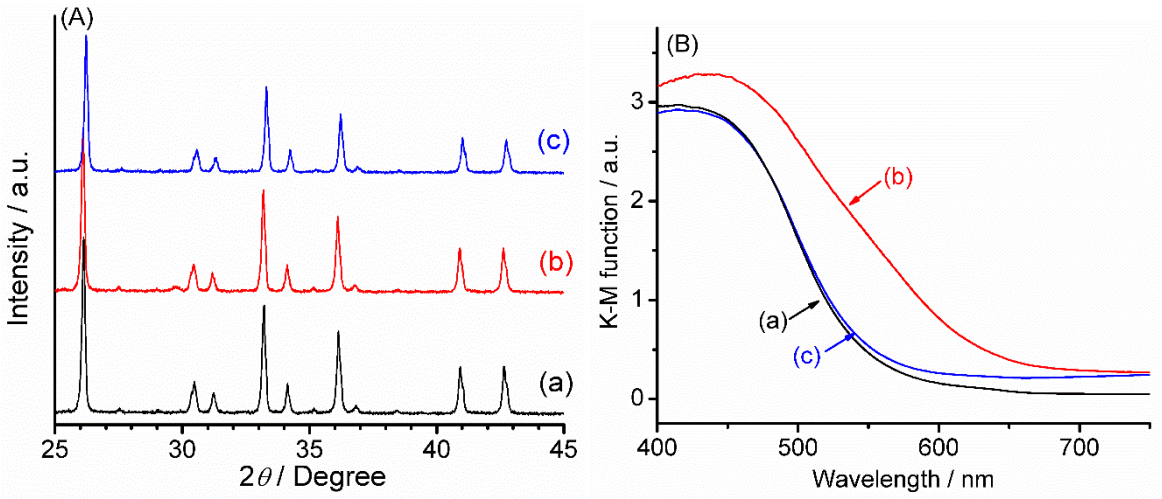

Figure S4. (A) XRD patterns and (B) DR spectra for (a) pristine $Sm_2Ti_2S_2O_5$ (STSO) and STSO heated with (b) Se and (c) S at 873 K.

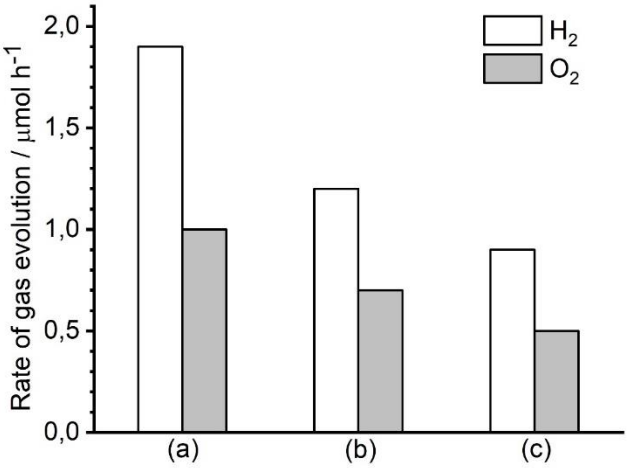

Figure S5. Water-splitting activity of LTCSO:Se/Au/BVO photocatalyst sheets loaded with Cr_2O_3 and (a) Ru, (b) Rh and (c) Pt cocatalysts. The LTCSO:Se sample was treated with Se at 973 K once. Reaction conditions: distilled water (40 mL); light source: 300 W Xe lamp equipped with a cut-off filter (λ > 420 nm); irradiation area: 8 cm^2.