Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Supporting information

Visible-light-active g-C_3N_4/N-doped $Sr_2Nb_2O_7$ Heterojunctions as Photocatalysts for the Hydrogen Evolution Reaction

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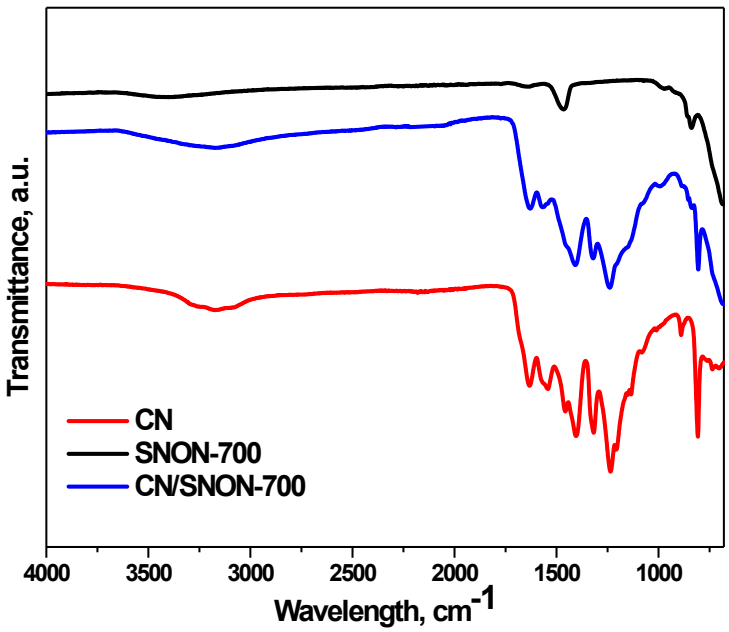

Figure S1: Fourier transform infrared (FTIR) spectra of CN, SNON-700 and CN/SNON-700 heterojunction samples.

Table S1: Surface area of different heterojunction samples.

Sample	Surface area
CN/SNO	47.2
CN/SNON-600	16.6
CN/SNON-700	14.8
CN/SNON-800	9.6
CN/SNON-950	6.3

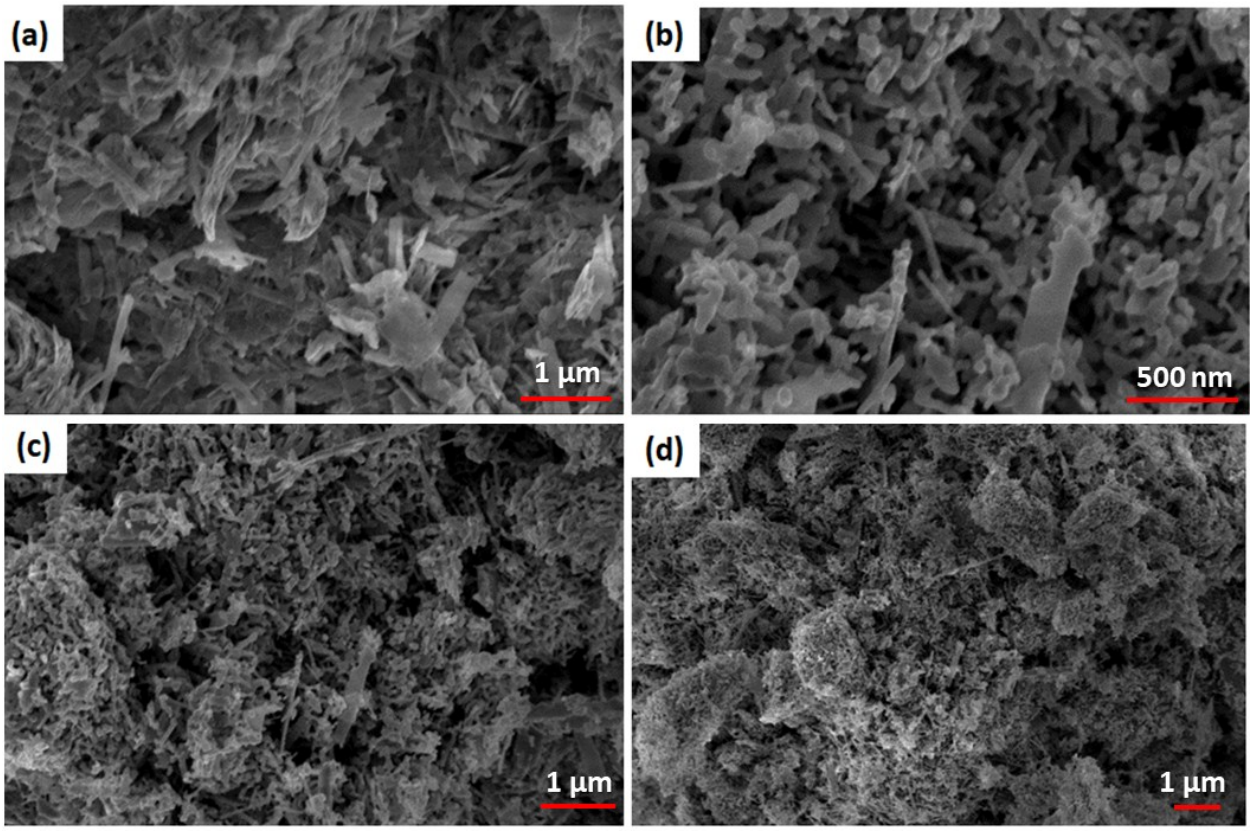

Figure S2: SEM images for (a) SNON-600, (b) SNON-700, (c) SNON-800, and (d) SNON-950.

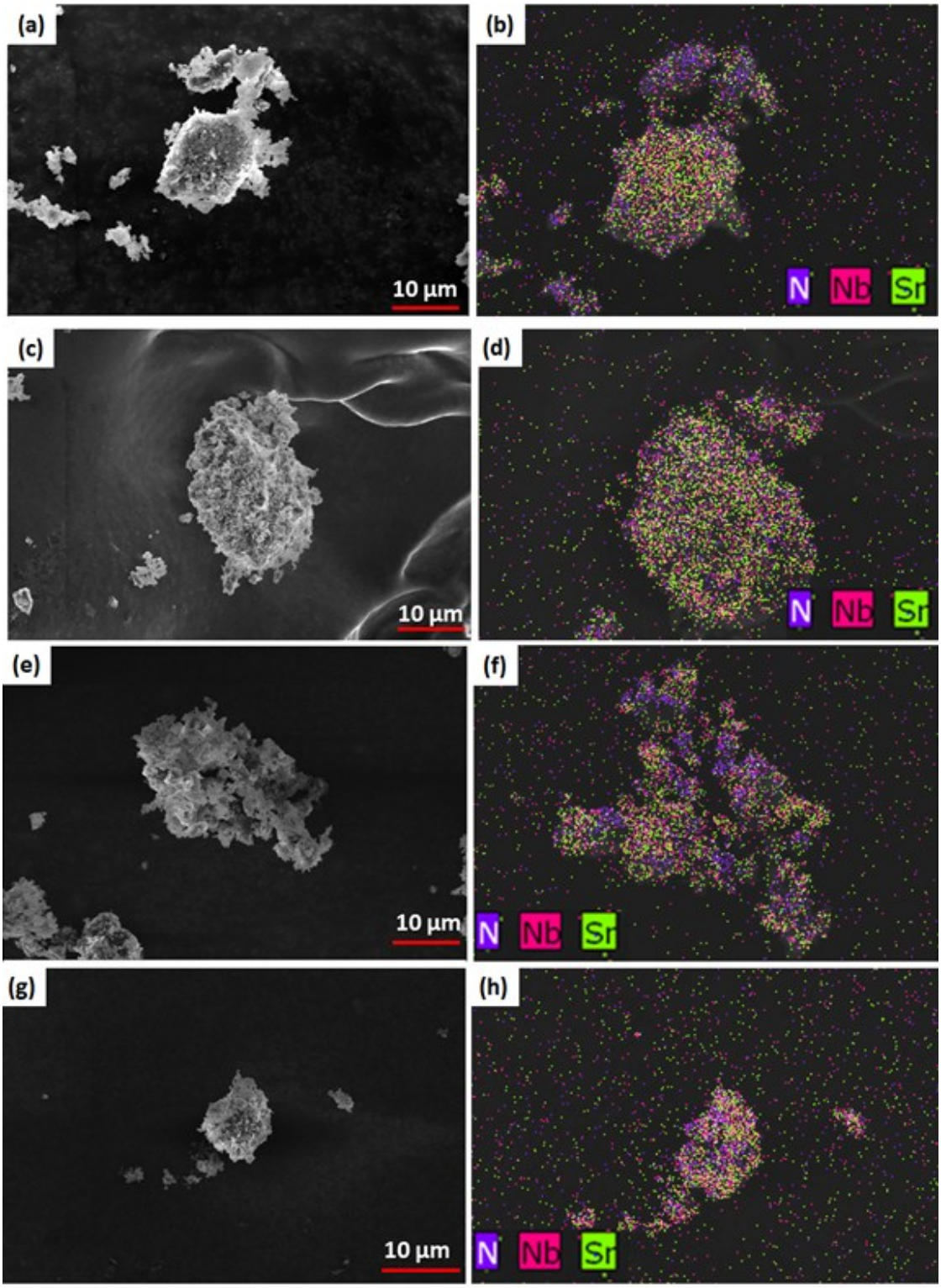

Figure S3: SEM images and EDX elemental mappings for CN/SNON-600 (a and b), CN/SNON-700 (c and d), CN/SNON-800 (e and f), and CN/SNON-950 (g and h).

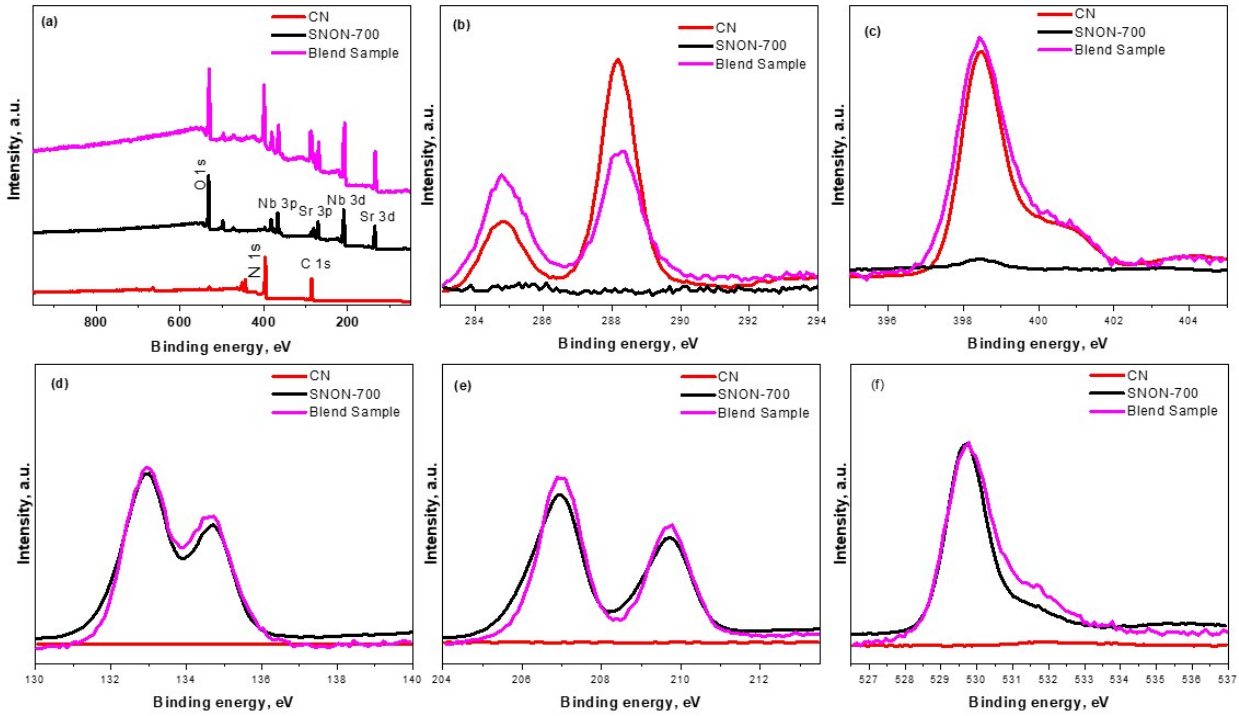

Figure S4: (a) XPS survey scan for CN, SNON-700 and blend sample. High resolution XPS spectra of (b) C 1s, (c) N1s, (d)Sr3d, (e) Nb3d, and (f) O1s for CN, SNON-700 and blend sample. Blend sample was made by heterogenous mixture of CN and SNON-700 in 1:1 mass ratio.

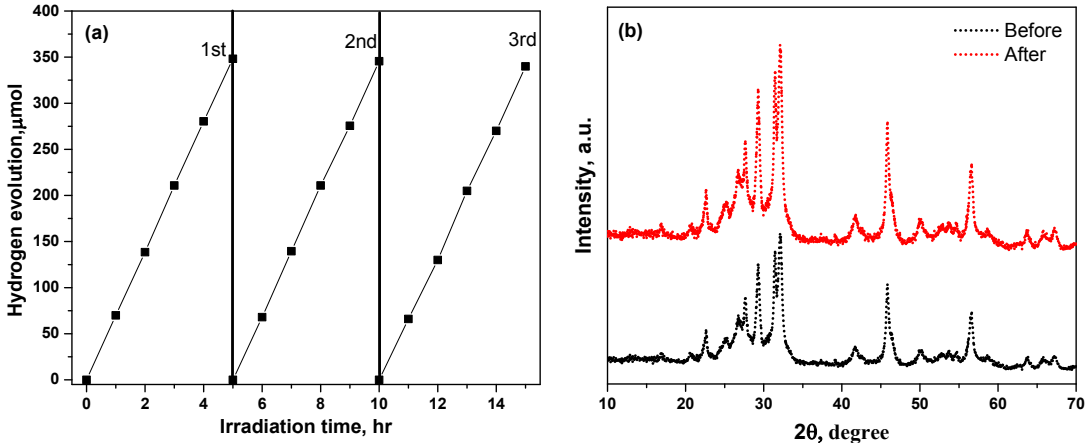

Figure S5: Recyclability test for the CN/SNON-700 heterojunction: (a) photocatalytic hydrogen generation after a different number of cycles. (b) PXRD patterns of the CN/SNON-700 heterojunction photocatalyst before and after the photocatalytic testing.

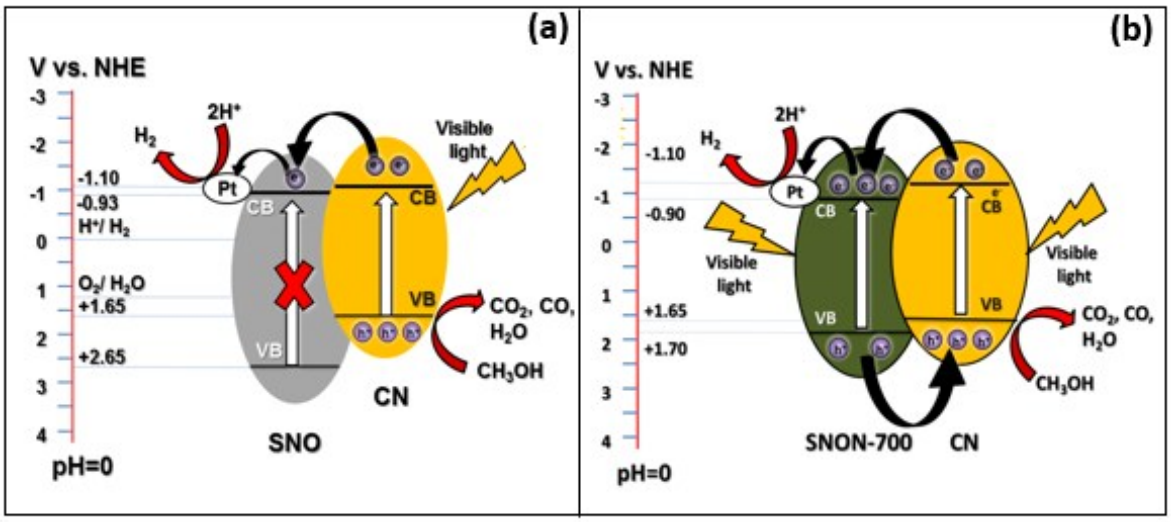

Figure S6: Comparative study for the proposed mechanism for (a) CN/SNO and (b)CN/SNON-700

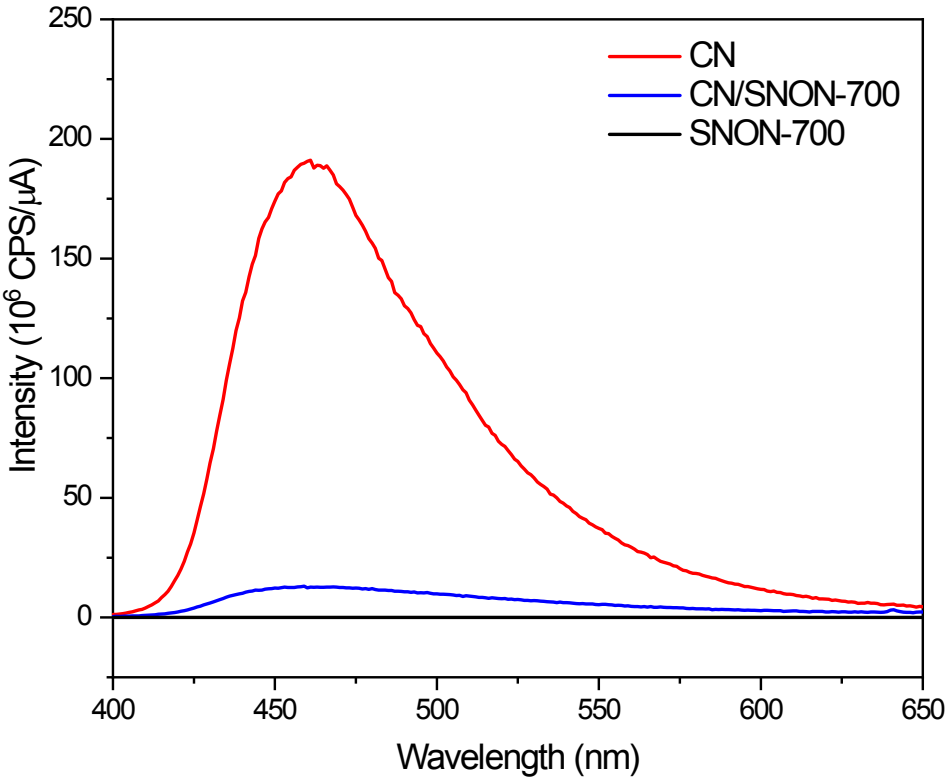

Figure S7: Photoluminescence (PL) spectra of CN SNON-700, and CN/SNON-700 at an excitation wavelength of 336 nm.

Table S2: Kinetic parameters of the emission decay for different catalysts.

Samples	A_1	τ_1 (ns)	A_2	τ_2 (ns)	A_3	τ_3 (ns)	τ_{avg}	χ^2
CN	0.3035	2.3611	0.4576	9.9411	0.2389	69.4244	54.8417	1.3478
CN/SNON-600	0.5149	0.8659	0.36	5.0136	0.1251	43.982	32.4305	1.5524
CN/SNON-700	0.4913	0.8775	0.3828	5.009	0.1259	43.3626	31.5979	1.5248
CN/SNON-800	0.4419	1.0724	0.3916	6.0869	0.1666	49.6178	38.2218	1.5968
CN/SNON-950	0.3127	1.9814	0.44	9.3595	0.2474	68.1916	55.0808	1.4039