Supplementary Information

Structural dependence of photocatalytic properties over double perovskite compound A_2InTaO_6 (A = Sr or Ba) doped with nickel

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Fig. S2 (a) UV-visible light absorption spectra (converted from diffuse reflectance spectra) of freshly prepared samples and (b) Kubelka-Munk transformation of diffuse reflectance data.

Fig. S3 (a) Temporal photocatalytic hydrogen production of all samples in aqueous sodium sulfite (0.05 M) under full range irradiation ($\lambda \geq 250$ nm), (b) average photocatalytic hydrogen production rate under full range irradiation ($\lambda \geq 250$ nm) and visible light irradiation ($\lambda \geq 400$ nm).

Table S1 Energy dispersive X-ray spectroscopy (EDS) analysis of as-prepared samples

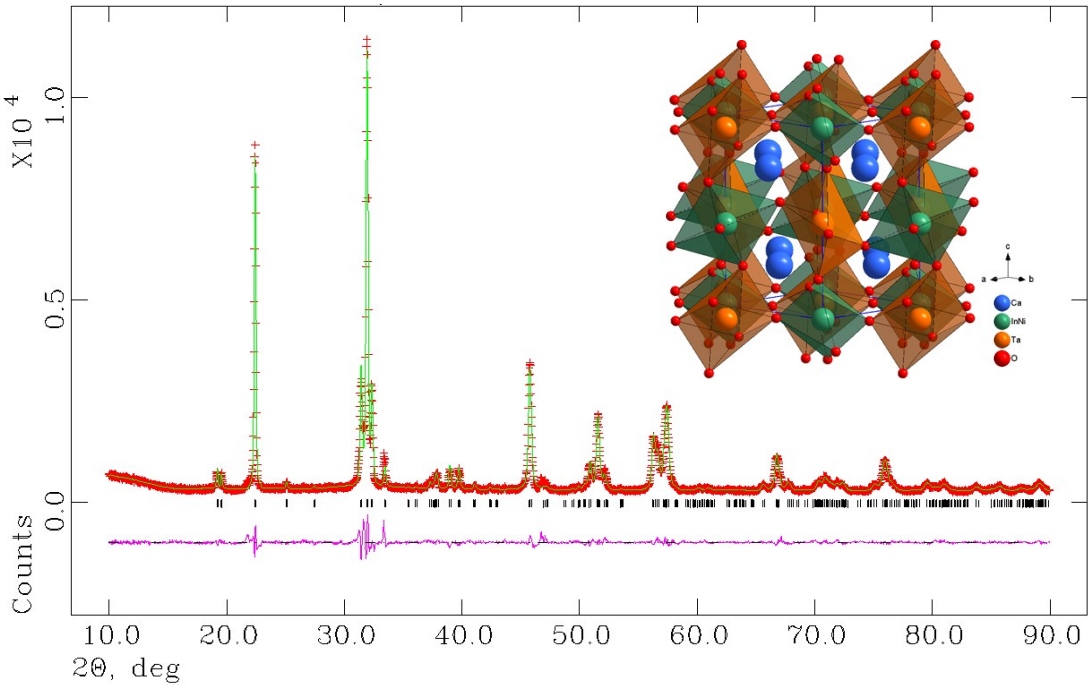
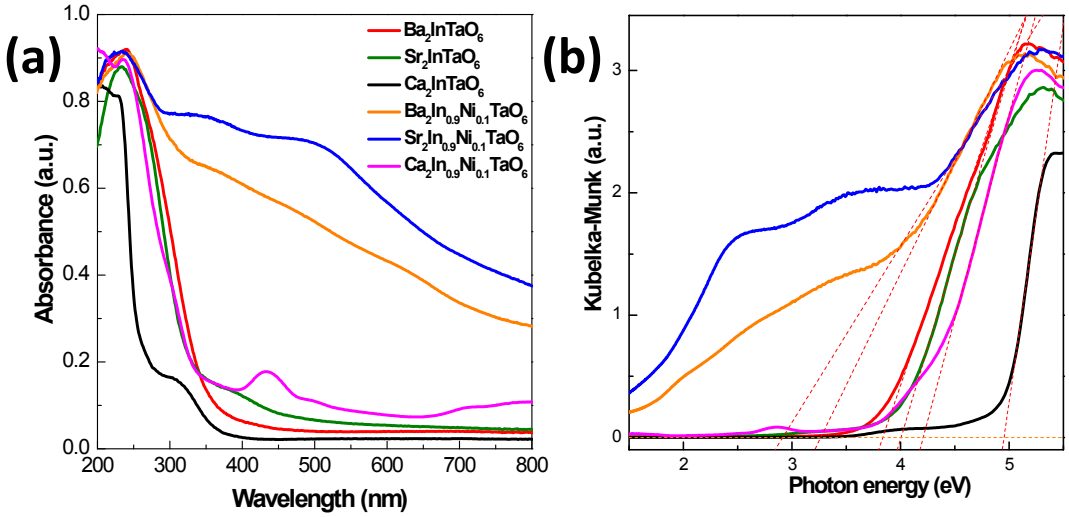


Fig. S1 Observed and calculated X-ray powder diffraction patterns of (a) $Ca_2In_{0.9}Ni_{0.1}TaO_6$, the refinement converged with good *R*-factors (R_p = 5.41%, R_{wp} = 7.67%, χ^2 = 2.943). The refined crystal structure is shown in the inserted image.



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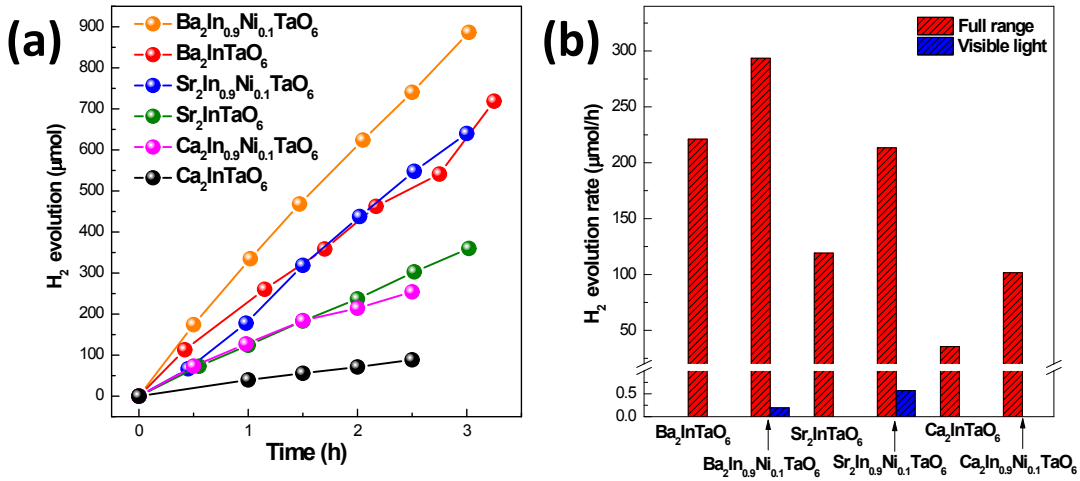

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Table S1 Energy dispersive X-ray spectroscopy (EDS) analysis of as-prepared samples

Samples	EDS analysis of as-prepared samples (mol%)				
	A	In	Ni	Ta	O
Ca_2InTaO_6	14.86	7.38	-	8.55	69.21
$Ca_2In_{0.9}Ni_{0.1}TaO_6$	17.64	6.97	1.05	8.53	65.80
Sr_2InTaO_6	16.80	8.03	-	7.80	67.37
$Sr_2In_{0.9}Ni_{0.1}TaO_6$	17.87	7.69	0.72	8.20	65.52
Ba_2InTaO_6	19.44	9.10	-	8.33	63.13
$Ba_2In_{0.9}Ni_{0.1}TaO_6$	20.07	7.91	1.57	8.42	62.05