

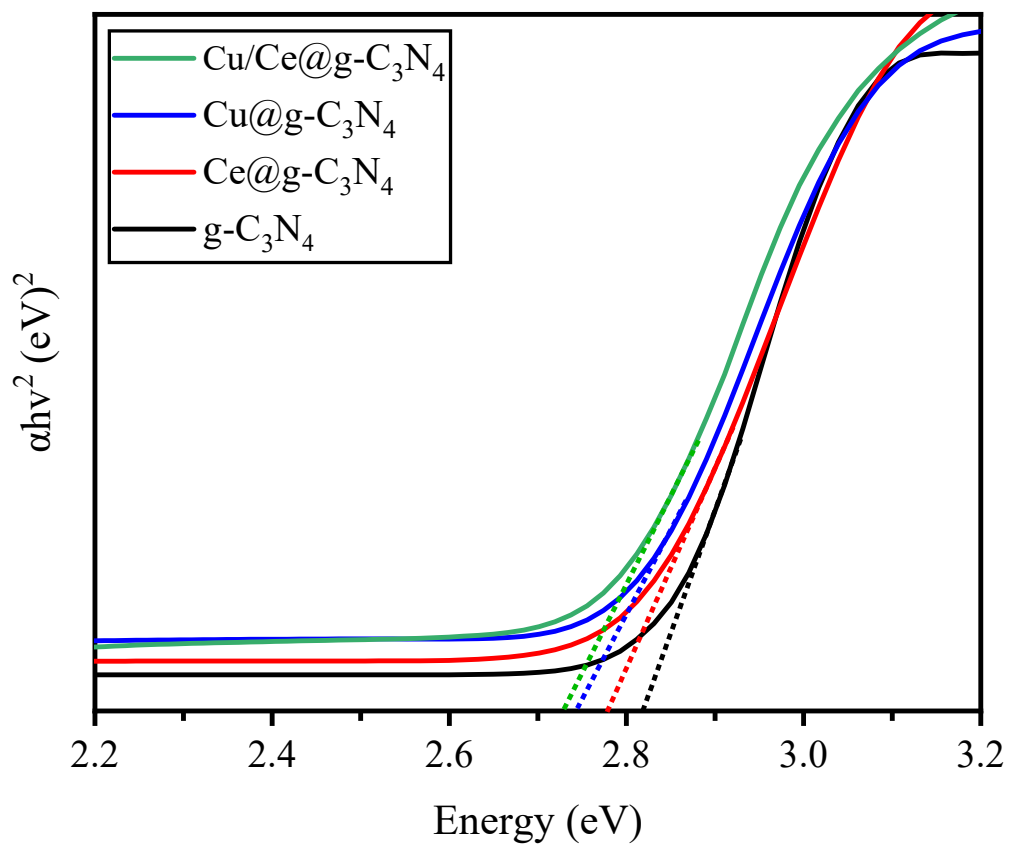
## Supporting information

### **Proceeding of catalytic water splitting on Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> photocatalysts: an exceptional approach for sun light driven hydrogen generation†**

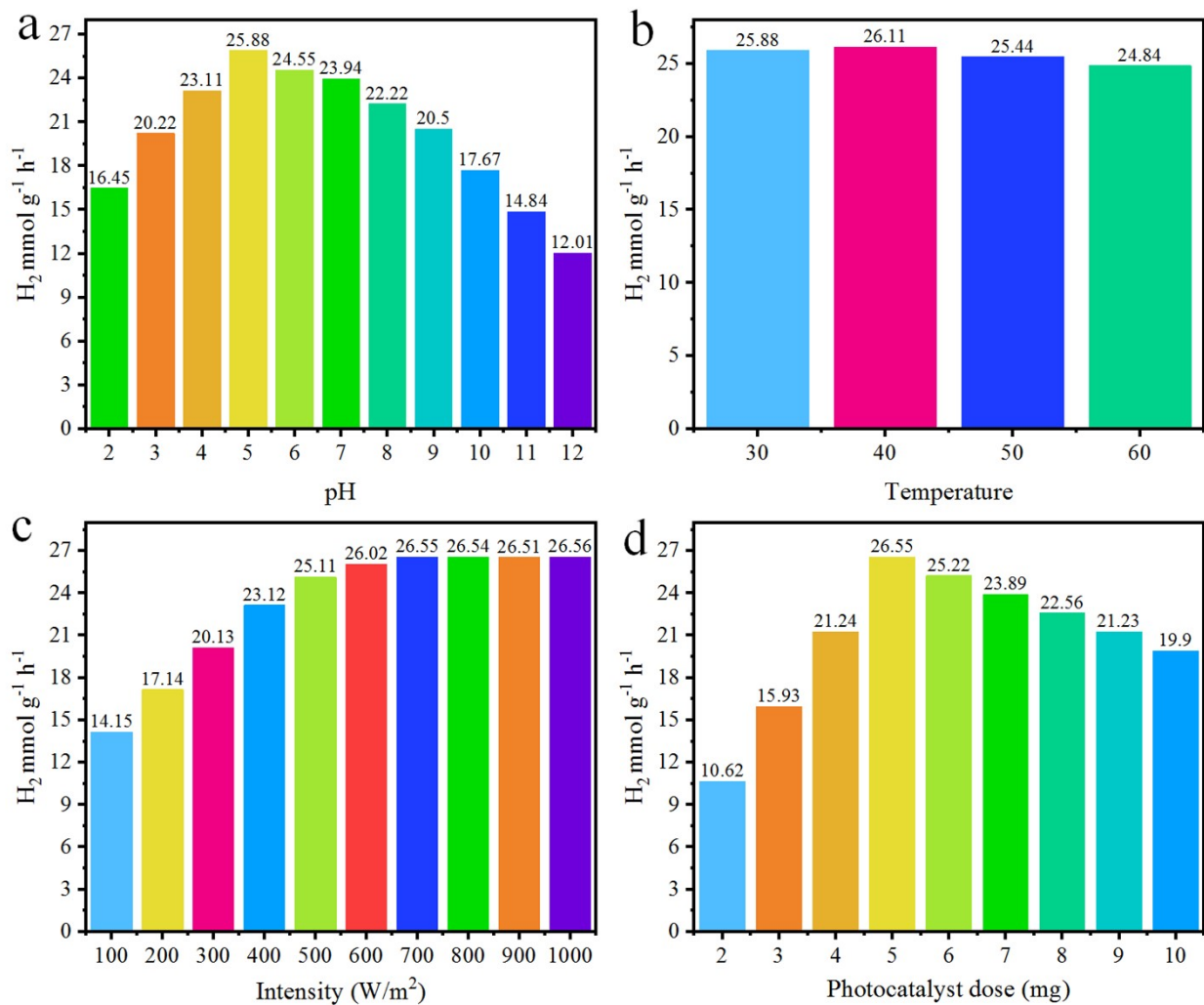
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**Figure S1:** Bandgap energies of  $\text{g-C}_3\text{N}_4$ ,  $\text{Ce@g-C}_3\text{N}_4$ ,  $\text{Cu@g-C}_3\text{N}_4$ ,  $\text{Cu/Ce@g-C}_3\text{N}_4$  catalysts calculated using Tauc plot method.



**Figure S2:** a) Effect of pH b) temperature c) light intensity and d) correspond to the effect of photocatalyst dose on hydrogen production rate.

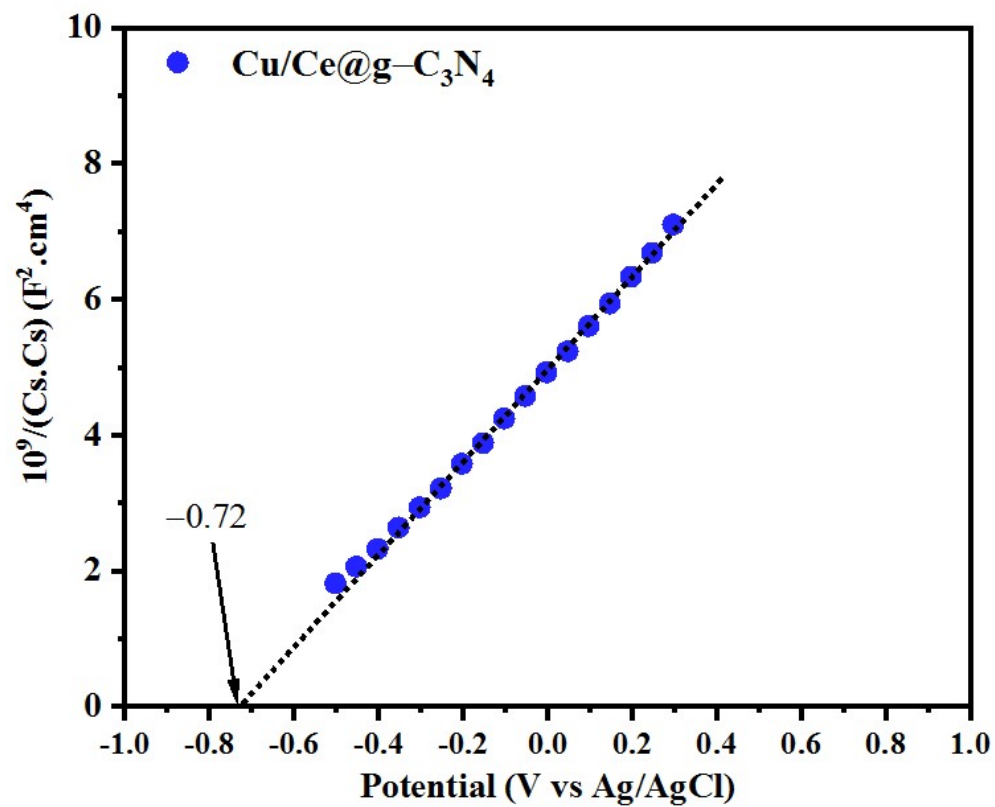


Figure S3: Mott-schottky plot of Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> catalysts.

**Table S1: Crystalline sizes and band gap energies of as-synthesized catalysts.**

<b>Photocatalysts</b>	<b>2θ</b>	<b>D(nm)</b>	<b>Band gap (eV)</b>
g-C <sub>3</sub> N <sub>4</sub>	27.21	28.25	2.82
Cu@g-C <sub>3</sub> N <sub>4</sub>	27.21	27.88	2.78
Ce@g-C <sub>3</sub> N <sub>4</sub>	27.20	27.95	2.74
Cu/Ce@g-C <sub>3</sub> N <sub>4</sub>	27.20	27.45	2.72

**Table S2: The hydrogen evolution performances of as-synthesized catalysts.**

<b>Sr. No.</b>	<b>Photocatalyst</b>	<b>H<sub>2</sub> mmol g<sup>-1</sup> h<sup>-1</sup></b>
1	g-C <sub>3</sub> N <sub>4</sub>	4.34± 0.04
2	2%Cu@g-C <sub>3</sub> N <sub>4</sub>	9.37± 0.37
3	2%Ce@g-C <sub>3</sub> N <sub>4</sub>	11.91± 0.62
4	2%Cu/Ce@g-C <sub>3</sub> N <sub>4</sub>	23.94± 0.70

**Table S3: Effect of pH on hydrogen evolution performances of Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> photocatalysts.**

<b>Sr. No.</b>	<b>pH</b>	<b>H<sub>2</sub> mmol g<sup>-1</sup> h<sup>-1</sup></b>
1	2	16.45
2	3	20.22
3	4	23.11
4	5	25.88
5	6	24.55
6	7	23.94
7	8	22.22
8	9	20.5
9	10	17.67
10	11	14.84
11	12	12.01

**Table S4: Effect of temperature on photocatalytic activity of Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> photocatalysts.**

<b>Sr. No.</b>	<b>Temperature (°C)</b>	<b>H<sub>2</sub> mmol g<sup>-1</sup> h<sup>-1</sup></b>
1	30	25.88
2	40	26.11
3	50	25.44
4	60	24.84

**Table S5: Effect of light intensity on photocatalytic activity of Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> photocatalysts.**

<b>Sr. No.</b>	<b>Light intensity (W/m<sup>2</sup>)</b>	<b>H<sub>2</sub> mmol g<sup>-1</sup> h<sup>-1</sup></b>
1	100	14.15
2	200	17.14
3	300	20.13
4	400	23.12
5	500	25.11
6	600	26.02
7	700	26.55
8	800	26.54
9	900	26.51
10	1000	26.56

**Table S6: Effect of catalyst dosage on photocatalytic activity of Cu/Ce@g-C<sub>3</sub>N<sub>4</sub> photocatalysts.**

<b>Sr. No.</b>	<b>Catalyst dose (mg)</b>	<b>H<sub>2</sub> mmol g<sup>-1</sup> h<sup>-1</sup></b>
1	2	10.62
2	3	15.93
3	4	21.24
4	5	26.55
5	6	25.22
6	7	23.89
7	8	22.56
8	9	21.23
9	10	19.9