

## Electronic Supplementary Information

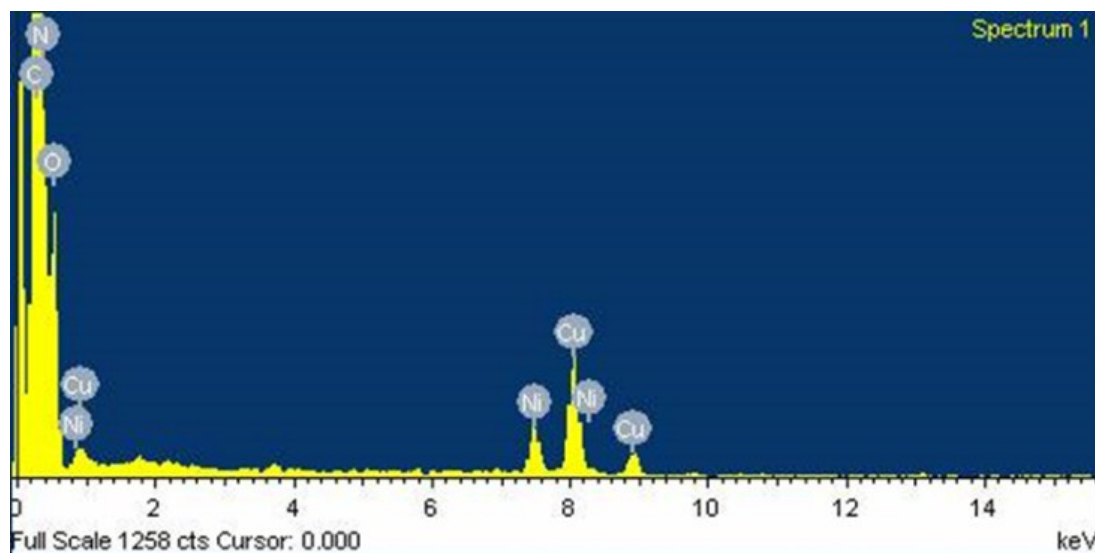
### Efficient visible-light photocatalytic H<sub>2</sub> evolution over metal-free g-C<sub>3</sub>N<sub>4</sub> co-modified via robust acetylene black and Ni(OH)<sub>2</sub> as dual co-catalysts

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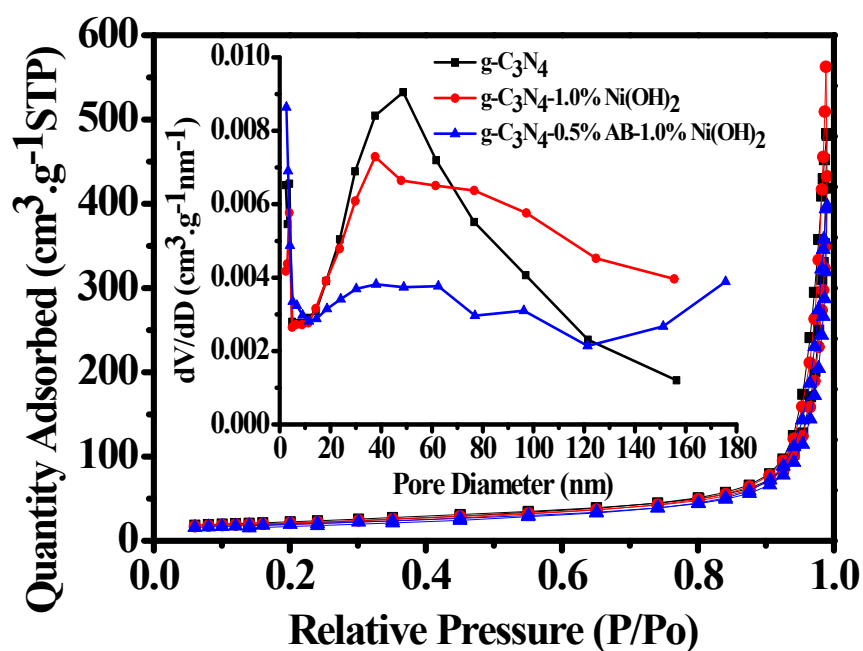
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**Figure S1** Energy dispersive X-ray (EDX) spectrum of g-C<sub>3</sub>N<sub>4</sub>-0.5%AB-1.0% Ni(OH)<sub>2</sub> sample.



**Figure S2** N<sub>2</sub> adsorption–desorption isotherms and the corresponding pore size distribution curves (inset) of g-C<sub>3</sub>N<sub>4</sub>, g-C<sub>3</sub>N<sub>4</sub>-1.0%Ni(OH)<sub>2</sub> and g-C<sub>3</sub>N<sub>4</sub>-0.5%AB-1.0% Ni(OH)<sub>2</sub>.

**Table S1.** Pore structure parameter of g-C<sub>3</sub>N<sub>4</sub>, g-C<sub>3</sub>N<sub>4</sub>-1.0%Ni(OH)<sub>2</sub> and g-C<sub>3</sub>N<sub>4</sub>-0.5%AB-1.0%Ni(OH)<sub>2</sub>.

Photocatalysts	BET Surface area(m <sup>2</sup> g <sup>-1</sup> )	Mean pore Diameter (nm)	Pore volume (cm <sup>3</sup> g <sup>-1</sup> )
g-C <sub>3</sub> N <sub>4</sub>	79.20	34.96	0.75
g-C <sub>3</sub> N <sub>4</sub> -1.0%Ni(OH) <sub>2</sub>	74.30	42.22	0.67
g-C <sub>3</sub> N <sub>4</sub> -0.5%AB-1.0%Ni(OH) <sub>2</sub>	68.19	33.33	0.62