

# Influence of gas atmosphere during synthesis of g-C<sub>3</sub>N<sub>4</sub> for enhanced photocatalytic H<sub>2</sub> production from water on Au/g-C<sub>3</sub>N<sub>4</sub> composites

P. Jiménez-Calvo\*, C. Marchal, T. Cottineau, V. Caps, V. Keller\*

<sup>1</sup> ICPEES, Institut de Chimie et Procédés pour l'Énergie, l'Environnement et la Santé, CNRS/Université de Strasbourg, UMR 7515 (CNRS), 25 rue Becquerel 67087 Strasbourg Cedex, France

\*Correspondence to: [vkeller@unistra.fr](mailto:vkeller@unistra.fr) / [jimenezcalvo@unistra.fr](mailto:jimenezcalvo@unistra.fr)

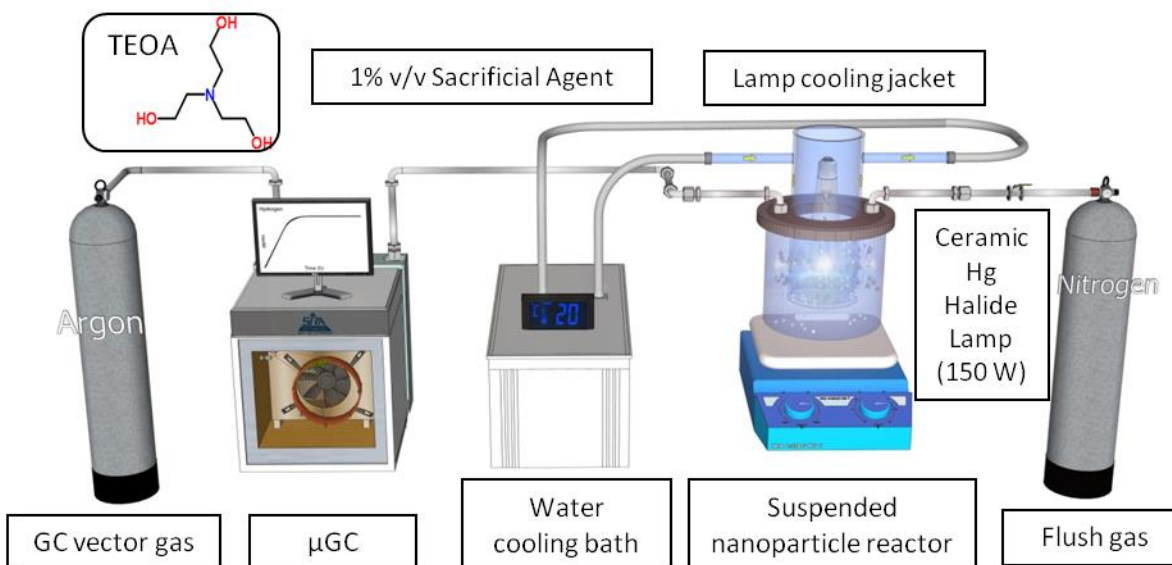


Figure S1. General scheme of the photocatalytic set-up.

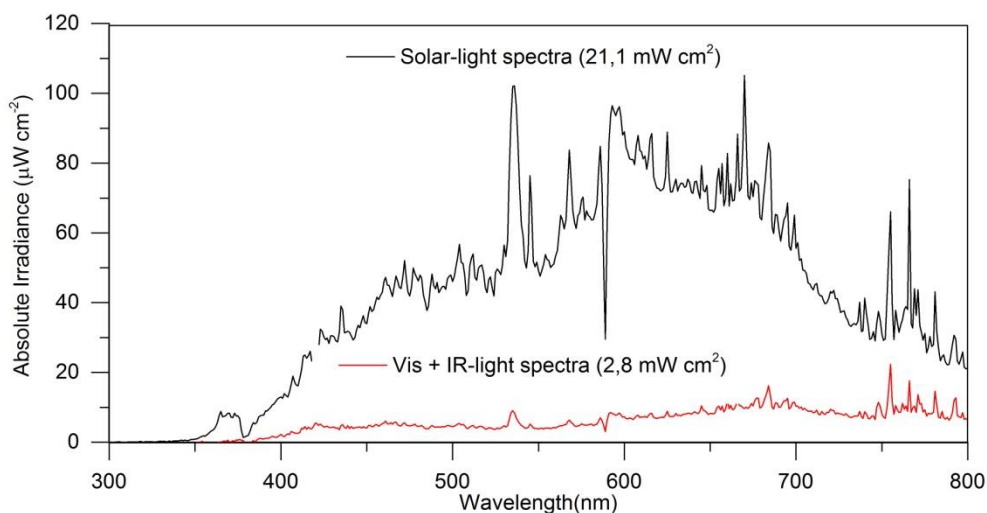
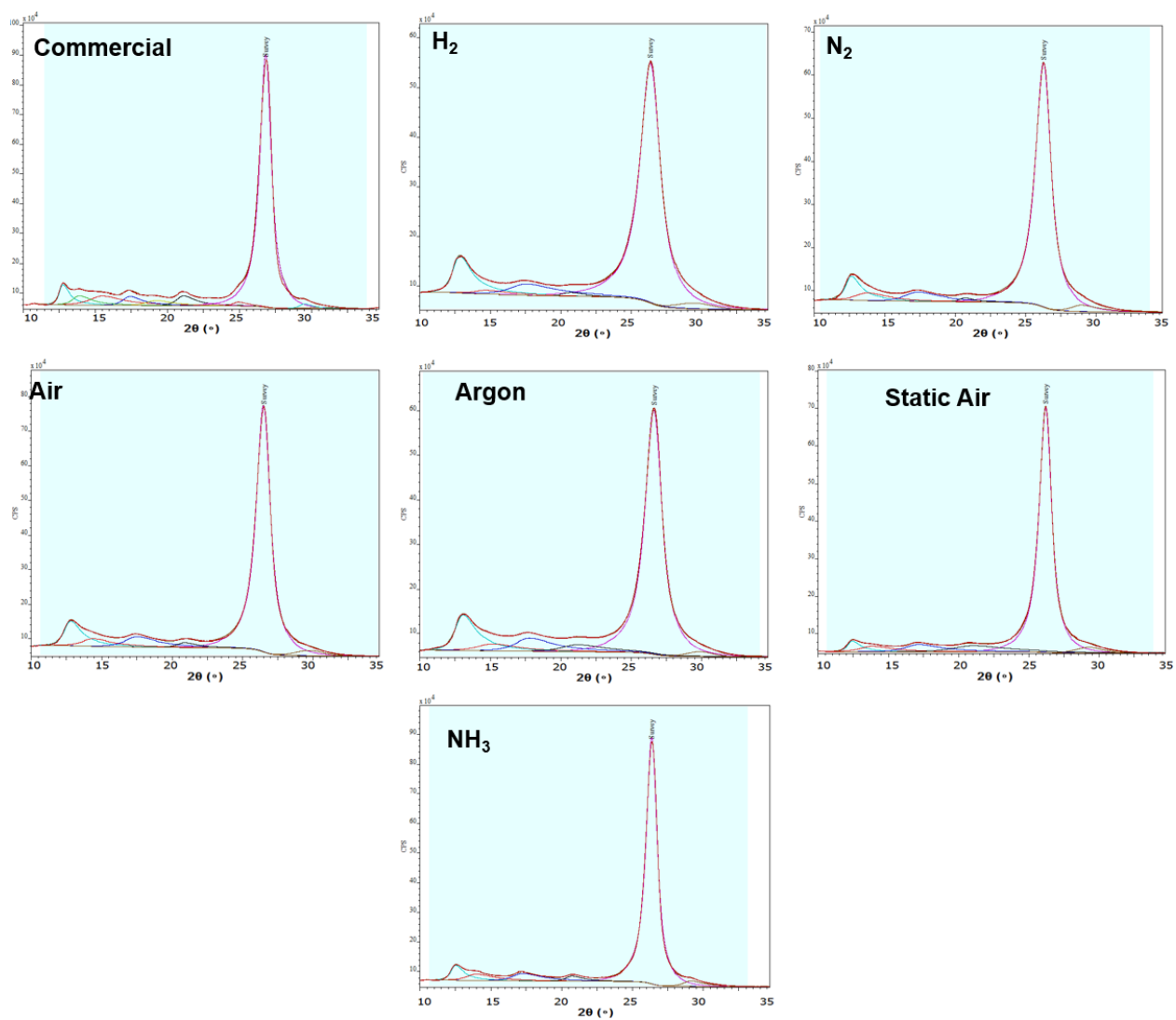
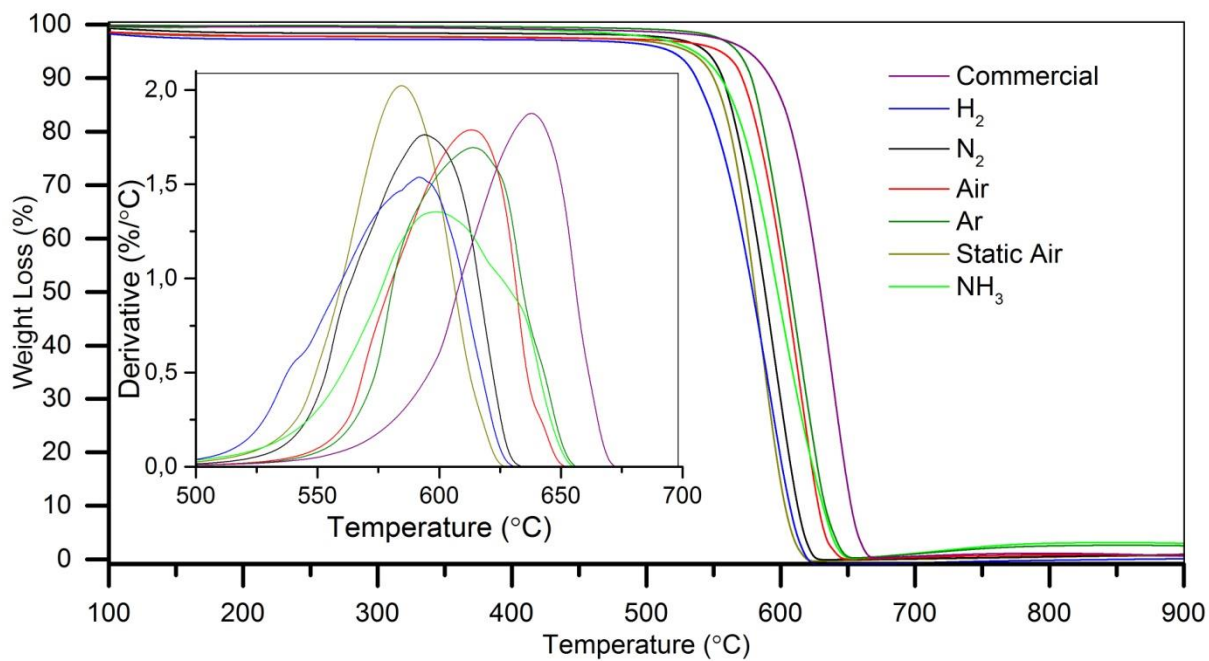


Figure S2. Light emission spectra of the Ceramic metal halide Hg lamp (150 W) used with the two solar and visible illumination configurations. For the visible configuration, a Nigrosin solution of 0.1 g L<sup>-1</sup> was added within the plunging quartz tube. The light emission was measured by using an ILT-900-R spectroradiometer from International Light Technologies.



**Figure S3** XRD deconvoluted peaks for the calculus of the distance of s-triazine and tri-s-triazine phases, and the interlayer distance.



**Figure S4.** TGA profiles. **Inset)** Derivatives of weight loss from the references and from the g-C<sub>3</sub>N<sub>4</sub>-atm as-prepared samples.

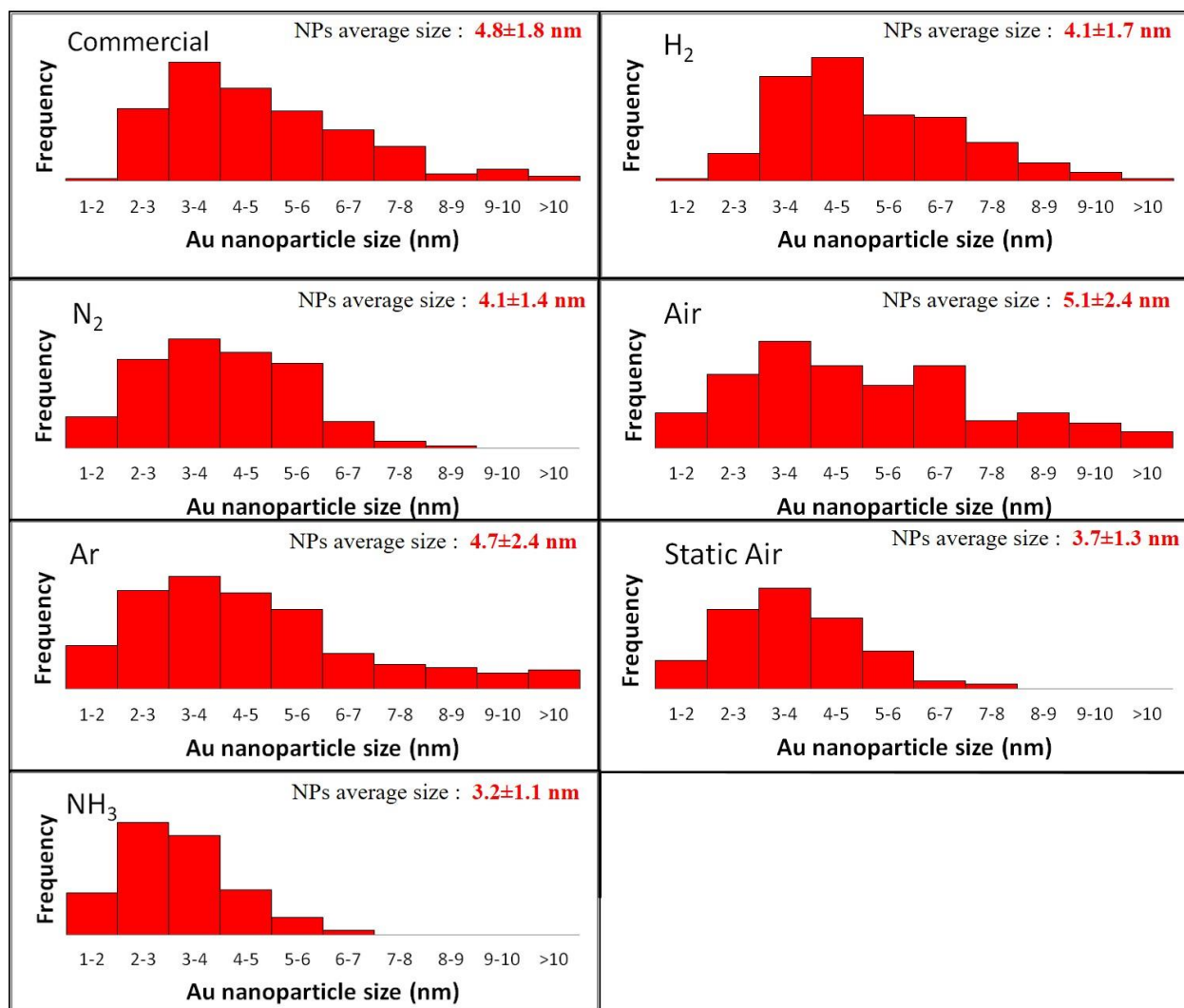


Figure S5. Particle size distribution obtained by TEM after (200 NPs for sample) for references and from the g-C<sub>3</sub>N<sub>4</sub>-atm as-prepared samples.

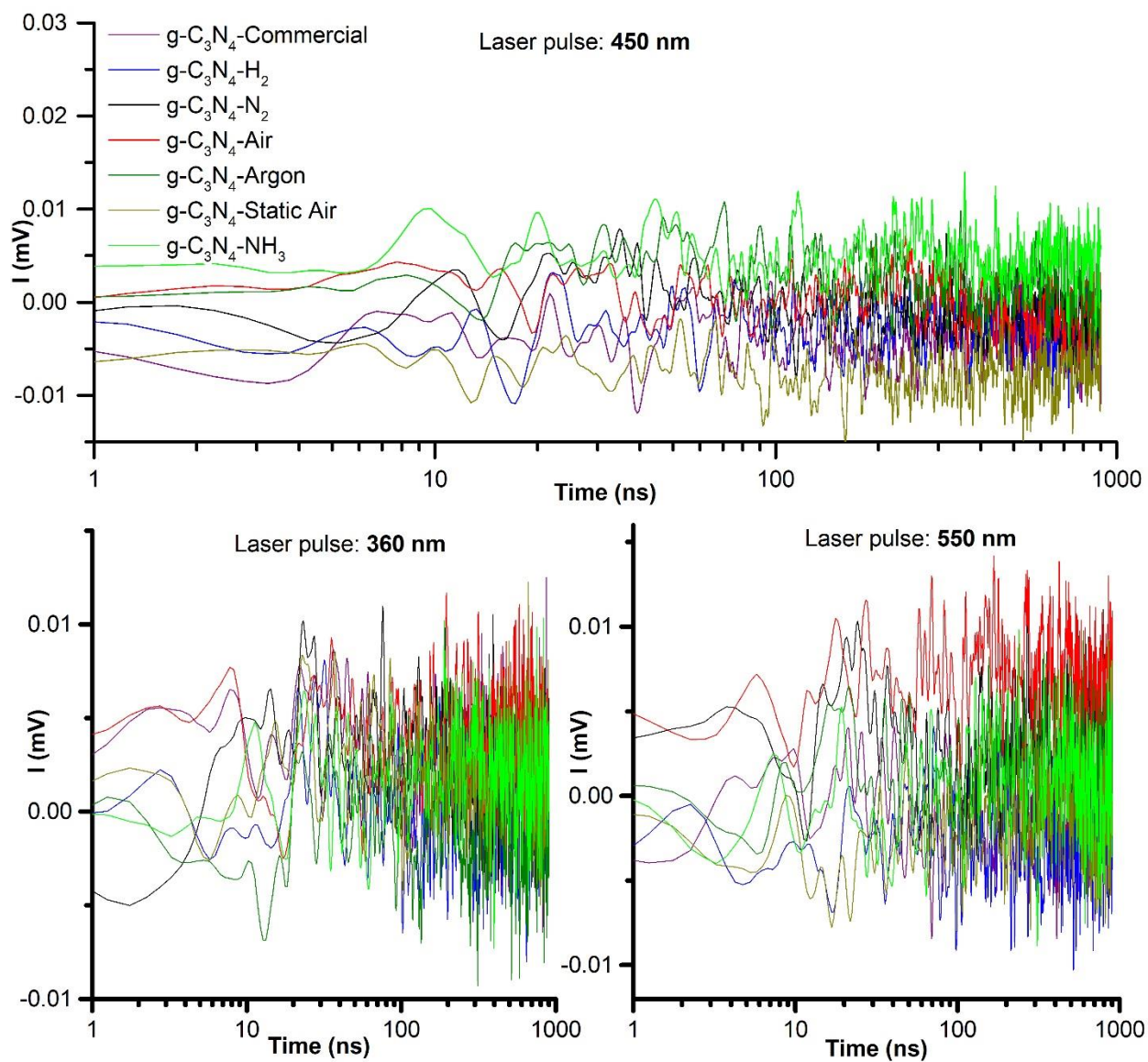


Figure S6. TRMC measurements of the references and of the as-prepared g-C<sub>3</sub>N<sub>4</sub>-atm samples at 360, 450, and 550 nm.

**Table S1.** ICP-MS results of the references and of the as-prepared g-C<sub>3</sub>N<sub>4</sub>-atm samples.

<b>g-C<sub>3</sub>N<sub>4</sub>T</b>	<b>Dep. Yield (%)</b>	<b>Au content (wt. %)</b>
Commercial	89±5	0.27
H <sub>2</sub>	81±4	0.24
N <sub>2</sub>	70±4	0.21
Air	82±4	0.25
Argon	69±4	0.21
Static Air	81±4	0.24
NH <sub>3</sub>	89±5	0.27