Supporting Information

Highly efficient hydrogen production and selective CO₂ reduction by C₃N₅ photocatalyst using only visible light

Kosei Ito and Kei Noda*

Department of Electronics and Electrical Engineering
Keio University
3-14-1 Hiyoshi, Kohoku-ku, Yokohama, 223-8522 (Japan)

E-mail: nodakei@elec.keio.ac.jp
**Fig. S1.** XPS spectra of O1s electrons measured for C₃N₅ and g-C₃N₄.

**Fig. S2.** PL spectra of 2-hydroxyterephthalic acid (at 426 nm) measured after VIS irradiation on terephthalic acid (TA) aqueous solutions containing C₃N₅, g-C₃N₄, no catalyst, and WO₃ as a reference material (purchased from Kojundo Chemical Laboratory), respectively. Here, TA was employed as a trapping reagent of hydroxyl radicals.
**Fig. S3.** Control experiments of CH$_3$OH production over C$_3$N$_5$ using oversaturated CO$_2$ solution after 1 hour visible light irradiation.

**Fig. S4.** Three cycle experiments of CH$_3$OH production over C$_3$N$_5$ using oversaturated CO$_2$ solution after 1 hour visible light irradiation.
**Fig. S5.** TEM images of C\textsubscript{3}N\textsubscript{5} observed before and after photocatalytic experiments.

**Fig. S6.** Powder XRD profiles of C\textsubscript{3}N\textsubscript{5} observed before and after photocatalytic experiments.