Supporting information

Bio-inspired SiO_2-Hard-Template Reconstructed g-C_3N_4 Nanosheets for Enhanced Photocatalytic Hydrogen Evolution

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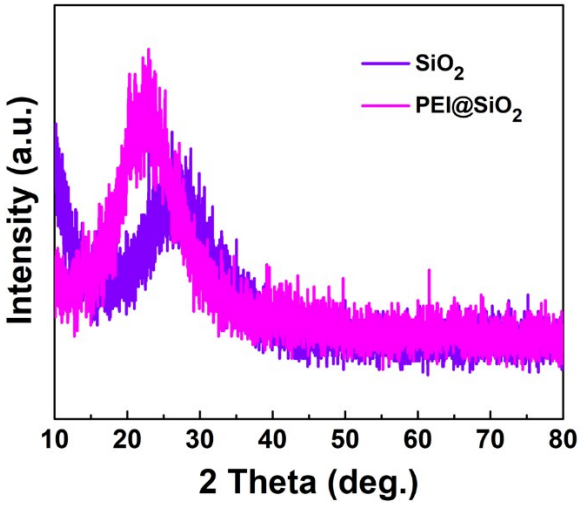

Figure S1 XRD patterns of PEI@SiO_2 and SiO_2.

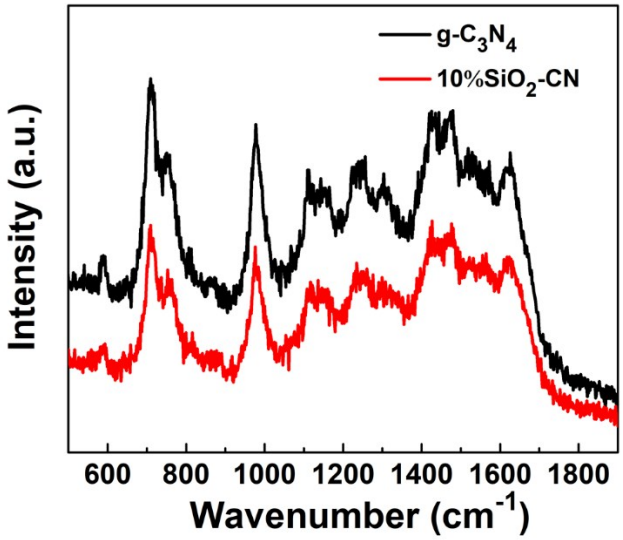

Figure S2 Raman spectra of g-C_3N_4 and 10%SiO_2-CN.

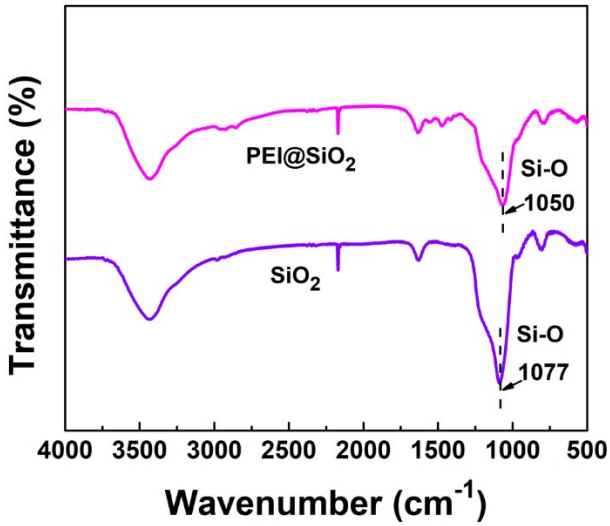

Figure S3 FT-IR spectra of PEI@SiO_2 and SiO_2.

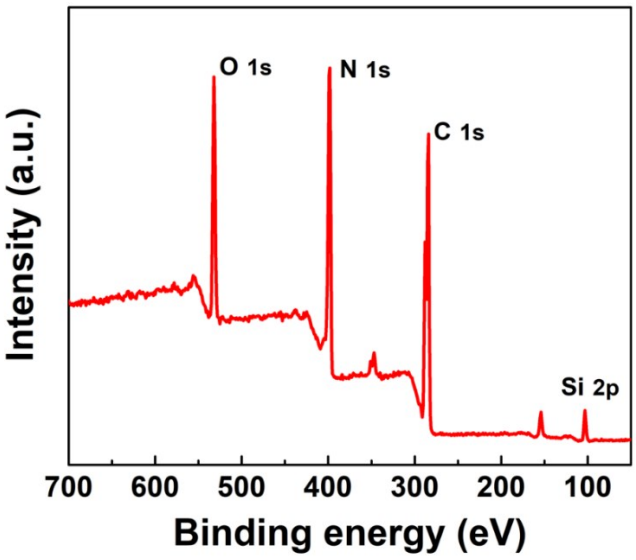

Figure S4 Survey XPS spectrum of 10%SiO_2-CN.

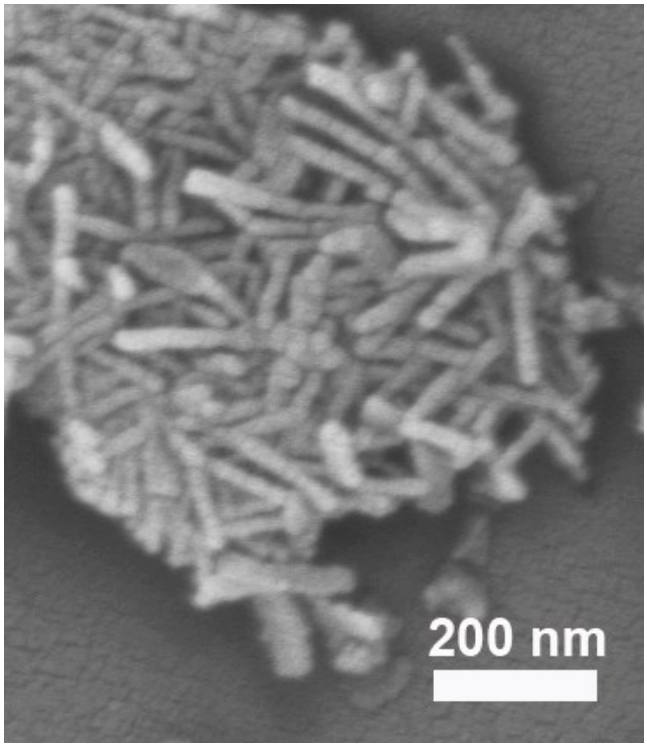

Figure S5 SEM image of PEI@SiO_2.

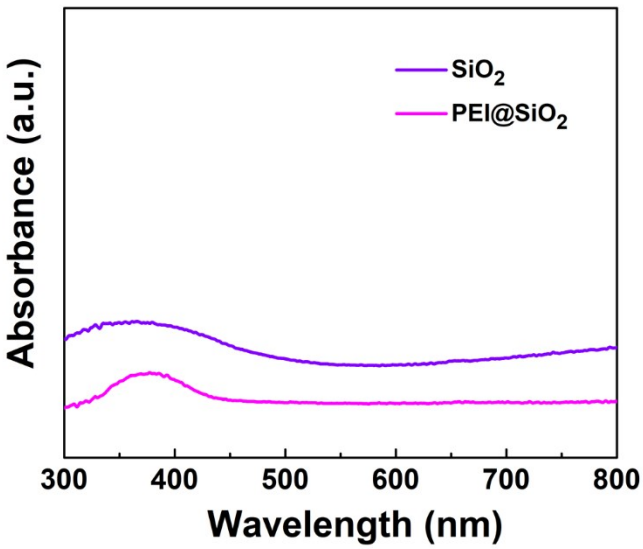

Figure S6 UV-Vis DRS spectra of PEI@SiO_2 and SiO_2.

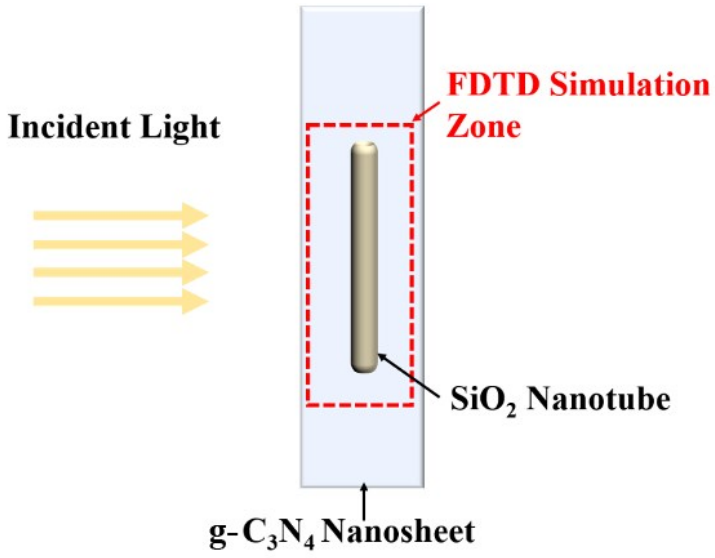

Figure S7 The FDTD simulation model of the SiO_2/g-C_3N_4 composites.

A SiO_2 nanotube with an outside diameter of 50 nm, a length of 1 μm and a tube wall thickness of 10 nm was employed as the light scattering agent, which was settled in the matrix of a g-C_3N_4 nanosheet with a dimension of 1 μm × 5 μm × 100 nm. For a comparison of the light propagation through the pristine g-C_3N_4 nanosheet, the SiO_2 nanotube was removed directly. The SiO_2 was set as a transparent material with a refractive index of n = 1.5. The incident light was set perpendicular to the SiO_2 nanotube and the g-C_3N_4 nanosheet, and the FDTD simulation zone can be seen in Figure S7. The boundary conditions were set as periodic type for the top and bottom surface, and introduced as perfect matched layers for the left and the right surface of the unit cell, with a uniform fine mesh type of 4 for simulation. The wavelength for the simulation light source was set at 550 nm.

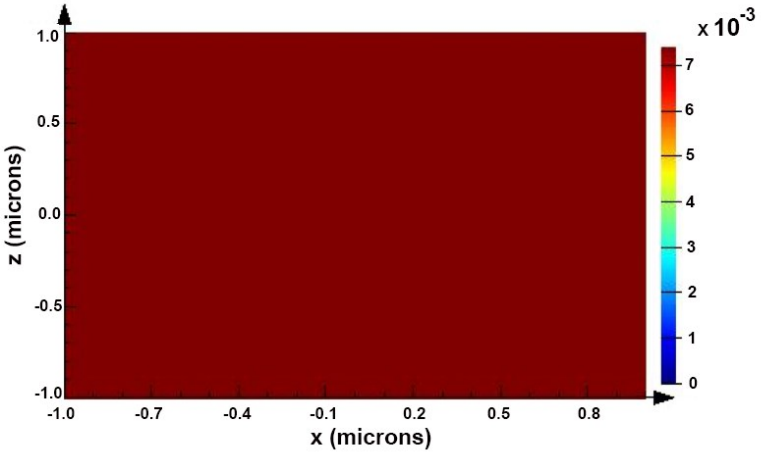

Figure S8 3D finite-difference time-domain (FDTD) calculations of electron distribution on the g-C_3N_4 material with light irradiation.

Table S1 Summary of EA results of g-C_3N_4 and 10%SiO_2-CN.

Samples	EA				
	C (wt%)	N (wt%)	H (wt%)	Apparent formula	Atomic C/N
g-C_3N_4	34.70	64.13	1.86	$C_3N_{4.75}H_{1.93}$	0.541
10%SiO_2-CN	25.76	46.20	1.99	$C_3N_{4.61}H_{2.78}$	0.588