**Electronic Supporting Information**

**Graphitic Carbon Nitride Nanosheets Decorated Zinc-Cadmium Sulfide Type-II Heterojunctions for Photocatalytic Hydrogen Production**

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S1 Materials and Methods

S1.1. Chemicals

Melamine (C3H6N6), sodium hydroxide (NaOH), zinc acetate [Zn(OAc)2], cadmium acetate [Cd(OAc)2], sodium sulfide nonahydrate [Na2S·9H2O], and sodium sulfite (Na2SO3) of analytical grade puritywere purchased from Sigma-Aldrich and used as received without further purification.

S1.2. Characterization

The structure and morphology of the as-synthesized samples were analyzed by transmission electron microscope (TEM, JEM-2100F, 200kV accelerating voltage). The crystal phase of the samples was measured by powder X-ray diffraction (XRD) measurements with a Philips X’Pert Pro Super diffractometer with Cu-Kα radiation (λ = 1.54178 Å) at an operating voltage of 40 kV and current of 200 mA. The elemental composition of the prepared catalyst was determined using X-ray photoelectron spectroscopy (XPS) analysis (PerkinElmer RBD). The UV−vis diffuse reflectance spectra (DRS) for band gap calculation and absorption behavior were recorded with a Shimadzu spectrophotometer (2501 PC model) in the 200 to 800 nm region. Photoelectrochemical tests were performed with a CHI-660B potentiostat (Chenhua Instrument Co., Shanghai, China) with a three-electrode setup (modified Ti foil as the working electrode, Ag/AgCl as the reference electrode, and Pt wire as the counter electrode) in 0.1 M Na2SO4 solution. The electrochemical impedance spectroscopy (EIS) was recorded with −0.6 V bias, and the frequency ranged from 1 Hz to 100 kHz with an alternating current signal amplitude of 5 mV.



**Figure S1:** Low resolution TEM image of *g*-C3N4‒ZnCdS catalyst.



**Figure S2:** XPS full scan survey for *g*-C3N4‒ZnCdS catalyst.