

ADVANCED FUNCTIONAL MATERIALS

Supporting Information

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Supramolecular Chemistry in Molten Sulfur: Preorganization Effects Leading to Marked Enhancement of Carbon Nitride Photoelectrochemistry

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Table S1. Carbon/nitrogen atomic ratio of Ph-CN thin films depending on the S mass mixed with the precursor.

| S added (mg) | 0 | 100 | 400 | 600 | 1200 |
|--------------|------|------|------|------|------|
| C/N (atom) | 0.85 | 0.86 | 0.90 | 0.94 | 0.95 |

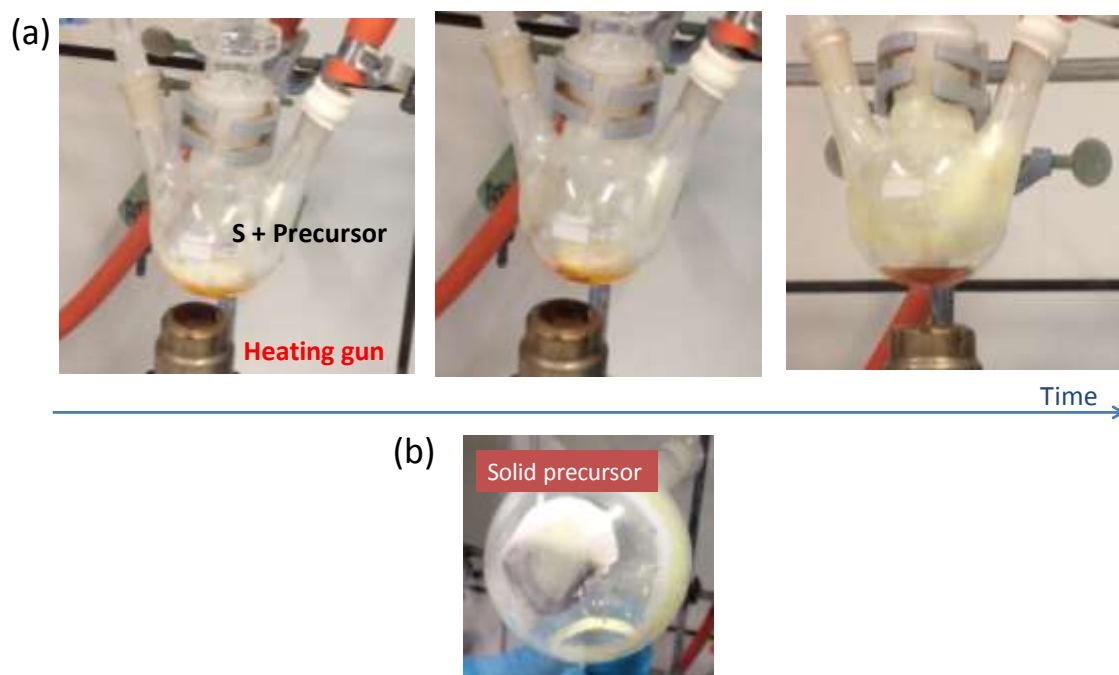


Figure S1. a) In-situ observation of the thermal behaviors of the mixture of S and the precursor, b) phase separation of the product by heating mixed S and cyanuric acid-melamine supramolecular complex that does not melt at elevated temperature.

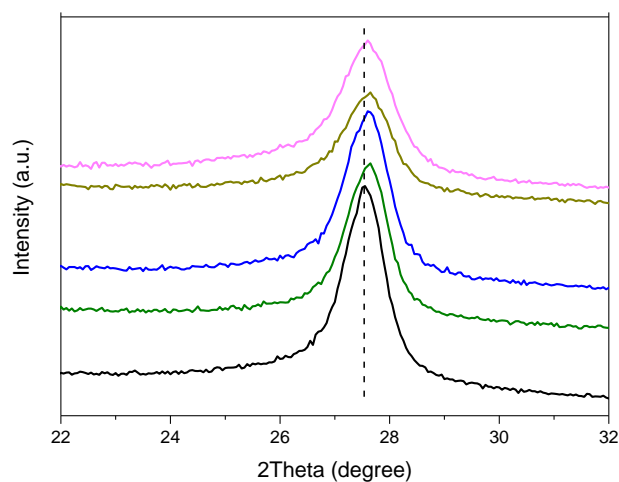


Figure S2. Zoomed in XRD pattern of the Ph-CN substrate, sulfur amount increasing from bottom to top.

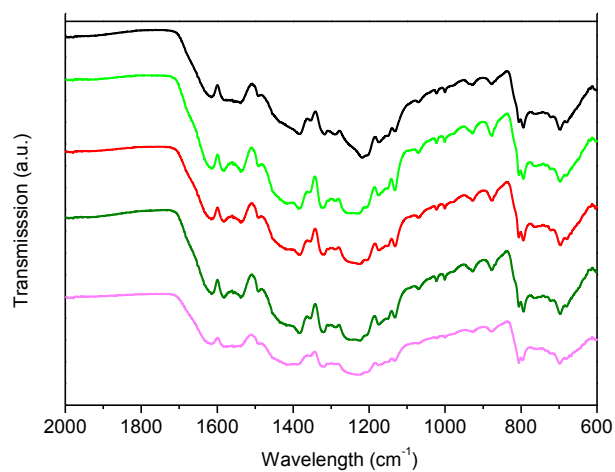


Figure S3. FTIR spectra of Ph-CN substrate with various S added, from top to bottom: 0, 100, 400, 600 and 1200 mg.

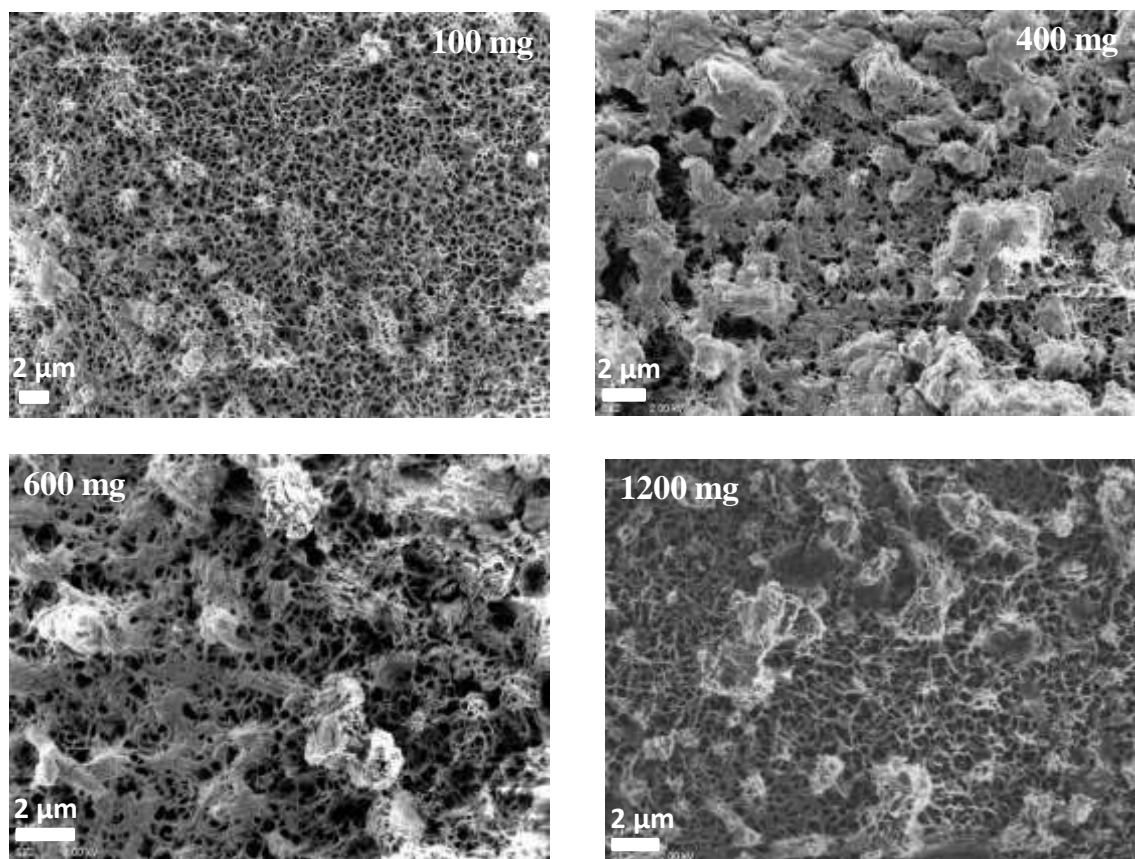


Figure S4. Top-view SEM images of Ph-CN thin films with different amount of S added.

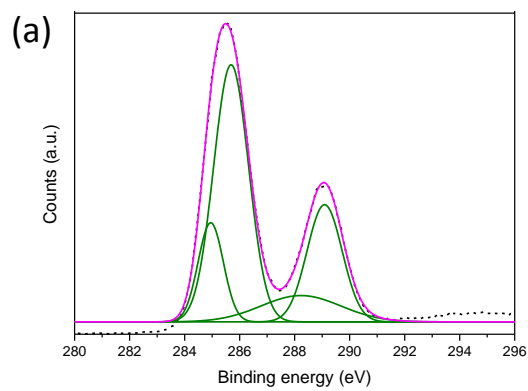


Figure S5. Fitted C 1s XPS spectrum of Ph-CN substrate.

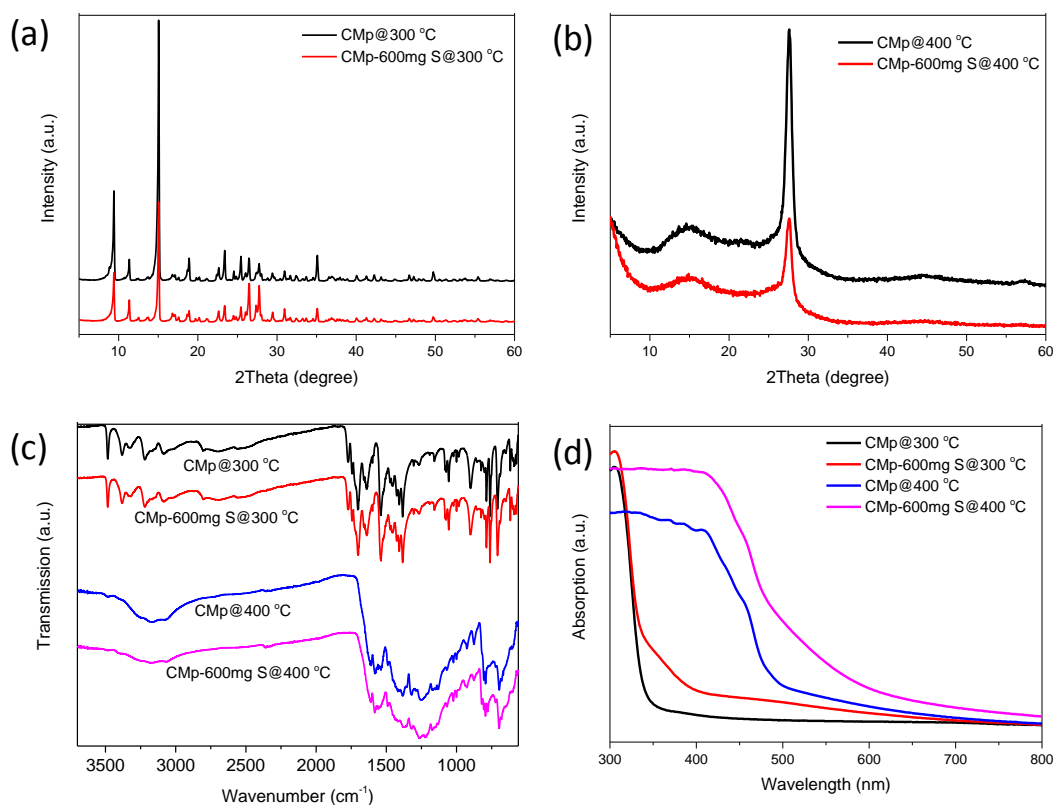


Figure S6. a,b) XRD patterns, c) FTIR spectra and d) UV-vis spectra of the intermediates obtained at 300 and 400 °C without and with 600 mg sulfur.

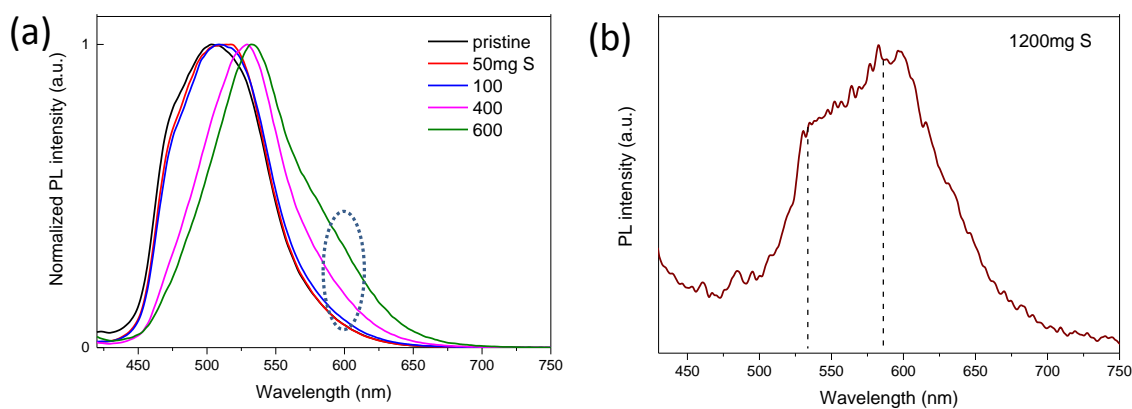


Figure S7. a) Normalized PL spectra of Ph-CN substrates with different S amount, b) PL spectrum of Ph-CNS₁₂₀₀.