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Abstract	:	A novel approach was developed for synthesizing nitrogen-doped porous carbon (NPC) using a ternary deep eutectic solvent (DES) composed of gallic acid, urea, and zinc chloride (Ga:U:ZnCl₂). The synthesis was performed at two carbonization temperatures (500 °C and 800 °C), with varying molar ratios of precursors. FTIR analysis confirmed the incorporation of nitrogen-containing functional groups, as indicated by N_{single bond}H and O_{single bond}H stretching vibrations. TGA results demonstrated that NPC thermal stability improved with lower urea content, with NPC800–161 exhibiting the highest thermal resilience. Structural characterization revealed that graphitization decreased with increasing carbonization temperature and urea content, as shown by XRD and Raman spectroscopy. XPS analysis further validated these findings, showing a shift in nitrogen species distribution, with pyridinic-N dominating at 800 °C, enhancing the material's adsorption potential. SEM and BET analyses indicated that carbonization temperature and urea content significantly influenced morphology and porosity. NPC800–161, with a honeycomb-like porous structure, achieved a BET surface area of 306.99 m²/g and a CO₂ adsorption capacity of 1.86316 mmol/g. These results emphasize the importance of optimizing precursor ratios and carbonization conditions to enhance NPC performance for CO₂ capture, catalysis, and energy storage. NPC800–161 emerges as a promising material for environmental and industrial applications, demonstrating the potential of DES-derived NPCs in addressing sustainability challenges.