Achieving the desired mesoporosity of carbon xerogels has been the focus of many research works regarding their synthesis since it is often the mesoporosity that determines their industrial applications. Applications of mesoporous carbon xerogels include supporting materials for catalysts, electrode materials for capacitors, column chromatography packing, adsorbents, thermal insulators, confinement of metal nanoparticles, and so on. Our interest is precisely to build a mesoporous structure for the nano-confinement of magnesium nanoparticles.

The primary objective of this work is to hydrothermally synthesize high-quality hydrogels that can undergo hot-air drying to yield mesoporous carbon xerogels. More specifically, hydrogel synthesis was carried out in an autoclave under a pressure of about 0.63 MPa and a temperature of 180 °C. The hydrothermal process temperature and initial pH of the solution were varied in search of a suitable condition that minimizes structural collapse during subsequent hot-air drying.

The hydrogels were synthesized by polycondensation of 2,4 dihydroxybenzoic acid with formaldehyde. Ammonium hydroxide was used as basic catalyst and distilled water as solvent. The sol-gel polycondensation took place in a 35 mL-Teflon-lined stainless steel autoclave. The xerogel obtained was characterized by SEM, XRD, XPS, BET, IR and TGA.

The hydrothermal process was on the overall relatively simple, low-cost, and less time-consuming compared to the conventional atmospheric method.

**Keywords:** mesoporous carbon, hydrothermal synthesis, magnesium

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