

### Colloidal templating method for ordered porous carbon structures

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We applied polystyrene colloidal crystals as a template for ordered porous carbon structures. Mono-dispersed PS templates were prepared by emulsion polymerization and assembled to form colloidal crystals. Phenolic reagent-formaldehyde(PF) resol solution were synthesized by three different phenolic reagents, phenol, hydroquinone, phloroglucinol. To fabricate 3D-inverted opal structured carbons, PS templates were infiltrated with the PF resol solution with block copolymer and excess solution was removed. We investigated differences of reaction conditions and final products among three different phenolic reagent based resol solution by using various analysis. An ordered microporous structure was observed by SEM, mesoporous structure was observed by TEM, surface area was investigated by BET and crystallinity was investigated by XRD.