

Tortuosity of the porous structure of carbon gels

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Carbon gels are porous materials obtained by carbonization of the organic polymers usually obtained by sol-gel polymerization reaction of a hydroxylated benzene and an aldehyde. The final three-dimensional polymeric network can be controlled by the polymerization and post-treatment conditions. Thus, usually varying the type and amount of solvent and/or reactants and the pH of the precursor solution, different characteristics of the polymeric network may be obtained. Typically, these variables are modified to adjust the porous properties to the requirements of a certain application. However, the porous characterization of the resultant materials is usually reduced to evaluate the pore volume and the mean pore size. In this work, it is shown how a series of samples with analogous pore size may present differences in their polymeric structure. The characterization of not only the volume and size of the voids between nodules, but also the tortuosity of these voids inside the polymeric structure may be determinant for the further behavior of these materials in some applications.