

### Development of electrode materials using carbon aerogel/polymer composites

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Carbon aerogels are promising materials for electrodes due to their large specific surface area and their high electrical conductivity. The Carbon aerogels were prepared by polycondensation of resorcinol with formaldehyde using sodium carbonate as a catalyst in ambient conditions, which is called RF aerogel. Conditions which change pore of RF aerogel are gelation temperature, time, the amount of catalyst. In this paper, the effect of resorcinol-to-catalyst ratio (R/C ratio) on volume shrinkage, BET surface area, and electrochemical property was investigated by changing R/C ratio from 100 to 2000. When the RF aerogel was dried after gelation for 7 days at 90°C, it showed different results depending on the R/C ratio. In the R/C ratio less than 500, it showed high volume shrinkage and from 500 to 1500 R/C ratio, less than 2% volume shrinkage and high BET surface area was confirmed. The volume shrinkage of RF aerogel was increased when the R/C ratio was more than 1500. carbon aerogel was made from RF aerogel which was dried in N<sub>2</sub> atmosphere, at 900°C, during 2hours without the volume shrinkage.