

CARBONIZED POLYANILINE CRYOGEL: A SPECTROSCOPIC STUDY

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Cryogels are chemically or physically crosslinked systems of polymer chains swollen with water. They are produced by the preparation of conducting polymers in frozen media, in ice. They contain a conducting component, typically a conducting polymer, such as polyaniline [1] and suitable supporting polymer. Raman spectroscopy allows for the analysis of wet samples or of aqueous solutions. Freeze-dried polyaniline cryogel has been prepared from polyaniline and was also analyzed with Raman spectroscopy. The carbonization has been followed by thermogravimetric analysis in inert atmosphere [2]. The macroporous morphology of polymer aerogel was retained after carbonization (Fig. 1). Raman spectra of polyaniline salt at 20 and 100 °C present the bands of the phenazine-like segments in polyaniline at 1646, 1401 and 578 cm^{-1} , indicating extensive cross-linking of units (Fig. 2) [3]. The conversion to nitrogen-containing carbon is complete at 500 °C.

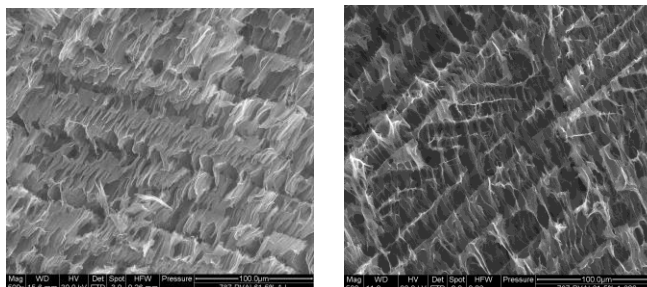


Figure 1 – Morphology of polyaniline aerogel at 20 °C (left) and after exposure to 600 °C. (right)

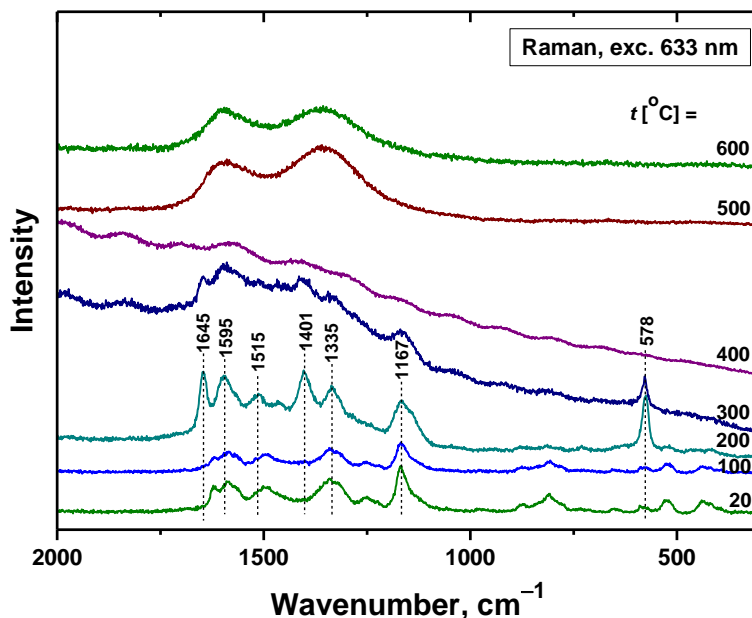


Figure 2 – Raman spectra of polyaniline aerogel exposed to elevated temperature

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References

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