



Electrospun BaTiO₃ Nanofibers

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BaTiO₃ is a ceramic lead-free material which is extensively investigated due to its ferroelectricity and piezoelectricity, which opens a wide applications in many electronic devices such as capacitors and nanogenerators.¹ In comparison with nanoparticles, the 1D nanostructured BaTiO₃ such as wires, tubes and fibers have attracted substantial attention due to their high aspect ratio and unique physical and chemical properties.² Electrospinning, as a simple and versatile technique, can be used for production of both organic and inorganic continuous fibers with diameters of several nanometers.³

In this work, BaTiO₃ nanofibers were prepared by electrospinning technique via polymer assisted sol-gel precursor solution, in order to adjust the viscosity which is a key parameter for successful electrospinning. The obtained fibers were spun onto a rotating collector, which resulted in production of aligned nanofiber mat. Additionally, the effects of calcination temperature and time on crystal structure were examined by XRD, Raman and FTIR analysis. SEM study showed that the obtained BaTiO₃ nanofibers have smooth morphology and hollow diameters.

Keywords: BaTiO₃, electrospinning, nanofibers, SEM, XRD

References

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