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Fabrication, characterization and magnetic properties of $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers

$\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers were fabricated by simple electrospinning using a solution that contained poly(vinylpyrrolidone) (PVP), Lanthanum nitrate ($\text{La}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$), Strontium nitrate ($\text{Sr}(\text{NO}_3)_2$) and Diisopropoxytitanium bis(acetylacetonate) solution. The $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers with average diameters of 109 –140 nm were successfully obtained from calcination of the as-spun $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3/\text{PVP}$ composite nanofibers at 630 –930 °C in air for 2 h. The as-spun and $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers were characterized by SEM, XRD, TEM, and VSM. The results of XRD and TEM with selected electron diffraction (SEAD) analysis indicated that the $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers had cubic perovskite structure with high intensity phase. Room temperature magnetization results revealed a diamagnetic behavior for all $\text{La}_{0.5}\text{Sr}_{0.5}\text{TiO}_3$ nanofibers.

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