|  |  |
| --- | --- |
| Title | Development of organic-inorganic flexible PVDF-LaFeO3 nanocomposites for the enhancement of electrical, ferroelectric and magnetic properties |
| Author(s) Name | Dhiraj Kumar Rana, Vivek Mehta, Shovan Kumar Kundu, Soumen Basu |
| Contact Email(s) | soumen.basu@phy.nitdgp.ac.in  |
| Published Journal Name | Materials Chemistry and Physics |
| Type of Publication |  Journal Article |
| Volume | 242 | Issue |  |
| Publisher | Elsevier |
| Publication Date |  15 February 2020 |
| ISSN | Online: 1879-3312, Print: 0254-0584 |
| DOI | https://doi.org/10.1016/j.matchemphys.2019.122491 |
| URL | https://www.sciencedirect.com/science/article/abs/pii/S0254058419313033 |
| Other Related Info. |  |

|  |
| --- |
|  |

|  |  |
| --- | --- |
| Abstract: The development of organic-inorganic PVDF-LaFeO3 (PVDF-LFO) flexible nanocomposite films has been synthesized by in-situ sol-gel method. The structural, electrical, ferroelectric and magnetic properties are investigated to explore its possible device applications. The existences of polar β-phase in nanocomposites are confirmed through the XRD pattern and FTIR spectra. Frequency dependence (100 Hz–1 MHz) electrical properties of the nanocomposites suggest the CBH conduction mechanism is followed by the charge carriers. The dielectric constant increases with the incorporation of LFO nanoparticles into the nanocomposites. The remanent polarization of the nanocomposites increased from 0.0014 to 0.012 μC/cm2 with LFO concentration from 0 to 15 wt% at 50 kV/cm and 100 Hz, which is the indication of enhancement of ferroelectricity in the nanocomposites. The room temperature remanent magnetization also increased from 0.006 to 0.02 emu/g of 5–15 wt% of LFO concentration and which confirmed the existence of weak ferromagnetic ordering of the nanocomposites. |  |
|  |