EFFECT OF STRONTIUM ON ELECTRICAL AND ATOMIC PROPERTIES OF Pb ($Li_{¼}$ $La_{½}$ $W_{½}$) O_3 CERAMICS

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The ultrasonic velocity (v), attenuation coefficient (α) and electrical resistivity was measured in the Polycrystalline samples of $(Pb_x\ Sr_{1-x})\ (Li_{1/4}\ La_{1/4}\ W_{1/2})\ O_3$, x = 0.0, 0.35, 0.075, 0.10 belonging to perovskite oxide ferroelectrics were prepared by conventional solid state reaction technique.

The X-ray analysis was done which confirmed the formation of the compounds. The Ultrasonic velocity and attenuation coefficient imply that the absorption of ultrasonic waves were found to be minimum at x = 0.035.

The measurement of dc resistivity (ρ) as a function of both applied electric field and temperature confirm that the compounds exhibit the negative temperature coefficient of resistance (NTCR) behaviour above 500K temperature.

It is concluded that the $(Pb_x\ Sr_{1-x})\ (Li_{1/4}\ La_{1/4}\ W_{1/2})\ O_3$, x = 0.0, 0.035, 0.075, 0.10) compounds have orthorhombic structure at room temperature (~300 K). The doping of Sr^{2+} ions at the Pb-site affect the ferroelectic property of the parent compound. The 0.035 and above mole percentage of Sr^{2+} doping Lead Lithium Lanthanate Tungstate compound looses its ferroelectric property (and more absorptivities) Sr^{2+} doped compound shows a linear variation of dielectric constant with temperature.

This material can be used as good capacitive material in electronic industries in a wide temperature range. Above 500K, all the four compounds behave as negative temperature coefficient resistors (NTCR).