







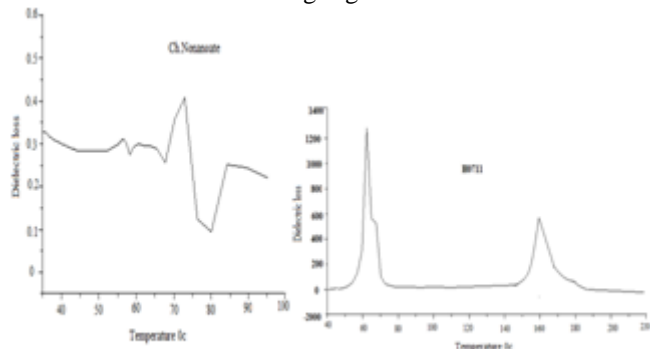






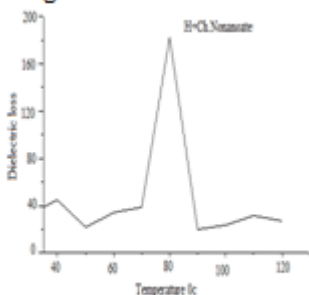
**The dielectric loss factor**

The effect of temperature on dielectric losses at frequency 10KHz is shown in following Figures.1.47-1.52

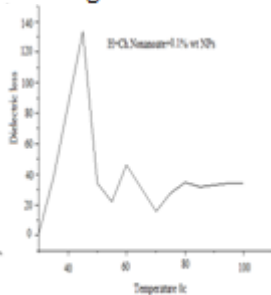


**Figure 1.47**

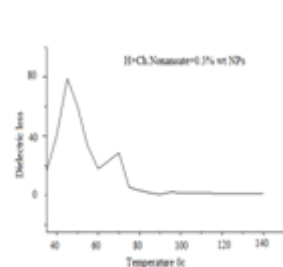
**Figure 1.48**



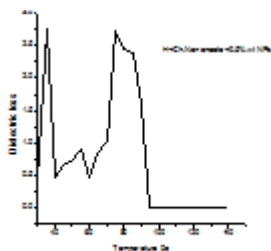
**Figure 1.49**



**Figure 1.50**



**Figure 1.51**



**Figure 1.52**

It has been observed that the dielectric loss shows variation with change in temperature. The LC mixture shows dielectric loss less than pure FLC. While the dielectric loss for all doped mixture is lower as compare to pure LCs. This proves that the NPs provide a more ordered LC system in which loss factor reduces. The dielectric loss is less in 0.5% wt concentration of NPs in LC mixture than other concentration.

**Table 4:** Values of Dielectric constant ( $\epsilon'$ ) of all the compounds at 30<sup>0</sup>c

Compounds	Dielectric constant
Ch.Nonanoate	0.01280
H0711	2.25
Ho711+Ch.Nonanoate	3.8
Mixture+0.1% NPS	6.21
Mixture+0.3% NPS	7.1
Mixture+0.3% NPS	27

**6. Conclusion**

We observed that low concentration of nanoparticle enhances the orientation coupling in a LC and leads to the increase of the clearing point. This increase is related to a permanent polarization of the ferroelectric nanoparticles. They have also

improved the phase stability in LC mixtures. In UV-Vis absorption spectra the FLCs absorb the longer wavelength of light than the LC mixtures and doped mixtures. This is because of the Stabilizing effect of the pitch in the FLCs. The dielectric loss is less in doped LC mixtures compared to pure LCs and their mixtures. This loss is less in 0.5% wt of NPs in LC mixtures compare to other concentrations. The doped LC mixture show high value of conductivity compare to pure LCs and their mixture. This can be attributed to the reduction in ionic impurity by nanoparticles. The conductivity and dielectric constant of LC mixtures with +0.5 % wt of NPs is found to be high.

**References**

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**Author Profile**

**Rita A. Gharde** has obtained her Ph.D. degree in 2002 from University of Mumbai, Mumbai (India). Currently, she is an associate professor in the department of Physics, Mumbai University. Her field of interest in research is the study and characterization of the pure and doped liquid crystals. Sangeeta Y. Thakare is a research Scholar, pursuing her Ph.D. under the guidance of Rita A. Gharde. Her research is focused on the dielectric and electro-optical studies of the ferroelectric liquid crystals.