

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Light induced effects in chiral liquid crystals: the role of local heating** KATHRYN REDDY, PETR SHIBAEV, Fordham University, Department of Physics, ANDREY ILJIN, Institute of Physics, Ukraine — Response of chiral viscoelastic liquid crystals doped with novel chiral azo dyes to a light irradiation was studied at different wavelengths and powers of incoming light. Light irradiation resulted in a shift of the selective reflection band and structural changes in cholesteric liquid crystal. Very often in scientific literature these effects are exclusively attributed to the isomerization of azo dyes. However, both effects in chiral liquid crystals can be explained in terms of i. changes of elastic constants, ii. volume changes, iii. helical pitch changes. Theoretical analysis of these factors shows that they can be dependent on local heating. The role of local heating is studied experimentally by using a number of fast responding thermo sensors. It is found that the role of heating can not be excluded from consideration for many liquid crystals displaying sharp temperature dependence of their parameters. For some liquid crystals local heating can be responsible for the observed effects.

Kathryn Reddy  
Fordham University, Department of Physics

Date submitted: 15 Nov 2013

Electronic form version 1.4