Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Circular dichroism of chiral photonic crystal liquid layers with enclosed defect inside ASHOT GEVORGYAN, Yerevan State University, Armenia, ARMEN KOCHARIAN, Califrnia State University, Los Angeles, GAGIK VARDANYAN, NNN Inc., Granada Hills, CA — The photonic crystals of artificial and self-organizing structures with spatial periodic changes in dielectric and magnetic properties have attracted considerable interest recently due to unusual physical properties and wide practical applications. The chiral periodic structure in the scale of optical wavelength gives rise to strong and characteristic circular dichroism responses at visible wavelengths. Here we investigate photonic density, circular dichroism and peculiarities of absorption and emission spectra at various eigen polarizations in multilayered one-dimensional chiral soft matter with two layers of CLCs and an isotropic defect layer inside. The circular dichroism is defined by differences in light energy absorption A=1-$(R+T)$ by the system (R and T are the reflection and transmission coefficients, respectively) and $A^{l,r}$ are the light absorptions, if the incident light has left and right circular polarizations, respectively. This problem can be solved by the modified Ambartsumian's layer addition method. The influence of absorption and gain on the circular dichroism, absorption and emission spectra is established in cholesteric liquid crystal (CLC) cell with an isotropic defect layer inside.

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Date submitted: 14 Nov 2014 Electronic form version 1.4