

Electronic Supplementary Information for
**Chiral Nematic Latex-GO Composite Films with Synchronous
Response of Color and Actuation**

Juanjuan Sun,^a Xingxiang Ji,^a Guihua Li,^a Yu Zhang,^a Na Liu,^a Hongguang Li,^{b*}
Menghua Qin,^{c*} Zaiwu Yuan^{a*}

^a State Key Laboratory of Biobased Material and Green Papermaking & Key Laboratory of Fine Chemicals in Universities of Shandong, Qilu University of Technology (Shandong Academy of Sciences), Jinan 250353, China. E-mail: yuanzaiwu@163.com

^b Key Laboratory of Colloid and Interface Chemistry, Ministry of Education, Shandong University, Jinan 250100, China. E-mail: hgli@licp.cas.cn

^c Laboratory of Organic Chemistry, Taishan University, Taian 271021, China. E-mail: qmh@qlu.edu.cn

Additional data

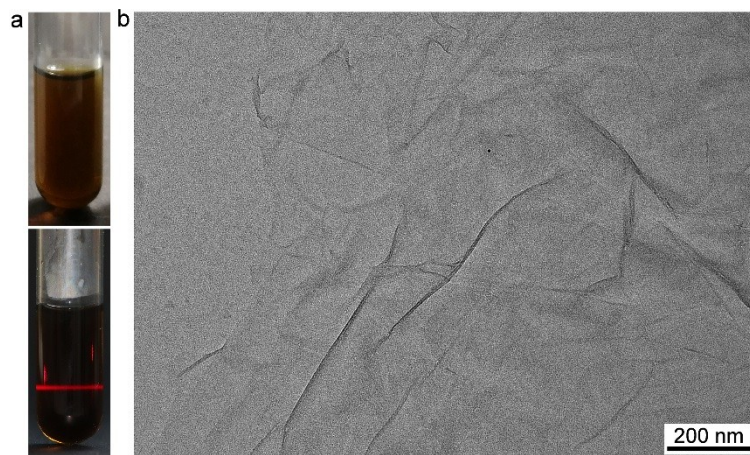


Fig. S1 Photos (a) and TEM image (b) of the aqueous dispersion of GO ($0.1 \text{ mg}\cdot\text{mL}^{-1}$).

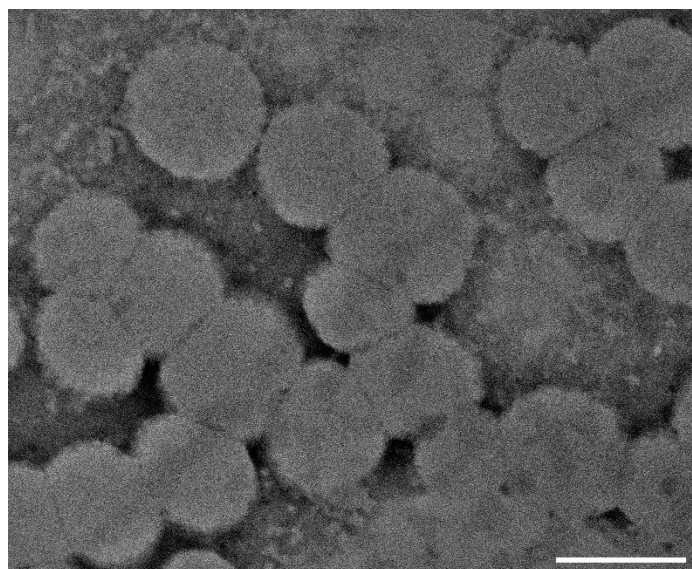


Fig. S2 A typical TEM image of an aqueous dispersion of the as-prepared latex particles. The scale bar corresponds to 200 nm.

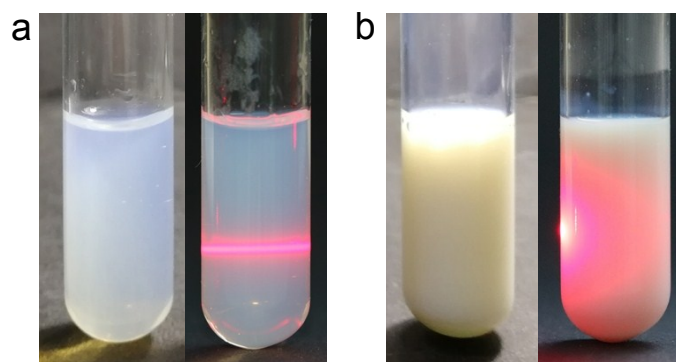


Fig. S3 Photographs of aqueous dispersions of CNCs (4 wt%, a) and latex (40 wt%,

b).

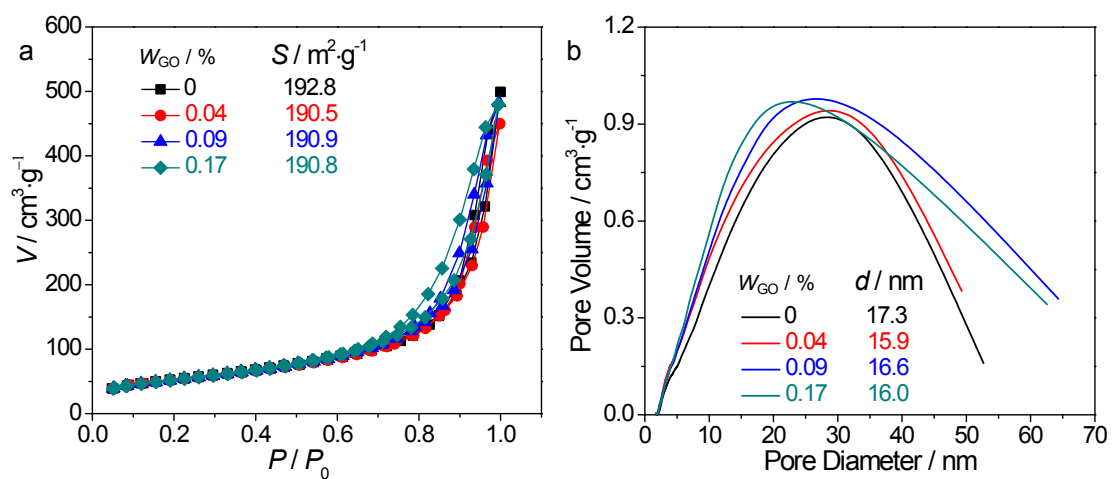


Fig. S4 N₂ adsorption/desorption isotherms (a) and BJH pore size distribution (b) of the composite films after alkali treatment followed by SCCO₂ drying. The content of GO for each film is shown inset.

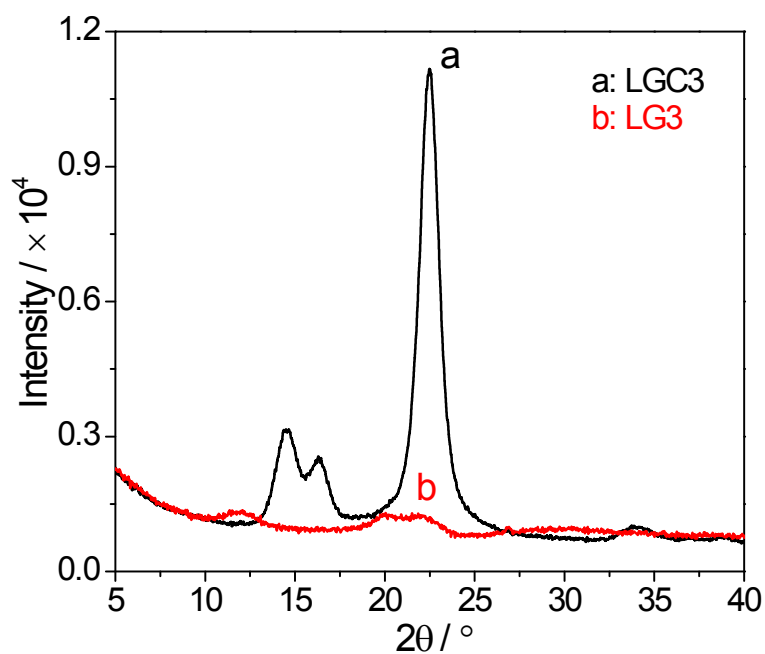


Fig. S5 XRD diffraction patterns of LGC3 and LG3.

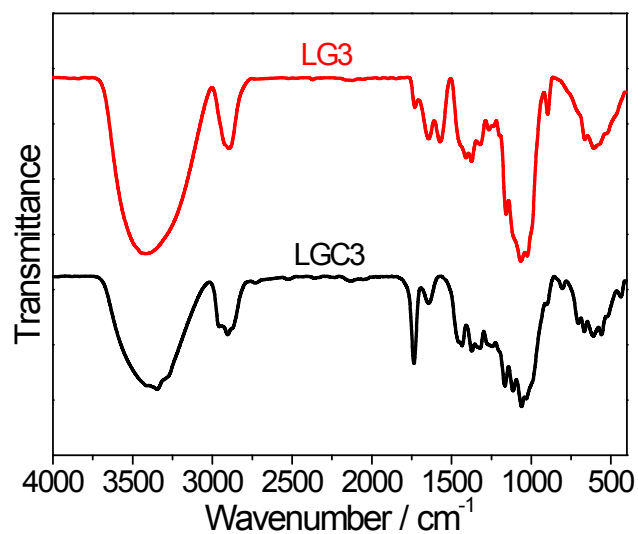


Fig. S6 FTIR spectra of LGC3 and LG3.

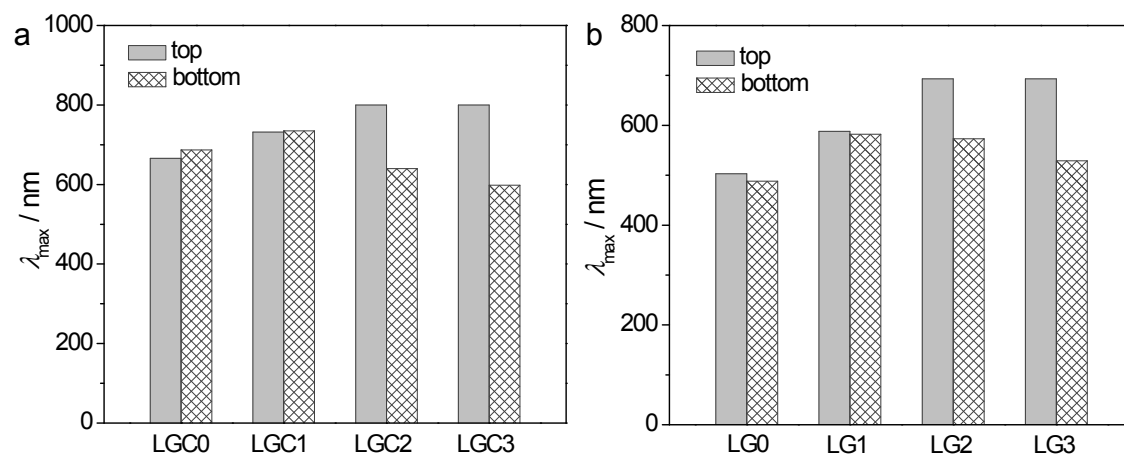


Fig. S7 Summary of λ_{max} of the reflection spectra on the top and bottom surfaces for LGC (a) and LG (b) films.

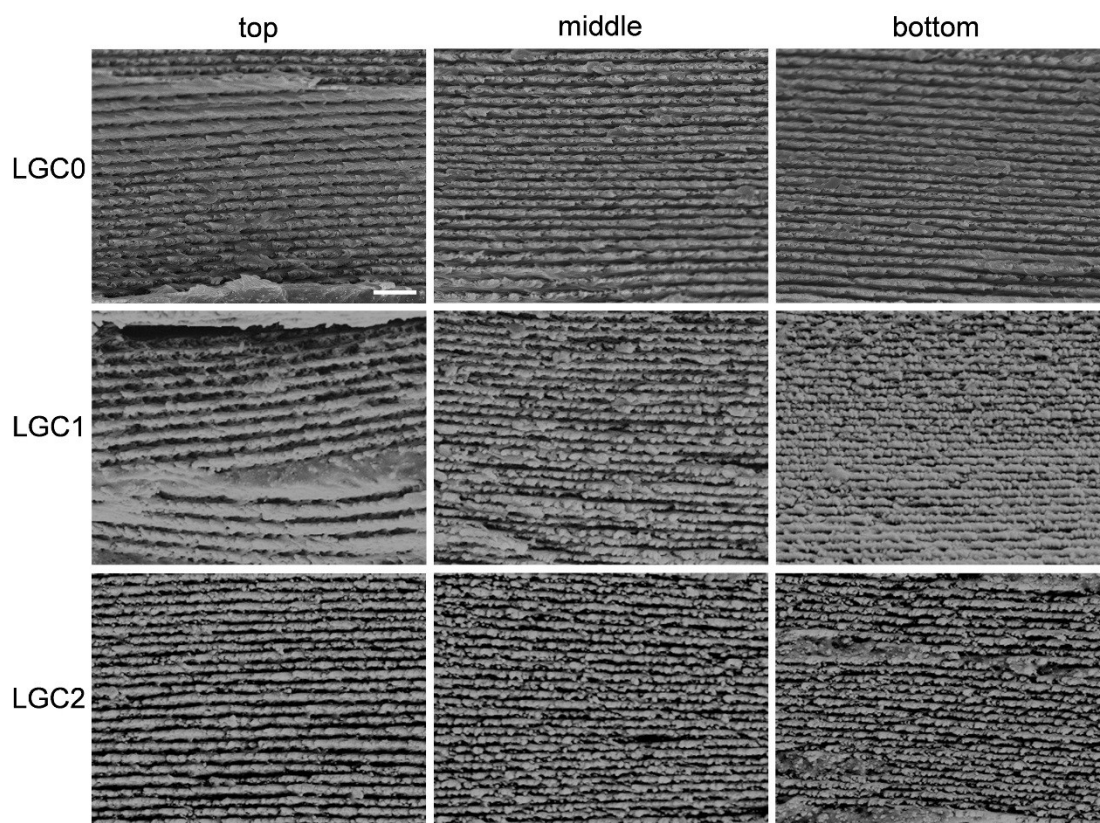


Fig. S8 SEM images of the fracture surfaces of LGC0-2 at different regions as indicated. The magnification of all the images is the same with the scale bar to be 1 μm .

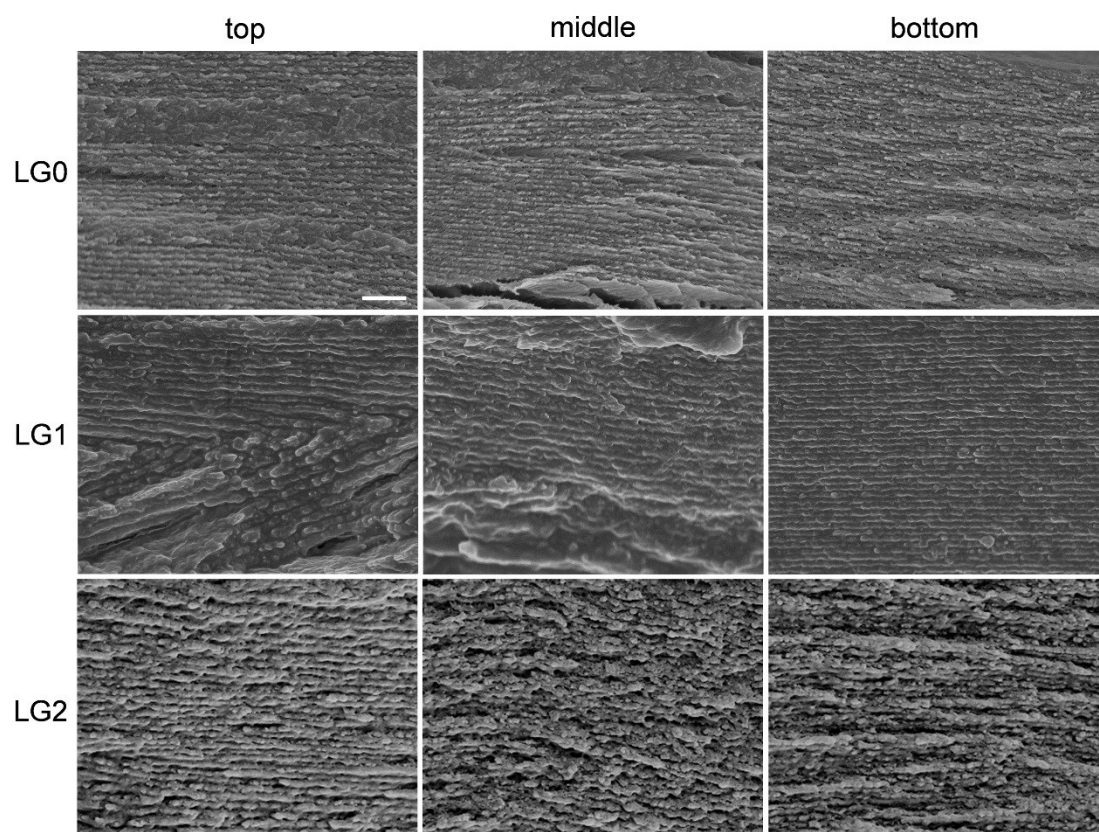


Fig. S9 SEM images of the fracture surfaces of LG0-2 at different regions as indicated. The magnification of all the images is the same with the scale bar to be 1 μm .

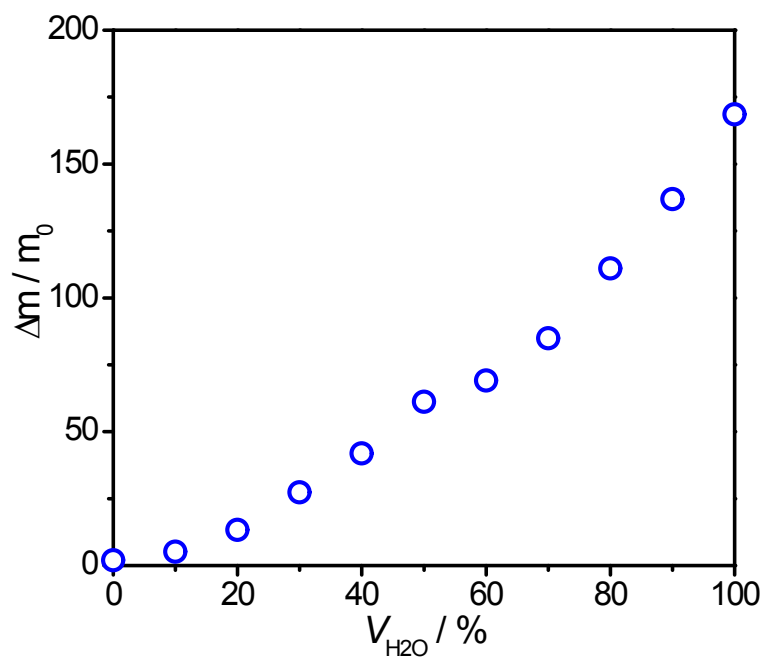


Fig. S10 Variation of extra weight fraction ($\Delta m / m_0$) as a function of $V_{\text{H}_2\text{O}}$ for the film bar of LG3 immersed in $\text{H}_2\text{O}/n\text{-PrOH}$ mixtures.

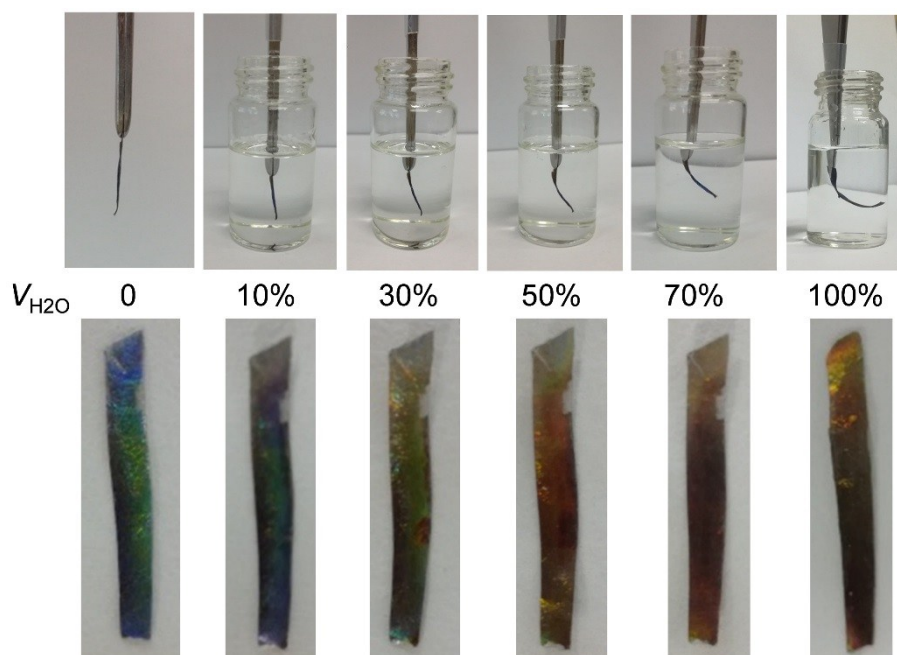


Fig. S11 Photos of the film bar of LG3 immersed in H₂O/MeOH mixtures with varying V_{H_2O} . Photos denoting the color change of the film bar are also given.

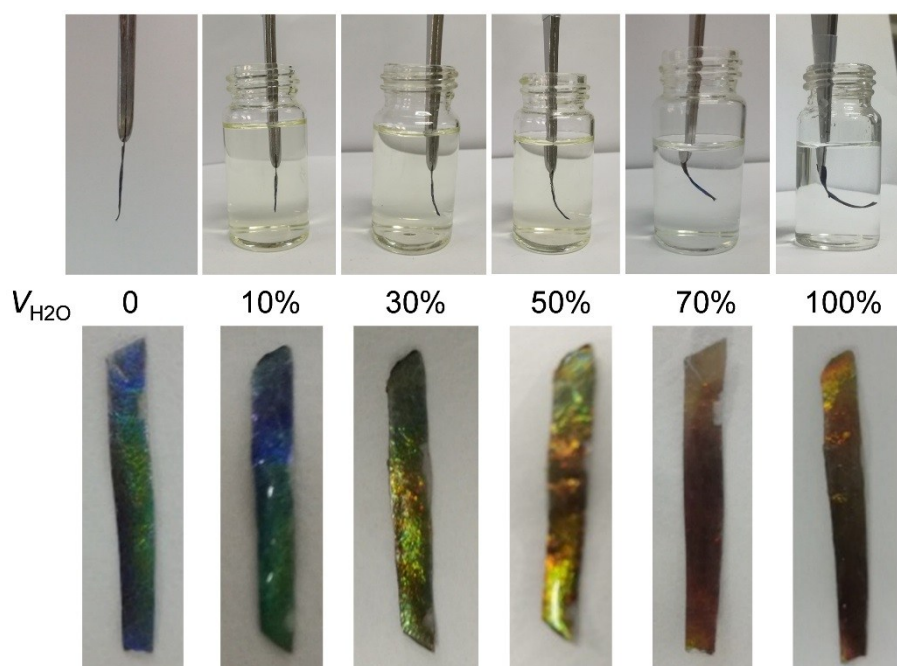


Fig. S12 Photos of the film bar of LG3 immersed in H₂O/acetone mixtures with varying V_{H_2O} . Photos denoting the color change of the film bar are also given.