1 INTRODUCTION

The high performance engineering-material coupled with low melt-viscosity and the tendency to form fibrous structure makes liquid crystalline polymers (LCPs) useful for various industrial applications. They are known for high strength and stiffness, high chemical resistance, good dimensional stability and low linear thermal expansion coefficient. While blended with other thermoplastics polymers, the LCPs improve mechanical properties of composites at reasonably low cost [1, 2]. LCPs display different morphologies when mixed with other thermoplastics [3, 4]. The shape of dispersed LCP varies from spherical, elliptical, layered to fibrous shape and depends upon the volume fraction of LCP, vis-
advanced by the interfacial tension [25, 26]. The LCP’s are incompatible with the thermoplastics because the melt of LCP displays anisotropy whereas the latter show isotropy. Figure 13 shows a fractured surface in which PET dominating morphology can be observed. Figure 14 is slightly different than Figure 13 as the layers and fibres of LCP were also observed along with PET smooth surface. The formation of layers and fibres may be attributed to the increased number of LCP particles with the increased LCP content and possible coalescence of these particles combined with the sheared flow inside the capillary. Figure 15 shows the microstructure where in the morphological features of LCP dominate over that of PET and hence fibrous structure can be seen in this micrograph. The morphology of LCP/PET samples strongly exhibits the composition dependency.

4 CONCLUSION

Visco-elastic parameters $G'$, $G''$, $\eta'$ are composition dependent at both states; the solid as well as fluid state of LCP in LCP/PET blends. The value of $\eta'$ of blends containing more than 50% of LCP in LCP/PET blend is higher than that of either of the blend constituents at 285°C. The increased amount of LCP in the blend reduced the sensitivity of $G''$ with respect to $\omega$. PET displayed near Newtonian behaviour beyond the $\omega$ value 1 rad/s. This behavior was dominated by shear thinning effect in all composition of LCP/PET blends. The $G'$ versus $G''$ plots demonstrated the composition dependency of LCP/PET blends at both temperatures 265 and 285°C.

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REFERENCES


