Title:	Study of self - assembly and photoisomerization of polymeric amphiphiles at liquid crystal- aqueous interfaces for the applications in biosensing
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Abstract:	It has been established from past studies that LC-aqueous interfaces are quite responsive to a variety of biological phenomena. It is detected by observing the change in the surface alignment of the liquid crystal molecules using the polarized optical microscope. Firstly, the amphiphilic polymers were studied where it was established that amphiphilic polymers show interactions with the liquid crystal molecules. But there still existed a need to develop a promising approach to introduce specific biorecognition groups at these interfaces that show interactions with the specific biological species. Therefore, new biotin functionality was introduced to these amphiphilic polymers which are known to show specific binding interactions with the avidin protein. We have prepared the doped mixtures of the biotinylated polymer into parent polymer so as to obtain an optimum concentration for further optical studies. Consequently, we were able to detect the presence of avidin protein at the LC-aqueous interfaces by observing the optical signals. Also, by using LC-sensing as a platform, we were able to show that polymer architecture plays an important role in influencing the surface anchoring of LC molecules. Hence two different architectures of polymers (linear and hyperbranched) were differentiated. In addition to this, the effect of photo-induced isomerization of amphiphilic polymers on the ordering of LC within the polymer doped LC films at aqueous interfaces was investigated. Overall, the results of the experiments provide a new approach for the introduction of biorecognition groups at the LC-aqueous interfaces for studying their interactions with biological species including protein.
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