Supporting information for

PDLC composites based on polyvinyl boric acid matrix – a promising pathway toward biomedical engineering

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Acknowledgements

The research leading to these results has received funding from the Romanian National Authority for Scientific Research, MEN – UEFISCDI grant, project number PN-II-RU-TE-2014-4-2314 and project number Horizon 2020 WIDESPREAD 2-2014: ERA Chairs, nr: 667387.

Figure 1s. NMR spectrum of BBO liquid crystal

Figure 2s. The Raman spectra of pure **BBO** liquid crystal and **PVAB** matrix

Figure 3s. Raman images constructed from different spectral regions and their dependence on laser polarization, as indicated on the top and left of the figure.

UV-vis and photoluminescence

Photophysical properties of the pure liquid crystal and embedded into PVAB matrix were investigated by UV-vis and photoluminescence spectroscopy.

UV-vis spectrum of the BBO solution in dichloromethane exhibited an absorption band at 266 nm, corresponding to the π - π^* transitions in the benzenoid chromophore (Figure 4sa). The band is sharp, with edge at 300 nm, corresponding to an energy band gape of 4.1 eV. Photoluminescence spectra of the pure liquid crystal and embedded into polymer matrix as films were registered by exciting with the light at absorption maximum wavelength. The photoluminescence spectrum of the pure smectic **BBO** film shows a sharp band in the UV domain with maximum at 276 nm, and a broad, structured band in the blue region with the emission maximum around 448 nm. The photoluminescence curves of the BBO embedded into PVAB matrix have identical trace profile, but are more intense (Figure 4sb), reflecting the

encapsulation of LC as microdroplets which increase the ratio of the surface to volume and thus the luminescence. Comparing the emission intensity of the PDLc films, it can be seen that P1 is more intense compared to P2 and P3, the most probably as consequence of the larger surface of smaller droplets which compete with higher BBO concentration.

Figure 4s. a) UV-vis and b) luminescence spectra of the pure LC and PDLc composites