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Editorial

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Editorial

The papers in this volume were all presented at the "2nd International Workshop on Liquid Crystals for Photonics" which was held at Wolfson College, Cambridge, from 20–22 July 2008. It was a successful meeting, judged by number of participants and feedback from delegates. The organisation of the Workshop was jointly shared by a team at Cambridge and a team from University College London.

The diversity of the workshop is well represented in this volume. The reports cover: nonlinear optical effects; devices and applications; modelling; alignment of liquid crystals; and nanoparticles in liquid crystals.

The Plenary presentation of Khoo shows how to theoretically configure liquid crystals for negative, zero, and unity refractive index media. Experimental Kerr effect studies on mixtures of tolane liquid crystals are described by Ghanadzadeh Gilani and co-workers.

Photonic liquid crystal fibre (PLCF) is the subject of several investigations. Budaszewski *et al*. present experimental measurements of the depolarizing effect of PLCF on sources of short coherence length. Wolinski *et al*. show that the PLCFs might be used for temperature and pressure sensing. Ertman *et al*. present the measurements of the evolution of the state of polarization in a PLCF under application of a lateral electric field. Czapla *et al*. used photonic crystal fibre surrounded by liquid crystals and measured both temperature and electric field sensitivity of this structure.

Applications of LCs to photonic networks and devices is represented in the papers of Lallana *et al*., Snow *et al*. and Beeckman *et al*. The paper of Lallana *et al*. provides an interesting link with the first Workshop. The nematic LCD based multiplexer and optical attenuator from the Proceedings of the first Workshop has been improved by the use of a polymer dispersed LCD. Snow *et al*. explain the hysteretic behavior found in the electro-optical tuning of a planar Bragg grating device using a LC overlay. In the first of two papers, Beeckman *et al*. show how a filter that switches rapidly between two broad wavelength ranges may be constructed using a ferroelectric LCD. In the second paper, experimental measurements on a four stage Lyot-Öhman type filter with a variable birefringence LCD pre-filter are presented.

Applications are envisaged in relation to polarization selective wavelength tunable sensing.

Sluijter *et al*. have extended previous work on the application of a Hamiltonian optics to light propagation in LC media. They apply this treatment here to light guiding and spatial light modulation applications. And Yakutovich *et al*. use a novel mesh-free simulation approach to study the post aligned bistable nematic cell.

Camorani *et al*. present a new alignment technology featuring azo-containing polymer brushes. Since these are photosensitive they can be used as command surfaces. Spadlo *et al*. have measured the anchoring energies of two varieties of a polyimide which produces vertical alignment with a small pre-tilt. Sutkowski *et al*. have demonstrated the use of alignment layers doped with anthraquinone dye to create a ferroelectric liquid crystal optically addressed spatial light modulator.

A number of papers is concerned with LC materials and their properties. Ziobro *et al*. discussed the synthesis of fluorosubstituted ester dopants for nematic mixtures with low threshold voltage and also for dual frequency addressable devices. Skrzypek presents the identification and measurement of an induced antiferroelectric phase in a mixture comprising cyano terminated compounds.

Natarajan *et al*. show how to improve the electro-optical performance of polymer stabilized cholesteric liquid crystals by holographic patterning. Hadjou Belaid *et al*. investigate the kinetics of polymer induced phase separation under ultraviolet (UV) radiation. Elouali *et al*. describe some interesting properties of poly(2-hydroxyethylmethacrylate)/5CB systems. Finally, Bensaid *et al*. have improved our understanding of holographic PDLC, based on acrylate monomers.

High birefringence materials are the subject of two papers. Urruchi *et al*. have explicated how conventional techniques for measuring the birefringence should be modified for cells which show retardances greater than 2π. Xu *et al*. have shown that high birefringence at visible wavelengths correlates well with high dielectric anisotropy in the microwave region.

The subject of suspension of inorganic nanoparticles in liquid crystals is also represented by two papers. Arora *et al*. from Darmstadt show how a suspension of multiwalled carbon nanotubes in ferroelectric liquid crystals demonstrates improved switching and stabilization of the helix. A closely related area is the novel liquid crystal blends where the intermolecular interaction is sufficiently strong for the blend to be stable without additional molecular engineering. Khouba *et al*. investigate the solute-LC interactions in dispersions of Schiff bases and their transition metal complexes in liquid crystals.

The next International Workshop on Liquid Crystals for Photonics is scheduled for 2010 and we are looking forward to the new meeting and further development of ideas and work represented in this special issue.

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