

Interference illumination for periodic gratings with nematic, blue phase and chiral liquid crystals

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The illumination of a photosensitive layer with linearly polarized blue or UV light is a non-contact method, enabling the creation of patterns with high resolution and/or complexity. Such patterns can be realized by interfering laser beams or by projecting the image of a spatial light modulator. Interference illumination enables patterning with sub-micrometer resolution and the fabrication of diffractive optical components and holographic elements. By patterning dense arrays of topological defects on a substrate, large numbers of disclination lines can be created, with multiple possibilities for interconnections. In the presentation, photoalignment will be discussed for the fabrication of topological structures and practical photonic applications based on different liquid crystal phases: nematic, chiral nematic, ferroelectric nematic and blue phase liquid crystals.

Biography:



Kristiaan Neyts received his M.S. and Ph.D. degrees at Ghent University in Belgium in 1987 and 1992. In 2000 he became professor at Ghent University in the Electronics and Information Systems Department in the Faculty of Engineering. Since September 2023 he is professor at the Hong Kong University of Science and Technology (HKUST) in the Department of Electronic and Computer Engineering (ECE) and Director of the State Key Laboratory of Displays and Opto-Electronics (SKLDOE). His research is in the fields of photoalignment, liquid crystals, outcoupling of light and electrophoresis.