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5 March 2021

Bulk photoalignment of nematic liquid crystals by addition of azobenzene components

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[Proceedings Volume 11707, Emerging Liquid Crystal Technologies XVI: \(/conference-proceedings-of-spie/11707.toc\)](#) 117070B (2021) <https://doi.org/10.1117/12.2577673> (<https://doi.org/10.1117/12.2577673>)

Event: [SPIE OPTO \(/conference-proceedings-of-spie/browse/SPIE-Photonics-West/SPIE-OPTO/2021\)](#), 2021, Online Only

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Abstract

Surface photoalignment has been utilized to control the liquid crystalline (LC) orientation by exposing the photosensitive surface coatings to linearly polarized light. However, there are limitations in cell thickness and director orientation complexity if surface photoalignment was conducted. An alternative approach in controlling the director orientation is bulk photoalignment. Azobenzenes, which have been used for surface photoalignment due to fast reorientation during exposure, are homogeneously mixed into a nematic LC. We present results on how azobenzene doped LCs can be aligned in various standard orientations. In addition, rewriting alignment and patterning complex director orientations via bulk alignment will be discussed.

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