Title:	Flexoelectric Polarization in a Nematic Liquid Crystal Enhanced by Dopants with Different Molecular Shape Polarities
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Keywords:	Flexoelectric Polarization Nematic Liquid Crystal Molecular Shape Polarities
Issue Date:	2022
Publisher:	ACS Publications
Citation:	ACS Omega, 7(11), 9785-9795.
Abstract:	Flexoelectricity may have an important impact on the switching properties of nematic and cholesteric liquid crystals due to the linear coupling between the flexoelectric polarization of the liquid crystal and the applied electric field. This coupling is the origin of the extraordinary electro-optic effect in cholesterics aligned in the uniform lying helix texture, resulting in fast switching and field control of both rise and fall times. Therefore, the flexoelectric properties of the liquid crystals have become an important issue when designing and synthesizing liquid crystal materials and/or preparing their mixtures with appropriate flexoelectric compounds (dopants). Here, we report on the flexoelectric polarization of a highly polar nematic liquid crystal host enhanced by doping it with two newly synthesized dopants SK 1–6 and SK 1–8, possessing a hockey stick molecular shape, and comparing their doping effect with the one of the dimeric dopants CB7CB possessing a symmetric bend molecular shape. All dopants were dissolved in small concentration (5 wt %) in the nematic host so that the linear approximation of the dependence of the difference between splay es and bend eb flexoelectric constants, that is, (es – eb), on the concentration of the dopant in the host material can be applied. In this way, (es – eb) was estimated for the hockey stick dopants SK 1–6 and SK 1–8 to be 0.182 and 0.204 nC/m, respectively. The obtained flexoelectric polarization of these dopants is among the highest reported in the literature so far.
Description:	Only IISER Mohali authors are available in the record.
URI:	https://doi.org/10.1021/acsomega.2c00023 (https://doi.org/10.1021/acsomega.2c00023) http://hdl.handle.net/123456789/5127 (http://hdl.handle.net/123456789/5127)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

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