365
Accession number:20122915258770
Title:Fast response beam coupling in liquid crystal cells sandwiched between ZnSe substrates
Authors:Lian, Chao (1); Zhao, Hua (1); Pei, Yanbo (1); Sun, Xiudong (1); Zhang, Jingwen (1)
Author affiliation:(1) Department of Physics, Harbin Institute of Technology, Harbin, 150001, China
Corresponding author:Lian, C.
Source title:Optics Express
Abbreviated source title:Opt. Express
Volume:20
Issue:14
Issue date:July 2, 2012
Publication year:2012
Pages:15843-15852
Language:English
E-ISSN:10944087
Document type:Journal article (JA)
Publisher:Optical Society of America, 2010 Massachusetts Avenue NW, Washington, DC 20036-1023, United States
Abstract:Fast responses (20 ms rising time) both in symmetrical two-wave and degenerate-four-wave mixing experiments were observed and investigated in C <inf>60</inf> doped 4,4'-n-pentylcyanobiphenyl liquid crystal cells sandwiched between bare ZnSe substrates with an electric field applied parallel to the cell surfaces. The ZnSe material seems responsible for the fast response due to its excellent charge carrier transportation capability. Strong fanning effect and transient features were seen and studied, hinting super strong photorefractive effect in the material system. This low voltage operated liquid crystal based photorefractive approach is promising in real time applications over visible to terahertz regime. ©2012 Optical Society of America.
Number of references:24
Main heading:Photoreactivity
Controlled terms:Cell membranes - Electric fields - Liquid crystals
Uncontrolled terms:Beam coupling - Cell surfaces - Charge-carrier transportation - Fanning effect - Fast response - Liquid crystal cells - Low voltages - Material systems - Mixing experiments - Photo-refractive - Photorefractive effects - Real-time application - Rising time - Tera Hertz - Transient features
Classification code:461.2 Biological Materials and Tissue Engineering - 701.1 Electricity: Basic Concepts and Phenomena - 741.1 Light/Optics - 804 Chemical Products Generally
DOI:10.1364/OE.20.015843
Database:Compendex