



Colorado School of Mines Office for Technology Transfer

All-Optically Prepared and Controlled Nematic Liquid Crystal Light Valve

Dr. Tom Furtak, Youngwoo Yi

Department of Physics

Description: This device acts as an optical switch that controls the intensity of a light beam through the action of a second control beam. This behavior is achieved through photo-induced anisotropy that develops in a monomolecular layer coating the inside surfaces of a liquid crystal cell. One of these surfaces is permanently aligned prior to assembly, while the other surface retains reversible behavior, adopting anisotropy according to the orientation of the polarization of the control beam. The device is the first of its kind, in which both control surfaces contain the same molecule. The different behaviors on these surfaces are achieved according to the processing conditions.

Potential Areas of Application

- High-resolution microdisplays
- Optical memory
- Optical switching for optical beam control
- Main element in all-optical computer

Main Advantages of this Invention

- Display manufacturing without contact to window surfaces
- Doesn't rely on contact-rubbing methods
- Simple, reliable and low cost.

Intellectual Property Status: Patent issued February 27, 2007

ID number: US Patent 7,182,982

Opportunity: We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

Contact

William Vaughan
Director, Technology Transfer
Colorado School of Mines
1500 Illinois Street
Guggenheim Hall, Room 306a
Golden, CO 80401
Phone: 303.384.2555
Fax: 303.273.3244
Email: wvaughan@mines.edu