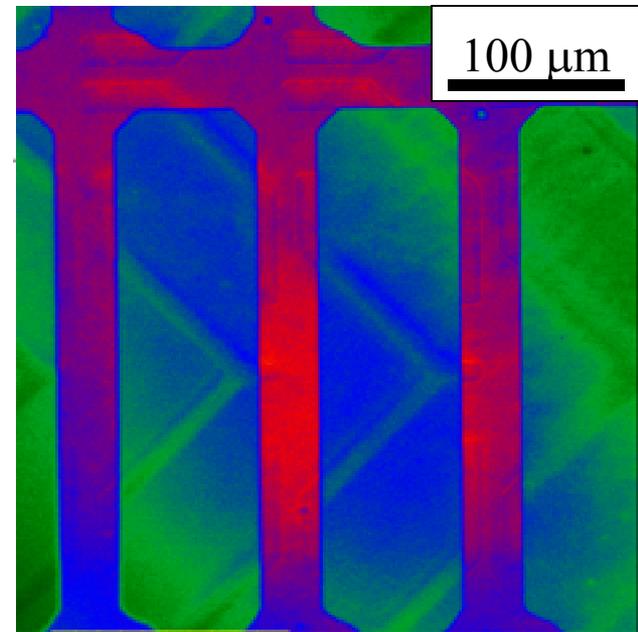


Acquisition and Development of Fast Confocal Polarizing Microscope for Liquid Crystal Materials Research and Education,

Oleg D. Lavrentovich

Kent State University, DMR-0315523

The award allows us to expand the technique of three-dimensional (3D) non-destructive imaging of liquid crystals, the so-called Fluorescence Confocal Polarizing Microscopy (FCPM), into the time domain of milliseconds to study fast processes in liquid crystals such as the electric switching of a pixel in a liquid crystal display. The new instrument images the wave of director reorientation propagating between the pixels in response to the applied voltage pulse, thus capturing the first two milliseconds of propagation that determine quality of the display performance.



Acquisition and Development of Fast Confocal Polarizing Microscope for Liquid Crystal Materials Research and Education,

Oleg D. Lavrentovich

Kent State University, DMR-0315523

Broader impact

The instrument with the principal scheme shown significantly improve the currently available technique of 3D imaging of liquid crystals by allowing researchers to study dynamical phenomena at the millisecond scale.

Education

The project involves graduate students at Chemical Physics Interdisciplinary Program (Bohdan Senyuk) and researchers at the Liquid Crystal Institute. Upon completion, the instrument will be used by undergraduates in the REU “Chemistry of Liquid Crystals” at Kent State University.

