Adaptive and nonlinear optical devices

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Olin Hall 105

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Abstract: I will discuss my research interests in nonlinear chalcogenide devices and electrowetting adaptive optics.

- **Chalcogenide devices** Recently, ultrafast and nonlinear integrated devices have captured interest for frequency metrology, sensing, and imaging. An excellent platform for nonlinear optical devices is offered by chalcogenide glasses, with high nonlinearities, long wavelength transparencies, flexible substrate choice, and low nonlinear absorption. Progress on integrated optical devices for the near, mid, and long-wavelength infrared is presented, including nonlinear optical characterization.

- **Electrowetting adaptive optics** Electrowetting, first demonstrated in the 1800s, is an effect in which an applied voltage can be used to shape the surface of a droplet or liquid-liquid interface. The resulting devices are compact, low power, and versatile. Specifically, I will discuss applications of electrowetting adaptive optical devices for biological imaging, wavefront correction, switching, and non-mechanical beam steering.

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