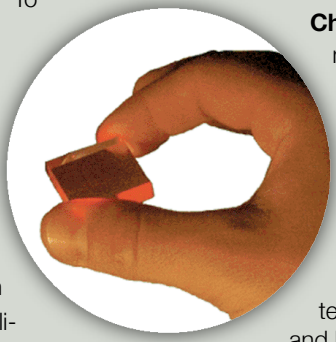
Microintegrated Optics for Advanced Bioimaging and Control

MOABC

The MOABC Center will focus on integrating optics into microscale and microfluidic systems. This need is increasingly apparent as cellular and molecular biosensors and analytical platforms are being developed for portable applications. To implement current technologies, such as fluorescence detection, in these applications, requires the integration of imaging, excitation, and detection capabilities into microscale platforms. For both portable health-care applications and for emerging research needs, microfluidic systems must also incorporate novel control and transport mechanisms for manipulating cellular and molecular samples. The use of integrated optics is the key to achieving both significant size and cost reduction for biomedical devices, and for meeting the requirements of biotechnology researchers for new assays and manipulation techniques. The proposed center will serve all levels of the research community, from fundamental investigations to commercialization ventures. Our products and expertise will aid not only the consumer of medical care in the United States, but extend the reach of many technologies to the Third World.



Technology Areas

Characterization: Novel integrated microscale biophotonic measurement systems for characterizing cells

Manufacturing: Femtosecond laser micromachining for precision, 3D-integrated optical/microfluidic devices.

Manipulation: Optical-based techniques for the control of cells and label-free sensing of cell properties.

Academic Partners

Colorado School of Mines
University of Colorado, Boulder/JILA
University of Colorado Health Sciences Center

Service and Training

The Colorado School of Mines is home to a world-class ultrafast optical science laboratory. Center expertise and facilities will be readily available to the research community. Not only will the center provide training with tools and methods, but also the center will provide:

1) Waveguide fabrication.
2) Biological sample characterization, and
3) Cell mechanical property testing

Location

The Colorado School of Mines is located in Golden, Colorado, only 15 miles west of Denver's downtown business district. This proximity to a large metropolitan area and Denver International Airport provides ready access to the proposed facilities. Nestled in the foothills of the Rocky Mountains near many of the world's premier ski resorts and Rocky Mountain National Park, Golden enjoys more than 300 days of sunshine a year.

For more information:

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