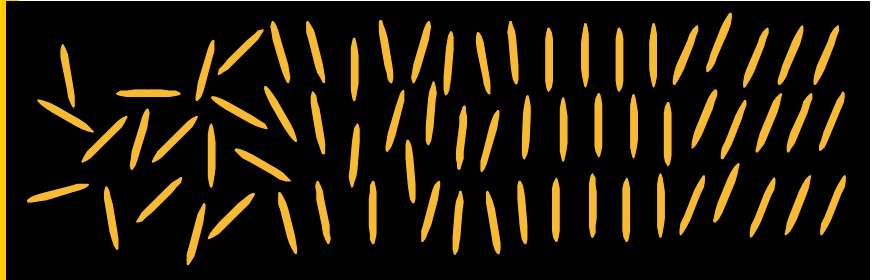


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Professor David M.W. Marr

Chemical Engineering Department, Colorado School of Mines

Complex Fluid Manipulation with Applied Fields in Microfluidic Geometries

Abstract: For future microfluidic devices to be truly capable, both mass and information must be transported across multiple length scales at very high densities on small, portable platforms. To achieve this goal an integrated approach must be developed. We show that the application of external fields, specifically electric fields and optical trapping techniques, not only allows for the control of complex fluids but also the actuation of the working components of devices for micro- and nanotechnology. To illustrate this, we control several microscopic colloidal devices using light and isolate, arrange, and translate colloids to direct microfluidic flows and effect particle separations. Using electric fields we also show that interactions within complex fluids can be rapidly manipulated to reversibly control two- and three dimensional crystallization within microfluidic geometries.

Wednesday, March 30 at 1:30 p.m.
Duane Physics 11th Floor Commons Room



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