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CHARACTERIZATION OF ELASTO-INERTIAL CELL FOCUSING AND THE DEVELOPMENT OF NOVEL HIGH-THROUGHPUT IMAGING FLOW CYTOMETERS

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Project Summary: Microfluidic-based cell manipulations provide unique opportunities for sophisticated and high-throughput biological assays such as cell sorting, rare cell detection and imaging flow cytometry.

We explore the utility of viscoelastic carrier fluids for enhanced elasto-inertial focusing. To demonstrate the utility of such a sheath less focusing system we developed an optofluidic flow cytometer integrating a refractive, microlens array (MLA) for imaging cells at high linear velocities. Furthermore we developed a powerful imaging flow cytometer that incorporates stroboscopic illumination for blur-free fluorescence detection at throughputs in excess of 60,000 cells per second.

CV. Gregor received his BSc and MSc in Chemistry from Faculty of Chemistry and Pharmacy at the University of Innsbruck in 2013 and 2015. He did the practical part of his Master thesis during a research internship at the Ian Wark Research Institute of South Australia in Adelaide. In 2016 Gregor joined the deMello Group as a PhD student.