

NSF Center Formed to Advance Microfluidics

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Center will develop design tools and manufacturing technologies to target cost-effective, quick and easy assessment of the environment, agriculture and human health.

At the inaugural meeting of the newly established Center for Advanced Design and Manufacturing of Integrated Microfluidics (CADMIM) 13 industry partners joined Abraham Lee, UC-Irvine CADMIM Center Director, and Ian Papautsky, UC-CEAS CADMIM Center Director, at the UC Irvine Samuel School of Engineering.

CADMIM is a National Science Foundation Industry/University Cooperative Research Center.

The center aims to advance research and education on the engineering, science and applications of integrated microfluidic design and expandable production through dedicated ongoing industrial collaboration.

UC-Irvine principal investigator Lee is the William Link Professor and Chair of the biomedical engineering department. UC College of Engineering and Applied Science CADMIM director Papautsky is an electrical engineering associate professor.

Papautsky says, "Our goal is to refine the functions of labs-on-a-chip to create high capacity, self-contained micro-devices that can be manufactured and deployed in a low-cost but widespread approach. CADMIM builds upon two centers currently in operation, the state-funded Ohio Center for Microfluidic Innovation (OCMI) at the University of Cincinnati (created by the Ohio 3rd Frontier Wright Projects Program) and the DARPA Microfluidic Fundamental Focus Center (MF3) at UC Irvine headed by Dr. Lee. Papautsky serves as Director of OCMI and has been partnering with Lee and UC Irvine for DARPA MF3 since 2006. Papautsky explains, "Abe and I have been collaborating for several years for DARPA MF3 when we decided it would be wise to leverage our facilities and resources for the creation of a national center—CADMIM." "

In opening remarks on his expectations for the CADMIM Center, UC CEAS Dean Teik C. Lim, stated, "We would first like to recognize the PI from UC-Irvine, Dr. Abraham Lee, and his team for their leadership. I would also like to recognize Dr. Ian Papautsky and his colleagues here at the University of Cincinnati. On behalf of the College of Engineering and Applied Science, I would like to say it is a pleasure to work with UC-Irvine to further advance the design and manufacturing of integrated microfluidics. Thank you also to the National Science Foundation and Dr. Drew Rivers for their support and funding."

CADMIM has every element for success from both institutions — top researchers, world-class facilities, industry partnerships and the commitment of two outstanding institutions. From the UC side, Papautsky and his research team have several recent patents for their work in microfluidics for the detection of heavy metals in blood samples. "We are expecting dramatic results from combining our lab-on-a-chip and microfluidics research with today's communications, computing and data capabilities," the dean says. "Possible applications range from medicine to agriculture and environmental testing to production processes and quality controls for our industrial partners."

"This new generation of ubiquitous, low-cost devices holds enormous promise and we are excited to be teaming with our colleagues at UC-Irvine. CADMIM has my support and the support of the University of Cincinnati."

CADMIM will operate on-campus at two sites, UC Irvine and the University of Cincinnati. Each facility will have four core faculty participants. Faculty from University of Cincinnati include: Chong Ahn, electrical engineering professor; Jason Heikenfeld, electrical engineering professor; and Andrew Steckl, electrical engineering professor. UC Irvine faculty include: Elliot Hui, biomedical engineering; Michelle Khine, biomedical engineering; and Mark Bachman, electrical engineering.