



3rd International Nanotechnology Conference & Expo

May 7-9, 2018 Rome, Italy

Low-Cost Portable Platform for Rapid, On-Site Sickle Cell Disease Diagnostics

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Currently, many medical diagnostic procedures are inefficient and inaccessible to a large population in the world because these procedures require advanced and expensive testing equipment as well as labor-intensive protocols to be carried out by a trained technician. Here, we present a versatile platform technology designed for point-of-care diagnostics which uses magnetic levitation to separate cells on the basis of their densities and measure the density distribution of the cells in a patient sample. We have demonstrated its versatility in the ability to measure density change in cells for a range of diagnostic applications including sickle cell disease diagnosis, white blood cell cytometry, and rare object detection in biological samples.

Biography:

Dr. Savas Tasoglu joined the University of Connecticut in 2014 as an Assistant Professor in the Department of Mechanical Engineering. He received his Ph.D. in 2011 from UC Berkeley, with a research focus on transport phenomena and pharmacokinetics of anti-HIV microbicide drug delivery. Dr. Tasoglu held a postdoctoral appointment at Harvard Medical School and Harvard-MIT Division of Health Sciences and Technology until he joined UConn in 2014. His current research interests are: point-of-care diagnostic devices, bioprinting, magnetic focusing and levitation. His work has been featured at the cover of *Advanced Materials*, *Small*, *Trends in Biotechnology*, and *Physics of Fluids* and highlighted in *Nature*, *Nature Physics*, *Nature Medicine*, *Boston Globe*, *Reuters Health*, and *Boston Magazine*.