Stanford

Rahim Esfandyarpour

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Bio

BIO

Rahim Esfandyarpour received his M.Sc. and Ph.D. in Electrical Engineering from Stanford University in 2010 and 2014 respectively. Currently he is an Engineering Research Associate at Stanford Genome Technology Center, Stanford Biochemistry Department and Stanford Medical School. With a multidisciplinary background, Dr. Esfandyarpour is leading his group of scientists and engineers working on several cutting-edge research projects in biomedical field. His research covers a broad swath of engineering disciplines, interfacing micro/nanotechnology, nanoscience and nanoelectronics, micro/nanofabrication, micro/nanoscale semiconductors device physics, NEMS and MESM, flexible and wearable technologies, with applications in health monitoring, molecular and cellular detection, and energy harnessing. Specifically, his research at Stanford University focuses on using micro/nanotechnology for biomedical applications by applying innovative engineering solutions to develop next generation technologies (e.g. portable and wearable IOT bio devices) that address the major challenges in life science discovery and to bring accessible technology-based solutions to medicine. He has near a decade of extensive experience in development of novel biomedical platforms for variety of biological applications, essential for enabling precision medicine, including continues health monitoring, early diagnostics, and effective treatment of lethal diseases such as cancer. Dr. Esfnadyarpour has authored papers in journals including PNAS, Biotechnology & Bioengineering, Sensors & Actuators B, Biomicrofluidics, and Nanotechnology. His work was highlighted in New Scientist, Yahoo News, BBC World Service, Popular Science, Gizmodo, Europa Press, Nature news, Science Daily, Azonano, Engineer Online, Helthcareitnews, StanfordMedNews, Tech Times, Physics.org, Labnews and several others.

EDUCATION AND CERTIFICATIONS

- Doctor of Philosophy, Stanford University , Electrical Engineering (2014)
- Master of Science, Stanford University , Electrical Engineering (2010)

PROJECTS

- NanoBioTechnology

PATENTS

- Rahim Esfandyarpour, James S Harris Jr, Ronald W Davis,. "United States Patent US Patent App. 15/108,559, 2015 Re-Usable Analyte Detector and Methods"
- Rahim Esfandyarpour, James S Harris Jr, Ronald W Davis,. "United States Patent US Patent App. 15/119,468, 2015 Metal-insulator transition point biosensor"

LINKS

- My Linkedin: https://www.linkedin.com/in/rahim-esfandyarpour-4b8a9129/

Teaching

COURSES

2015-16

- NanoBioTechnology, Nanoscience and Sensing: EE 292G (Win)

Publications

PUBLICATIONS

- **Multifunctional, inexpensive, and reusable nanoparticle-printed biochip for cell manipulation and diagnosis.** *Proceedings of the National Academy of Sciences of the United States of America*
  Esfandyarpour, R., DiDonato, M. J., Yang, Y., Durmus, N. G., Harris, J. S., Davis, R. W.
  2017; 114 (8): E1306-E1315

- **Nanoelectronic three-dimensional (3D) nanotip sensing array for real-time, sensitive, label-free sequence specific detection of nucleic acids.** *Biomedical microdevices*
  Esfandyarpour, R., Yang, L., Koochak, Z., Harris, J. S., Davis, R. W.
  2016; 18 (1): 7-?

- **Surface charge sensing by altering the phase transition in VO2** *JOURNAL OF APPLIED PHYSICS*
  Kumar, S., Esfandyarpour, R., Davis, R., Nishi, Y.
  2014; 116 (7)

- **Nanoelectronic impedance detection of target cells.** *Biotechnology and bioengineering*
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Harris, J. S., Davis, R. W.
  2014; 111 (6): 1161-1169

- **Simulation and fabrication of a new novel 3D injectable biosensor for high throughput genomics and proteomics in a lab-on-a-chip device.** *Nanotechnology*
  Esfandyarpour, R., Esfandyarpour, H., Harris, J. S., Davis, R. W.
  2013; 24 (46): 465301-?

- **Simulation and fabrication of a new novel 3D injectable biosensor for high throughput genomics and proteomics in a lab-on-a-chip device.** *Nanotechnology*
  Esfandyarpour, R., Esfandyarpour, H., Harris, J. S., Davis, R. W.
  2013; 24 (46): 465301-?

- **Label-free electronic probing of nucleic acids and proteins at the nanoscale using the nanoneedle biosensor** *BIOMICROFLUIDICS*
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Esfandyarpour, H., Harris, J. S., Davis, R. W.
  2013; 7 (4)

- **Microneedle biosensor: A method for direct label-free real time protein detection** *SENSORS AND ACTUATORS B-CHEMICAL*
  Esfandyarpour, R., Esfandyarpour, H., Javanmard, M., Harris, J. S., Davis, R. W.
  2013; 177: 848-855

- **Label-free electronic probing of nucleic acids and proteins at the nanoscale using the nanoneedle biosensor.** *Biomicrofluidics*
  Esfandyarpour, R., Javanmard, M., Koochak, Z., Esfandyarpour, H., Harris, J. S., Davis, R. W.
  2013; 7 (4): 44114-?

- **Thin Film Nanoelectronic Probe for Protein Detection**
  Esfandyarpour, R., et al

- **Fabrication Methodology for Label-free Nanocapactive Sensor**
  Esfandyarpour, R., et al

- **Matrix independent label-free nanoelectronic biosensor**
  Esfandyarpour, R., et al

- **Label-free electronic detection of target cells**
  Esfandyapour, R., et al

- **Rapid, label free, high throughput, miniaturized, and inexpensive nanoelectronic array as a cancer diagnosis tool**
  Esfandyarpour, R., et al

- **Electrical detection of protein biomarkers using nanoneedle biosensors**
  Esfandyarpour, R., et al

- **PNAS Plus Significance Statements** *National Acad Sciences*
  Esfandyarpour , R., et al
  2017