Stanford

Rainer Fasching

Adjunct Professor

Mechanical Engineering

Resume available Online

Bio

BIO

Dr. Rainer Fasching is a technology executive and a consulting associate professor at Stanford University, where he teaches advanced electrochemical energy storage and sensor technologies. He has over 20 years of experience in electrochemical devices, micro fabrication technologies, and industrial product development. His work has been centered on the physics, materials and fabrication technologies of electrochemical systems such as sensors, batteries and associated materials, and fuel cells. Currently he has been leading the development of advanced energy storage technologies from concept to product at top tier startup companies. He holds over 30 issued and/or published patents and has authored more than 60 publications.

ACADEMIC APPOINTMENTS

- Adjunct Professor, Mechanical Engineering

Teaching

COURSES

2018-19

- Applied Electrochemistry at Micro- and Nanoscale: ME 420 (Sum)

2017-18

- Applied Electrochemistry at Micro- and Nanoscale: ME 420 (Sum)

Publications

PUBLICATIONS

- **Nickel Silicide Nanowire Arrays for Anti-Reflective Electrodes in Photovoltaics** *ADVANCED FUNCTIONAL MATERIALS*
  Dasgupta, N. P., Xu, S., Jung, H. J., Iancu, A., Fasching, R., Sinclair, R., Prinz, F. B.
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- **Three-dimensional biodegradable microscaffolding: Scaffold characterization and cell population at single cell resolution** *ACTA BIOMATERIALIA*
  Ryu, W., Hammerick, K. E., Kim, Y. B., Kim, J. B., Fasching, R., Prinz, F. B.
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- **In vivo O-2 measurement inside single photosynthetic cells** *BIOTECHNOLOGY LETTERS*
  Bai, S., Ryu, W., Fasching, R. J., Grossman, A. R., Prinz, F. B.
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- **Direct Extraction of Photosynthetic Electrons from Single Algal Cells by Nanoprobing System** *NANO LETTERS*
  Ryu, W., Bai, S., Park, J. S., Huang, Z., Moseley, J., Fabian, T., Fasching, R. J., Grossman, A. R., Prinz, F. B.

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- **Open micro-fluidic system for atomic force microscopy-guided in situ electrochemical probing of a single cell** *LAB ON A CHIP*
  Ryu, W., Huang, Z., Park, J. S., Moseley, J., Grossman, A. R., Fasching, R. J., Prinz, F. B.
  2008; 8 (9): 1460-1467

- **Solid oxide fuel cell with corrugated thin film electrolyte** *NANO LETTERS*
  Su, P., Chao, C., Shim, J. H., Fasching, R., Prinz, F. B.
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- **Controlled release of growth factors on allograft bone in vitro** *5th Musculoskeletal Transplant Foundation Symposium*
  Huang, Z., Ryu, W., Ren, P., Fasching, R., Goodman, S. B.
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- **Nanoscale probe system for cell-organelle analysis** *SENSORS AND ACTUATORS B-CHEMICAL*
  Bai, S., Fabian, T., Prinz, F. B., Fasching, R. J.
  2008; 130 (1): 249-257

- **Reversible oxidation of spinach ferredoxin at surface-modified electrodes** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Komadina, J., Walch, S., Fasching, R., Grossman, A., Prinz, F. B.
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- **Biodegradable micro-osmotic pump for long-term and controlled release of basic fibroblast growth factor** *JOURNAL OF CONTROLLED RELEASE*
  Ryu, W., Huang, Z., Prinz, F. B., Goodman, S. B., Fasching, R.
  2007; 124 (1-2): 98-105

- **Fabrication of multi-layered biodegradable drug delivery device based on micro-structuring of PLGA polymers** *BIOMEDICAL MICRODEVICES*
  Ryu, W. H., Vyakarnam, M., Greco, R. S., Prinz, F. B., Fasching, R. J.
  2007; 9 (6): 845-853

- **The construction of three-dimensional micro-fluidic scaffolds of biodegradable polymers by solvent vapor based bonding of micro-molded layers** *BIOMATERIALS*
  Ryu, W., Min, S. W., Hammerick, K. E., Vyakarnam, M., Greco, R. S., Prinz, F. B., Fasching, R. J.
  2007; 28 (6): 1174-1184

- **High-performance ultrathin solid oxide fuel cells for low-temperature operation** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Huang, H., Nakamura, M., Su, P., Fasching, R., Saito, Y., Prinz, F. B.
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- **AFM/EC nano probing of single cells and organelles** *6th IEEE Sensors Conference*
  Fasching, R., Ryu, W., Bai, S., Park, J., Fabian, T., Moseley, J., Grossman, A., Prinz, F.
  IEEE.2007: 699–702

- **Microfabrication technology of biodegradable polymers for interconnecting microstructures** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Ryu, W., Fasching, R. J., Vyakarnam, M., Greco, R. S., Prinz, F. B.
  2006; 15 (6): 1457-1465

- **Nanoscale electrochemical probes for single cell analysis** *31st International Conference on Micro- and Nano-Engineering*
  Fasching, R. J., Bai, S., Fabian, T., Prinz, F. B.
  ELSEVIER SCIENCE BV.2006: 1638–41

- **Nanofabrication of electrochemical planar probes for single cell analysis** *Conference on Micromachining and Microfabrication Process Technology XI*
  Fasching, R. J., Bai, S., Fabian, T., Prinz, F. B.
  SPIE-INT SOC OPTICAL ENGINEERING.2006

- **Cantilever tip probe arrays for simultaneous SECM and AFM analysis** *10th International Meeting on Chemical Sensors*
  Fasching, R. J., Tao, Y., Prinz, F. B.
  ELSEVIER SCIENCE SA.2005: 964–72

- **Ultra-sharp high-aspect-ratio probe array for SECM and AFM analysis** *Smart Structures and Materials 2004 Conference*
  Tao, Y., Fasching, R. J., Primz, F. B.

SPIE-INT SOC OPTICAL ENGINEERING.2004: 431–442

- **Fabrication of an electrochemical tip-probe system embedded in SiNx-cantilevers for simultaneous SECM and AFM analysis** *Conference on Micromachining and Microfabrication Process Technology IX*
  Fasching, R. J., Tao, Y., Prinz, F. B.
  SPIE-INT SOC OPTICAL ENGINEERING.2004: 53–64
- **A miniaturized amperometric CO2 sensor based on dissociation of copper complexes** *9th International Meeting on Chemical Sensors*
  Fasching, R., Kohl, F., Urban, G.
  ELSEVIER SCIENCE SA.2003: 197–204
- **High-density multi-layer connection technology for MEMS and CMOS applications** *Conference on Smart Sensors, Actuators, and MEMS*
  Bai, S. J., Fasching, R. J., Prinz, F. B.
  SPIE-INT SOC OPTICAL ENGINEERING.2003: 536–542
- **A pencil probe system for electrochemical analysis and modification in nanometer dimensions** *Conference on Smart Sensors, Actuators, and MEMS*
  Fasching, R. J., Tao, Y., Hammerick, K., Prinz, F. B.
  SPIE-INT SOC OPTICAL ENGINEERING.2003: 128–135