

FREDERICK K. BALAGADDE

EDUCATION

CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, CA

2007 Ph.D. Applied Physics

2004 M.S. Applied Physics

MANCHESTER COLLEGE

North Manchester, IN

2001 B.A. Physics & Computer Science, *Minor:* Mathematics

EXPERIENCE

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- 08/'07 – PRESENT **LAWRENCE LIVERMORE NATIONAL LABORATORY** Livermore, CA
Principle Investigator, Engineering Technologies Division
Establishing Microfluidics Large Scale Integration Laboratory to research on MRSA, the bacterial cause of drug-resistant *staph* infections.
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- 1/'05 – 06/'07 **STANFORD UNIVERSITY** Stanford, CA
Research Scientist, Bioengineering Department
Developed microfluidic platform to study bacterial predator-prey systems
-
- 9/'01 – 12/'04 **CALIFORNIA INSTITUTE OF TECHNOLOGY** Pasadena, CA
Research Scientist, Applied Physics Department
Invented an unprecedented microfluidic chip (or Microchemostat), featured on National Public Radio's and published in Science (2005; **309**:137-140).
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- SUMMER 2000 & 2001 **FERMI NATIONAL ACCELERATOR LABORATORY** Batavia, IL
Undergraduate Summer Intern

PUBLICATIONS

- Balagadde F., "The New Role of the Microchemostat in the Bioengineering Revolution" IEEE, *in press*
- Balagaddé et al, "A Synthetic *Escherichia Coli* Predator-Prey System" *Mol. Sys. Biol.*4:187, 1-8, 2008
- Marguet, P., Balagaddé, F. et al, "Biology by design: Reduction and Synthesis of Cellular Components and Behavior" *Journal of the Royal Society Interface* 4:607, 2007
- Balagaddé et al, Long-term Monitoring of Bacteria Undergoing Programmed Population Control in a Microchemostat. *Science* 309 (5731) 137-40, 2005.
- Gaier J., YoderVandenberg Y., Berkebile S., Stueben H., Balagaddé F. "The Electrical and Thermal Conductivity of Woven Pristine and Intercalated Graphite Fiber-Polymer Composites" *Carbon* 42 (12) 2187-2193, 2003.

PATENTS

Balagaddé, F. K., Hansen, C., Kartalov, E., Quake, S. R., "Microfluidic Chemostat" US Patent No. 11/012,852.

SELECTED HONORS

Fellowships: (1) TEDGlobal 2009, Oxford, UK, July 21-24, 2009
(2) Engineering & Applied Science Division Fellowship, Cal Tech, 2001

Conference Speaking Engagements:

- (1) Nano-Engineering for Medicine & Biology, Houston TX, Feb 7-10, 2010
- (2) IEEE Engineering in Medicine & Biology, 31st International Conference, Minneapolis, MN, Sept. 2-6, 2009
- (3) Society for Industrial Microbiology, Annual Meeting, Toronto, ON, Canada, July 26 – 30, 2009
- (4) European Federation of Biotechnology, 3rd International Conference on Analysis of Microbial Cells at the Single Cell Level, Semmering, Austria, May 26-29, 2005
- (5) 2nd International Conference on Synthetic Biology, UC Berkeley, May 20-22, 2006
- (6) Biomedical Engineering Society Annual Meeting, Chicago IL, October 2006

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AUGUST 2007 - PRESENT

LAWRENCE LIVERMORE NATIONAL LABORATORY, Livermore, CA
Principle Investigator, Engineering Technologies Division
Established a Microfluidics Large Scale Integration Laboratory to research on MRSA, the bacterial cause of drug resistant *staph* infections.

SEPT 2001 – DEC 2004

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, CA
Research Assistant, Applied Physics Department
Invented an unprecedented microfluidic chip (or Microchemostat, see top figure in center) for culturing of bacteria, reported on *National Public Radio's* 'All Things Considered' and published in *Science* (*Science* 2005; **309**: 137-140)

SUMMER of 2000 & 2001, Undergraduate Intern

FERMI NATIONAL ACCELERATOR LABORATORY Batavia, IL

JAN 2005 – JUNE 2007

STANFORD UNIVERSITY, Stanford, CA
Research Scientist, Bioengineering Department
Built a microfluidic chip platform to research on biologically programmed predator-prey systems in *E. coli* populations.

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, CA

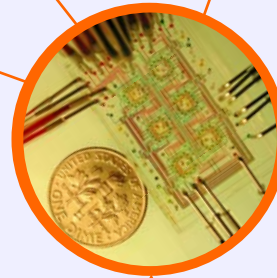
2007 **PhD** Applied Physics

2004 **M.S.** Applied Physics

MANCHESTER COLLEGE, North Manchester, IN

2001 **B.S.** Physics & Computer Science

GPA: 4.0 Minor: Mathematics



EXPERIENCE



Professional Memberships:

- (1) American Institute of Chemical Engineers, **AICHE**
- (2) Institute of Electrical & Electronics Engineers, **IEEE**
- (3) American Association for the Advancement of Science, **AAAS**
- (4) National Physics Honor Society, **Sigma Pi Sigma**
- (5) National Mathematics Honor Society, **Kappa Mu Epsilon**

Fellowships:

- (1) TEDGlobal 2009, Oxford, UK, July 21-24, 2009
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Marguet, Balagaddé et al, "Biology by design: Reduction and Synthesis of Cellular Components and Behavior" *Journal of the Royal Society Interface* **4**: 607, 2007

Balagaddé et al, "Long-term Monitoring of Bacteria Undergoing Programmed Population Control in a Microchemostat" *Science* **309**: 137-40, 2005

Gaier J., Balagaddé F. et al, "The Electrical & Thermal Conductivity of Graphite Fiber-Polymer Composites" *Carbon* **42** (12) 2187-2193, 2003

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