

# Ashim K. Datta

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## SPECIALIZATION:

Application of transport phenomena and related changes to understand and optimize food and biological processes.

## CAREER RESEARCH INTERESTS:

Fundamental study of heat and mass transport relevant to processing of food and biomaterials. In food applications, we combine models of transport in a shrinkable/swellable system with models of microbiological growth and destruction to predict food safety. We also integrate the transport models with reaction-diffusion based models of food quality (color, texture) to predict food quality from first principle.

## PRESENT TITLE:

Professor of Biological Engineering (50% research, 50% teaching)

## GRADUATE RESEARCH FIELDS OF CORNELL UNIVERSITY:

Biological Engineering  
Food Science and Technology  
Computational Science and Engineering

## POSITIONS HELD:

2000-Present Professor of Biological and Environmental Engineering, Cornell University.  
1993-2000 Associate Professor of Agricultural and Biological Engineering, Cornell University.  
1987-1993 Assistant Professor of Agricultural and Biological Engineering, Cornell University.

## SABBATICAL LEAVES:

Fall 2000, 2010 Visiting Professor, Dept. of Agro Engineering, Katholieke Universiteit Leuven, Belgium  
Fall 1994 Visiting Professor, Dept. of Chemical Engineering and Materials Science, Univ. of Minnesota, Twin Cities Campus.

## EDUCATION:

University of Florida at Gainesville	Ph.D. 1985. Agricultural Engineering with minors in Heat Transfer (Mech. Eng.) and Process Control (Chem. Eng.) <i>Dissertation:</i> Mathematical Modeling of Natural Convection and Conduction Heating of Foods with Application to On-Line Process Control
University of Illinois at Urbana-Champaign	M.S. 1982. Agricultural Engineering <i>Thesis:</i> Real Time Acquisition and Analysis of Data on Milk Electrical Conductivity
Indian Inst. of Technology, India	B.Tech. 1979. Agricultural Engineering

## HONORS AND AWARDS:

Mr. and Mrs. Richard F. Tucker '50 Excellence in Teaching Award, Coll. of Engineering, Cornell Univ. (2012)  
Food and Agricultural Sciences Excellence in College and University Awards Program of the United States Department of Agriculture: Regional Award (One of Five Nationwide), 2011  
State University of New York Chancellor's Award for Excellence in Teaching (2010).  
Michael Tien '72 Excellence in Teaching Award (2005), College of Engineering, Cornell University.  
Paper Award for the top papers of engineering merit (1988) from the American Soc. of Agric. Engineers.  
Award of Excellence for the best Ph.D. dissertation (1986) from the Institute of Food and Agricultural Sciences, University of Florida

**RECOGNITIONS:**

Invited Presentations on food process modeling in conferences organized in Spain, Italy, Sweden, Belgium, Turkey, China, The Netherlands, Malaysia and Chile  
Seven students received the Best Paper Award from the Food Engineering Division of the IFT; Three students received the Best Paper Award from the Conference of Food Engineering.  
Panel member, FDA funded project to the Institute of Food Technologists entitled, "How to Quantify the Destruction Kinetics of Alternative Processing Technologies"  
Panel member, USDA NRI Competitive Grants Program (3 times)  
External Examiner, Catholic University Leuven, Belgium; University of British Columbia, Vancouver, Canada; University of Nantes, France  
Research citations in media, The New York Times, Discover, Business Weekly, Popular Science, etc.

**EXTERNAL GRANT SUPPORT (Selected):**

NSF International Program, "Optimization of multiphase transport and deformation in novel baking process"  
National Science Foundation, "Thermal stresses during freezing of biomaterials"  
USDA NRI Program, "Porous Media Approach to Understanding and Improvement of Food Quality," "Computer-Aided Food Quality Engineering"  
USDA National Integrated Food Safety Initiative, "Computer-Aided Food Safety Engineering"  
US Army Laboratories at Natick, "Moisture Migration in Bilayered Foods"  
USDA NRI/Competitive Grants Program, "Safe microwaveable foods for added value"  
US Army Lab at Natick, Massachusetts, "Quality improvement in microwave sterilization"  
USDA (subcontract through Univ. of California, Davis), "Development of an undergraduate course in transport processes with agricultural and biological perspective"

**MEMBERSHIPS IN PROFESSIONAL AND HONOR SOCIETIES:**

American Society of Agricultural and Biological Engineers (ASABE); Institute of Food Technologists (IFT); American Institute of Chemical Engineers (AIChE); Institute of Biological Engineering (IBE); American Society for Engineering Education (ASEE)

**COMMITTEES IN PROFESSIONAL SOCIETIES:**

IFT Food Engineering Division; AIChE CoFE programming, USDA NC1023 Regional Project Committee (Improvement of Thermal Processes for Foods); ASABE Textbook Committee

**EDITOR AND EDITORIAL BOARD (Journals):**

Associate Editor, *Transactions of the ASABE*; Editorial Boards, *Institution of Chemical Engineers Journal: Food and Bioproducts Processing*; *International Journal of Food Properties* and *International Journal of Food Engineering*

**COURSES TAUGHT:**

- Computer-Aided Engineering: Applications to Biomedical Processes (1996-Present)
- Biological and Bioenvironmental Transport Processes (1990-1998, 2004-Present)
- A Transport Phenomena Based Approach to Food Process Engineering. A graduate course taught at the Katholieke Universiteit, Leuven, Belgium and at Cornell University (1987-1994)
- Engineering Properties of Foods (1988-1994)

**PAST ADVISING:**

10 PhD students (thesis advisor) in Biological Engineering and Food Science, 5 MS student (thesis advisor), 16 PhD and MS students (minor committee members)

**CURRENT ADVISING:**

3 PhD students (thesis advisor), 1 MS student (thesis advisor), 3 PhD students (minor committee members), 18 undergraduate students (academic advisor)

**PUBLICATIONS:**

90+ refereed journal papers, 2 Textbooks, 4 Books co-edited, 23 Book chapters, ~200 presentations and abstracts