Yogendra Shastri

Post-doctoral Research Associate
Energy Biosciences Institute
Department of Agricultural and Biological Engineering
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Education:

- **Ph.D. in Bioengineering:** 2003-2007
  University of Illinois at Chicago, Chicago, IL
- **M.Tech. in Systems and Control Engineering:** 2001-2003
  Indian Institute of Technology Bombay, India and University of Stuttgart, Germany
- **B.Tech. in Chemical Engineering:** 1996-2000
  Laxminarayan Institute of Technology, Nagpur University, India

Research and Teaching Interests:

Research Interests:
- Biofuel value chain analysis
- Water pollutant trading
- Agent based modeling and applications

Teaching Interests:
- Optimization
- Environmental risk assessment
- Renewable energy

Awards:

- AIChE Environmental Division best graduate student paper award for 2007.
- DAAD (German Academic Exchange Service) scholarship to conduct M.Tech. thesis research at the University of Stuttgart, Germany.

Selected Invited talks:

- Y. Shastri. Effect of uncertainty and complexity on modeling in sustainability. At *TARDIS 2006: Trans-Atlantic Research and Development Interchange on Sustainability 2006, A scientific workshop*, YMCA of the Rockies, Estes Park, Colorado, USA, September 2006.
- Y. Shastri. Sustainable mercury waste management: Industrial and ecological perspective. At *NEERI - National Environmental Engineering Research Institute*, Nagpur, India, July 2006.

Publications:

Journal Articles:[1]

- Y. Shastri and U. Diwekar. L-Shaped BONUS algorithm with application to water pollutant trading. *Industrial & Engineering Chemistry Research*. Vol. 47(23), pp. 9417-9725, 2008.
- Y. Shastri, U. Diwekar, H. Cabezas and J. Williamson. Is sustainability achievable? Exploring the limits of sustainability with model systems. *Environmental Science & Technology*. Vol 42(17), pp. 6710-6716, 2008.
- Y. Shastri, U. Diwekar and H. Cabezas. Optimal control for sustainable environmental management. *Environmental Science & Technology*. Vol. 42(14), pp. 5322-5328, 2008.
- Y. Shastri and U. Diwekar. Optimal control of lake pH for mercury bioaccumulation control. *Ecological Modelling*. Vol. 216, pp. 1-17, 2008.
- Y. Shastri and U. Diwekar. Sustainable ecosystem management using optimal control theory: Part 1 (Deterministic systems). *Journal of Theoretical Biology*, Vol. 241, pp. 506-521, 2006.
- Y. Shastri and U. Diwekar. Sustainable ecosystem management using optimal control theory: Part 2 (Stochastic systems). *Journal of Theoretical Biology*, Vol. 241, pp. 522-531, 2006.

[1] Three journal articles based on the post-doctoral research are currently under review and two more are in preparation.

- Y. Shastri and U. Diwekar. Sensor placement in water networks: A stochastic programming approach, *Journal of Water Resources Planning and Management*, Vol. 132, No. 3, pp. 192-203, May/June 2006.
- Y. Shastri and U. Diwekar. An efficient algorithm for large scale stochastic nonlinear programming problems. *Computers and Chemical Engineering*, Vol. 30, pp. 864-877, 2006.

Monograph:

- Y. Shastri. Sustainable system management: Achieving sustainability with a systems theory approach. VDM Verlag, Germany, 2008

Book Chapters:

- Y. Shastri and U. Diwekar. Industrial pollution management: A sustainability perspective. In *Industrial Waste: Environmental Impact, Disposal and Treatment*, John Samuelson (Ed.), Nova Science, ISBN: 978-1-60692-720-5, 2009.
- Y. Shastri and U. Diwekar. Freshwater ecosystem conservation and management: A control theory approach. Invited chapter to appear in *Freshwater Ecosystems: Biodiversity, Management and Conservation*, Nova Science Publishers.
- U. Diwekar and Y. Shastri. Nonlinear programming. In *Introduction to Applied Optimization* (2^{nd} edition), U. Diwekar (Author), Kluwer Academic Publishers, Netherlands.

Selected Technical Reports:

- Y. Shastri and U. Diwekar. Optimal control theory for sustainable environmental management under uncertainty. United Stated Environmental Protection Agency, Contract EP05C000413, November 2008.
- Y. Shastri and U. Diwekar. APECS CAPE-OPEN compliant stochastic modeling, multi-objective optimization, and reduced order modeling capabilities. National Energy Technology Laboratory (NETL), Contract: Subtask 41817.312.16, October 2007.

Book Review:

U. Diwekar and Y. Shastri. Sustainability science and engineering: Defining principles. Martin A. Abraham (Ed.), Elsevier. In *Environmental Progress*, Vol. 26, No. 1, pp. 11-14, 2007.

Contributed Presentations:

Over 30 conference presentations including peer reviewed conference proceedings in AIChE, ASABE, ACS, INFORMS and other meetings.

Review Board:

- Industrial & Engineering Chemistry Research (2009-present)
- Computers & Electronics in Agriculture (2008-present)
- Sustainability: Science, Practice & Policy (2007-present)

Professional Affiliations:

American Institute of Chemical Engineers (AIChE); American Society of Agricultural and Biological Engineers (ASABE); Institute for Sustainability (IfS)

University/Campus services:

Organization and participation in *Agronomy Day 2008* and *Agronomy Day 2009* at the University of Illinois at Urbana-Champaign representing Energy Biosciences Institute.

References:

Available upon request.