

AJAY KUMAR

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EDUCATION

University of Nebraska-Lincoln (UNL)	Agricultural and Biological Systems Engineering	Ph.D., 2009
University of Nebraska-Lincoln	Agricultural and Biological Systems Engineering	M.S., 2006
Indian Institute of Technology (IIT)	Agricultural and Food Engineering	B.Tech., 2003

APPOINTMENTS

Assistant Professor, Department of Biosystems and Agricultural Engineering, OSU	6/2009-present
Adjunct Assistant Professor, Department of Biological Systems Engineering, UNL	10/2009-present
Graduate Research Assistant, Department of Biological Systems Engineering (BSE), UNL	8/2003-6/2009

ACADEMIC HONORS & AWARDS

- Graduate Student of the Year 2009, Mid-Central Conference of ASABE, 2009.
- Graduate Fellowship, Office of Graduate Studies, UNL, 2007-08, 2008-09.
- John and Louise Skala Fellowship, UNL, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.
- Milton-Mohr Graduate Fellowship, College of Engineering, UNL, 2005-06, 2006-07, 2008-09.
- Aquila Energy Sciences Fellowship, Aquila Inc., Nebraska University Foundation, Nebraska Center of Energy Science Research, UNL, 2007-08.
- Bill A. and Rita L. Stout Outstanding International Graduate Student Award, Department of BSE, UNL, 2006-07.
- Raymond J. Tarleton Graduate Fellowship, American Association of Cereal Chemist International (AACC Intl.) Foundation, 2005-06.
- Merit-Cum-Means scholarship, IIT Kharagpur, 1999-00, 2000-01, 2001-02, 2002-03.

PEER-REVIEWED JOURNAL PUBLICATIONS

1. A. Kumar, Y. Demirel, D. D. Jones and M. A. Hanna. (*In Review*). Optimization and economic evaluation of industrial gas production and combined heat and power generation from gasification of corn stover and distillers grains, *Bioresource Technology*. Submitted 05/2009.
2. A. Kumar, D. D. Jones, G. E. Meyer and M. A. Hanna. (*In Review*). Dimensional analysis with rule-based fuzzy inference system to predict energy consumption and mean residence time in twin-screw extruder, *Journal of Food Engineering*. Submitted 08/2009.
3. A. Kumar, Y. Demirel, H. Nouredini, D. D. Jones and M. A. Hanna. (*In Press*). Simulation of corn stover and distillers grains gasification with Aspen Plus, *Transactions of ASABE*. Accepted 10/2009.
4. A. Kumar, D. D. Jones and M. A. Hanna. 2009. Thermochemical biomass gasification: A review of the current status of the technology, *Energies*, 2(3):556-581.
5. A. Kumar, K. Eskridge, D. D. Jones and M. A. Hanna. 2009. Steam-air fluidized bed gasification of distillers grains: Effects of steam to biomass ratio, equivalence ratio and gasification temperature, *Bioresource Technology*, 100(6):2062-2068.
6. L. Wang, A. Kumar, C. L. Weller, M. A. Hanna and D. D. Jones. 2009. Thermal degradation kinetics of distillers grains in nitrogen and air, *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 31(10):797-806.

7. H. A. Pushpadass, A. Kumar, D. S. Jackson, R. L. Wehling, J. J. Dumais and M. A. Hanna. 2009. Macromolecular changes in extruded starch-films plasticized with glycerol, water and stearic acid, *Starch*, 61(5):256-266.
8. A. Kumar, L. J. Wang, Y. A. Dzenis., D. D. Jones and M. A. Hanna. 2008. Thermogravimetric characterization of corn stover as gasification and pyrolysis feedstock, *Biomass and Bioenergy*, 32(5):460-467.
9. A. Kumar, G. M. Ganjyal, David D. Jones and M. A. Hanna. 2008. Modeling residence time distribution in a twin-extruder as a series of ideal steady-state flow reactors, *Journal of Food Engineering*, 84(3):441-448.
10. A. Kumar, G. M. Ganjyal, D. D. Jones and M. A. Hanna. 2007. Experimental determination of longitudinal expansion during extrusion of starches, *Cereal Chemistry*, 84(5):480-484.
11. A. Kumar, G. M. Ganjyal, D. D. Jones and M. A. Hanna. 2006. Digital image processing for measurement of residence time distribution in a laboratory extruder, *Journal of Food Engineering*, 75(2): 237-244.

SELECTED CONFERENCE PRESENTATIONS

1. A. Kumar, K. N. Patil, D.D. Bellmer, and R.L. Huhnke. Effects of biomass and air flowrates on fluidized-bed gasification of switchgrass: Preliminary analysis. Bioenergy Engineering Conference of American Society of Agricultural and Biological Engineers, Bellevue, WA, Oct 11-14, 2009.
2. A. Kumar, D. D. Jones and M. A. Hanna. Integrated model of thermochemical biomass gasification for generating combined heat and power. Annual international meeting of American Society of Agricultural and Biological Engineers (ASABE), Reno, NV, June 21-June 24, 2009.
3. A. Kumar, D. D. Jones and M. A. Hanna. Tar reduction in thermochemical biomass gasification. Annual international meeting of ASABE, Reno, NV, June 21-June 24, 2009.
4. A. Kumar, Y. Demirel, D. D. Jones and M. A. Hanna. Simulation of Corn Stover Gasification. UNL Research Fair, Lincoln, NE, Apr 14-16, 2009.
5. A. Kumar, Y. Demirel, D. D. Jones and M. A. Hanna. Modeling of fluidized bed steam-air gasification of biomass. Annual international meeting of American Society of ASABE, Providence, RI, June 29-July 2, 2008. Paper number: 084523.
6. A. Kumar, L. Isom, D. D. Jones and M. A. Hanna. Availability of corn in Nebraska after consumption by ethanol and livestock industry. Corn Utilization and Technology Conference (CUTC), Kansas City, KS, June 2-4, 2008.
7. A. Kumar, K. Eskridge, D. D. Jones and M. A. Hanna. Steam-air fluidized bed gasification of distillers grains. Annual international meeting of ASABE, Providence, RI, June 29-July 2, 2008. Paper number: 084521. CUTC, Kansas City, KS, June 2-4, 2008.
8. A. Kumar, L. Wang, D. Yuris, D. D. Jones and M. A. Hanna. Thermogravimetric characterization of corn stover as gasification/pyrolysis feedstock. Annual international meeting of ASABE, Minneapolis, MN, June 17-20, 2007. Paper number: 076146.
9. A. Kumar, G. M. Ganjyal, D. D. Jones and M. A. Hanna. Modeling residence time distribution in a twin-extruder as a series of ideal steady-state flow reactors. Annual meeting of AACC Intl., San Diego, CA, Sept 19-22, 2004.

INDUSTRIAL EXPERIENCE

- Engineering intern, Kellogg Company, Omaha, NE, May 2005-Jan 2006
- Summer intern, Production & Engineering Department, GlaxoSmithKline Consumer Healthcare, Rajahmundry, India May 2002-June 2002

PROFESSIONAL ACTIVITIES

- Member of ASABE, AACC Intl., Sigma Xi The scientific Research Society.
- Peer reviewer for journals, "Journal of Food Engineering", "Cereal Chemistry", "Fuel Cells" and "Polymer International".
- Judge for ASABE Mid-central student design paper competition, Apr 4-5, 2008.