

SUE E. NOKES, PH.D., P.E.

CONTACT INFORMATION

BUSINESS: The University of Kentucky • Department of Biosystems and Agricultural Engineering • 215 C. E. Barnhart Building • Lexington, Kentucky 40546-0276 • (859) 218-4328 • snokes@uky.edu

EDUCATION

- Ph.D., Biological and Agricultural Engineering, North Carolina State University, Raleigh, North Carolina. Completion Date: May, 1990 Minor: Biomathematics.
Dissertation Title: *"Simulation of the Development and Control of Cercospora Leafspot and the Effects on Peanut Growth"*. Dissertation Advisor: Dr. James H. Young.
- M.Sc., Agricultural Engineering, The Ohio State University, Columbus, Ohio. Completed December, 1983.
Thesis Title: *"Development and Analysis of a Nursery Polybag Container Lifting Mechanism"*. Thesis Advisor: Dr. Robert G. Holmes.
- B.Sc., Agricultural Engineering, The Ohio State University, Columbus, Ohio. Completed June, 1982. *Summa Cum Laude* with Distinction.
Senior Honors Project Title: *"Development of an Automated Vegetable Transplanting System"*. Project Advisor: Dr. Robert G. Holmes.

EXPERIENCE

- Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky, July, 2007 – present.
- Department Chair, Department of Biosystems and Agricultural Engineering, University of Kentucky. July 1, 2011 –June 30, 2017.
- Director of Undergraduate Studies, Department of Biosystems and Agricultural Engineering, University of Kentucky. August, 2007-July 1, 2011.
- Associate Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky, July 2001-June, 2007
- Assistant Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky, July, 1995-June 2001.
- Research Scientist, Department of Agricultural Engineering, The Ohio State University, July, 1990 - June, 1995.
- Graduate Research Assistant, Biological and Agricultural Engineering Department, North Carolina State University. August, 1986 - May, 1990.
- Graduate Teaching Assistant, Agricultural Engineering Department, The Ohio State University. August, 1985 - June, 1986.
- Mechanical Engineer, Directorate of Engineering and Housing, Fort Benjamin Harrison, Indianapolis, Indiana. July, 1984 - July, 1985.
- Product Engineer, Ford Motor Company, Climate Control Division, Dearborn, Michigan. September, 1983 - June, 1984.
- University Fellow, Department of Agricultural Engineering, The Ohio State University. September 1982-1983.

- Student Intern, Soil Conservation Service (now NRCS). Summer of 1981 – Area office (Medina, Ohio). Summer of 1980 – county office (Stark County, Ohio).
- Student Research Assistant. Summer of 1979. OARDC Ag Engineering. Supervisor: Dr. Ted Short.

HONORS AND AWARDS

- Wethington Award (Award for obtaining extramural funding), 2006- 2017.
- ASABE Presidential Citation for service to the Society (Treasurer), July, 2017.
- Fellow, ASABE. July, 2016.
- Research Empowerment Award, College of Agriculture, Food, and Environment. University of Kentucky, October, 2016.
- Distinguished Alumni Award, Food, Agricultural, and Biological Engineering Department, The Ohio State University. April 13, 2016.
- Provost's Outstanding Teaching Award, May, 2012
- Fellow, American Institute of Medical and Biological Engineering, February, 2012.
- USDA-NASULGC Excellence in Teaching Award, Southern Region. November, 2003.
- Superior ASAE Paper Award. 2002. (2.5% of the papers published in 2002 were selected as Superior).
- ASAE A.W. Farrall Young Educator Award, 2000.
- Chancellor's Award for Outstanding Teaching, Non-Tenured Faculty, 2000.
- Henry Lutes College of Engineering Excellence in Teaching Award, 1999.
- Recipient of Gamma Sigma Delta Master Teacher Award, College of Agriculture, 1999.
- Outstanding Teacher Award, BAE, College of Engineering, University of Kentucky, 1999.
- Outstanding Teacher Award, BAE, College of Engineering, University of Kentucky, 1998.
- Outstanding Teacher Award, BAE, College of Engineering, University of Kentucky, 1996.
- Recognized as an Achieving Membership Vice-Chair, ASAE, 1994.
- Towers Faculty Recognition Award for Resident Instruction, College of Agriculture, 1993.
- Society for Computer Simulation Paper Award, 1990.
- Phi Kappa Phi Outstanding Ph.D. Candidate, North Carolina State University, 1990.
- H.R. Lucas Biomathematics Scholarship, 1989.
- Outstanding Departmental Teaching Assistant Award, The Ohio State University, 1986.
- Outstanding Departmental Teaching Assistant Award, The Ohio State University, 1985.
- University Fellow, The Ohio State University, 1982.
- President's Scholarship Recognition Award, 1982.

GRANTS AND CONTRACTS***Current***

- Nokes, S.E., Lynn, B.C., Knutson, B.L., Rankin, S.E. and Shi, J. 2017. RII Track-2 FEC: Assembling Successful Structures: Lignin beads for sustainability of food, energy, and water systems. National Science Foundation. \$2,000,000 to UK for 4 years. Partnering with Louisiana State University Agricultural Center, Baton Rouge, LA.

Grants Completed

- Nokes, S.E., Anex, R., Chinn, M., Crofcheck, C., DeBolt, S., Flythe, M., Foster, C., Halich, G., Knutson, B., Lynn, B., Lee, C., Montross, M., Mueller, T., Posselius, J., Rankin, S., Seay, J., Shearer, S., Smith, R., Stombaugh, T., Veal, M., Webb, E. 2010. On-Farm Biomass Processing: Towards an Integrated High-Solids Transporting/Storing/Processing System. USDA-ARS Biomass Research Development Initiative. Funded \$6,932,786 with a \$2,169,775 match from CNH. 5 years. July 1, 2011-June 30, 2016.
- Rankin, S., Nokes, S. and Knutson, B. 2010. Interfacial Engineering of Biomass Saccharification by *T. reesei* Enzymes. KSEF-Kentucky Science and Engineering Foundation. \$90,000 for two years. 9/1/10-8/31/12.
- Knutson, B.L., Rankin, S. and Nokes, S.E. 2008. Separation and recovery of high-value pentose derivatives from cellulosic biomass using molecular imprinting. USDA/DOE Biomass Research Initiative. \$1.5M for three years (matching provided by the State of KY).
- S.E. Nokes, B.L. Knutson, H.J. Strobel, and B.C. Lynn. 2007. Bacterial adaptations for enhanced cellulose utilization: a systems approach. Southeastern Sun Grant Center. \$250,000 for three years with a one year no cost extension.
- Nokes, S.E., and C. Crofcheck. 2006. Subcontract on Iowa State Proposal. A Virtual Education Center for Biorenewable Resources: Building Capacity and Humanizing Distance Education. USDA Higher Education Challenge Grant. \$500,000 for 36 months. Subcontract to UK for \$125,000 for 36 months plus 2-yr no cost extension.
- Vaillancourt, L.J, S.E. Nokes, and M. D. Montross. 2007. The Potential Use of Corn Stalk Rot Fungi for Saccharification of Plant Cellulose in Fuel Ethanol Production. Pilot Project with the Kentucky Tobacco Research and Development Center (KTRDC), Research Program in Plant-derived Natural Products. \$75,000 for one year, renewed for one year.
- Nokes, S.E., B.L. Knutson, H.J. Strobel, and B.C. Lynn. 2005. Differentiating Microbial Pathway and Membrane Adaptations for Enhanced Performance in Extreme Environments. 2005. Kentucky Rural Energy Consortium. Funded \$160,763 for 15 months.
- Nokes, S.E., B.L. Knutson, H.J. Strobel, and B.C. Lynn. 2005. Differentiating Microbial Pathway and Membrane Adaptations for Enhanced Performance in Extreme Environments. 2005. Kentucky Office of Energy Policy Matching Grant. \$51,324 for 15 months.
- Nokes, S.E., and H.J. Strobel. 2004. Development of novel technology for in-situ saccharification and biomass conversion. CPBR. \$96,608 for one year.
- Crofcheck, C.L., M.D. Montross, S. McNeill and S.E. Nokes. 2004. Tours of ethanol and biodiesel production facilities and users across Kentucky. DOE/SSEB Southeast Biomass State & Regional Partnership Projects. Funded \$24,412 for one year.
- Nokes, S.E., M.D. Montross, C.L. Crofcheck, and C. L. Hanley. 2004. Biomass Outreach Education Program for the State of Kentucky. Kentucky Office of Energy Policy. Funded \$9,890 for one year.
- Smith, M.S., J. Chapell, G.B. Collins, N.M. Cox, and J. Fink. 2002. Partnering for Innovative Commercialization of Technology: The University of Kentucky Natural Products Alliance. NSF 02-060. OIA – Partnerships for Innovation –PFI. Funded \$600,000 for 3 years. S.E. Nokes was one of the Co-PI's on the project.

- Payne, F.A., C. A. Crofcheck, and S.E. Nokes. 2002. National Needs Graduate Fellows in Bioprocess Engineering. USDA. Funded \$207,000 for three years.
- Nokes, S.E., and H.J. Strobel. 2001. Fiberlite Centrifuge Rotors. Major Equipment Grant. University of Kentucky. Funded \$6,866.00 one-time lump sum.
- Nokes, S.E., H. J. Strobel, M.A. Marchant, and C. Krishna. 2000. Simplified Technology for Enzyme Production with Thermophilic Anaerobic Bacteria. USDA – NRI – CGP. Funded \$195,000 for five years.
- Nokes, S.E. 2000. Novel enzyme production technique for use in bioconversion process. University of Kentucky Research Committee Grant. Funded at \$4,800 for one year.
- Nokes, S.E. 1999. NSF Research Experience for Undergraduates Supplemental Award. NSF. \$18,843 for two years.
- Knutson, B.L., Strobel, H., Nokes, S.E., and Dawson, K. 1998. Novel compressed solvent extraction processes for enhanced biomass conversion using thermophilic bacteria. National Science Foundation. Funded for \$348,000 for 3 years.
- Nokes, S. E. 1997. Phytase production in solid state fermentation with *Aspergillus niger*. Sponsored by Alltech Inc. for \$110,000 for three years.
- Nokes, S. E. 1996. Model development and calibration for predicting the persistence and efficacy of chlorothalonil on tomatoes. Subcontract for \$42,000 for two years from Bennett, M. A., Riedel, R. M., and S. E. Nokes. 1996. Assessing an Integrated Disease Management Strategy for Tomatoes. Funded at \$116, 674 for two years from USDA - National Research Initiative Competitive Grants Program.
- Nokes, S. E. 1996. Fermentation optimization for enzymes production with fungi. Sponsored by Alltech Inc. for \$40,000 for two years.

CURRENT HATCH PROJECTS

- Shi, J. Nokes, S.E., Montross, M. and C. Crofcheck. 2016. S-1041. The science and engineering for a biobased industry and economy. Multi-state project. Five year project.

HATCH PROJECTS COMPLETED

- Nokes, S.E., Strobel, H.J., Montross, M. and C. Crofcheck.. 2009. S-1041 (Renewal of S-1007) The science and engineering for a biobased industry and economy. Multi-state project. Five year project.
- Nokes, S.E. 2008. NE506 Wood Utilization Research on US Biofuels, Bioproducts, Hybrid Biomaterials Composite Production, and Traditional Forest Products. Multi-state regional project. Stephen Reiling administrative advisor.
- Nokes, S.E., Strobel, H.J., Montross, M. and C. Crofcheck.. 2002. S-1007 The science and engineering for a biobased industry and economy. Multi-state project. Five year project.
- Nokes, S.E., Payne, F.A., Dawson, K.A., and H.J. Strobel. 1997. A systematic approach to enzyme recovery from solid-state fermentation. Kentucky Agricultural Experiment Station. Five year project.
- Gates, R.S., Nokes, S.E., Anderson, R.G., Buxton, J.W., and R.L. Geneve. 1996. Vapor pressure deficit control for plant propagation within greenhouses. Five year project.
- Payne, F.A., Gates, R.S., Nokes, S.E., and C. Hicks. 1995. Fiber optic sensor development for cottage cheese processing. Kentucky Agricultural Experiment Station. Five year project.

PATENT

- Nokes, S.E., Lynn, B.C., Rankin, S. Knutson, B, Montross, M.D., and M. Flythe. On-Farm Integrated High-Solids Processing System for Biomass. U.S. Utility Patent Number 9376697. Issue Date 6/28/2016.

REFEREED PUBLICATIONS

- Kwabena, D., Nokes, S.E., Seay, J.R. and B.L. Knutson. 2018. Mechanistic simulation of batch acetone-butanol-ethanol (ABE) fermentation with in situ gas stripping using Aspen Plus™. *Bioprocess and Biosystems Engineering*. 41(9): 1283-1294.
- Dideolu, J.D., Ellison, C.R., Bursavich, J., Benbow, M., Favrot, C., Blazier, M., Marculescu, C., Nokes, S.E., and Boldor, D. 2018. An evaluative comparison of lignocellulosic pyrolysis products derived from various parts of *Populus deltoides* trees and *Panicum virgatum* grass in an inductively heated reactor. *Energy Conversion and Management*. 171, 1 September 2018: 710-720.
- Modenbach, A.A., Nokes, S.E., Montross, M.D., and Knutson, B.L. 2017. Toward Biochemical Conversion of Lignocellulose On-Farm: Pretreatment and Hydrolysis of Corn Stover in-Situ. *Transactions of ASABE*. 60(4): 1025-1033. DOI: 10.13031/trans.12069.
- Sympson, W.S., Nokes, S.E., and Hickman, A.N. 2017. Recirculating calcium hydroxide solution: A practical choice for on-farm high solids lignocellulose pretreatment. *Industrial Crops and Products*. 97: 492-297. MAR, 2017. DOI: 10.1016/j.indcrop.2016.12.057
- Zhou, S., Li, H-F. Garlapalli, R., Nokes, S.E., Flythe, M., Rankin, S.E., and Knutson, B.L. 2017. Hydrolysis of model cellulose films by cellulosomes: Extension of quartz crystal microbalance technique to multienzymatic complexes. *Journal of Biotechnology*. 241: 42-49. DOI: 10.1016/j.jbiotec.2016.11.008
- Hickman, A.N., Nokes, S.E., Sympson, W.S., Ruwaya, M.J., Montross, M., and Knutson, B.L. 2016. The confounding effects of particle size and substrate bulk density on *Phanerochaete chrysosporium* pretreatment of *Panicum varigatum*. *Bioresources*. 11(3):7500-7511. DOI: 10.15376/biores.11.3.7500-7511
- Noelia M. Elía, Sue E. Nokes, Michael D. Flythe. 2016. Switchgrass (*Panicum virgatum*) fermentation by *Clostridium thermocellum* and *Clostridium saccharoperbutylacetonicum* sequential culture in a continuous flow reactor. *AIMS Energy*. 4(1):95-103. DOI: 10.3934/energy.2016.1.95
- Michael D. Flythe¹, Noelia M. Elía, Micah B. Schmal, Sue E. Nokes. 2015. Switchgrass (*Panicum virgatum*) Fermentation by *Clostridium thermocellum* and *Clostridium beijerinckii* Sequential Culture: Effect of Feedstock Particle Size on Gas Production. *Advances in Microbiology*. 5:311-316. <http://dx.doi.org/10.4236/aim.2015.55031>
- Yao, W. and S.E. Nokes. 2014. First Proof of Concept of Sustainable Metabolite Production from High Solids Fermentation of Lignocellulosic Biomass Using a Bacterial Co-Culture and Cycling Flush System. *Bioresource Technology*. 173(Dec): 216-223
- Yao, W. and S.E. Nokes. 2014. *Phanerochaete chrysosporium* Pretreatment of Biomass to Enhance Solvent Production in Subsequent Bacterial Solid-substrate Cultivation. *Biomass & Bioenergy*. 62(Mar): 100-107.
- Modenbach, A.A. and S E. Nokes. 2014. Effects of Sodium Hydroxide Pretreatment on Structural Components of Biomass. *Trans. of ASABE*. 57(4): 1187-1198.

- Petti, Carloalberto, Shearer, Andrew, Tateno, Mizuki, Ruwaya, Mathew, Nokes, Sue, Brutnell, Tom, and DeBolt, Seth. 2013. Comparative feedstock analysis in *Setaria viridis* L. as a model for C4 bioenergy grasses and Panicoid crop species. *Frontiers in Plant Science* 19 June 2013. Published online: doi: 10.3389/fpls.2013.00181.
- Modenbach, A.A. and S. E. Nokes. 2013. Enzymatic Hydrolysis of Biomass at High-Solids Loadings – A Review. *Biomass & Bioenergy*. 56(Sep): 526-544.
- Yao, W. and S.E. Nokes. 2013. The Use of Co-Culturing in Solid Substrate Cultivation and Possible Solutions to Scientific Challenges. *Biofuels, Bioproducts, & Biorefining – BIOFPR*. 7(4): 361-372.
- Modenbach, A. A. and S.E. Nokes. 2012. The Use of High-Solids Loadings in Biomass Pretreatment - A Review. *Biotechnology and Bioengineering*. *Biotechnology and Bioengineering*. June:109(6):1430-42. DOI 10.1002/bit.24464.
- Li, H-F., Knutson, B.L., Nokes, S.E., Lynn, B.C., and M.D. Flythe. 2012. Metabolic control of *Clostridium thermocellum* via inhibition of hydrogenase activity and the glucose transport rate. *Appl Microbiol Biotechnol*. Feb: 93(4):1777-84. DOI 10.1007/s00253-011-3812-3.
- Sharma, B., Nokes, S., Montross, M., and L. Vaillancourt. 2010. A real-time polymerase chain reaction protocol for quantifying growth of *Fusarium graminearum* during solid substrate cultivation on corn stover. *Journal of Biotech Research*, 2010. 2:144-155.
- Dhamagadda, V. S., S.E. Nokes, H.J. Strobel, and M.D. Flythe. 2010. Investigation of the metabolic inhibition observed in solid substrate cultivation of *Clostridium thermocellum* on cellulose. *Bioresource Technology*. 101(15): 6039-6044.
- Coleman, N., C. Crofcheck, S. Nokes and B. Knutson. 2009. Effects of Growth Media pH and Reaction Water Activity on the Conversion of Acetophenone to (S)-1-phenylethanol by *Saccharomyces cerevisiae* Immobilized on Celite 635® and in Calcium Alginate. *Trans of ASABE*. 52(2):665-671.
- Timmons, MD, BL Knutson, SE Nokes, H.J. Strobel, BC Lynn. 2009. Analysis of composition and structure of *Clostridium thermocellum* membranes from wild-type and ethanol-adapted strains. *Applied Microbiology and Biotechnology*. Vol. 82(5):929-939.
- Chinn, M.S., Nokes, S.E., Strobel, H.J. 2007. Influence of Process Conditions on End Product Formation from *Clostridium thermocellum* 27405 in Solid Substrate Cultivation on Avicel. *Bioresource Technology*. 99(7) May 2008: 2664-2671.
- Zhuang, J., M.A. Marchant, S.E. Nokes, and H.J. Strobel. 2007. Economic analysis of cellulase production methods for bioethanol. *Applied Engineering in Agriculture*. 23(5):679-687.
- Chinn, M.S., Nokes, S.E., Strobel, H.J. 2007. Influence of process conditions on end product formation from *Clostridium thermocellum* 27405 in solid substrate cultivation on Paper Pulp Sludge. *Bioresource Technology*. Volume 98(2007):2184-2193.
- Chinn, M.S., Nokes, S.E., Strobel, H.J. 2006. Screening of thermophilic anaerobic bacteria for solid substrate cultivation on lignocellulosic substrates. *Biotechnology Progress*. 22 (1): 53-59.
- Bothun, G.D., B.L. Knutson, H.J. Strobel, and S.E. Nokes. 2006. Liposome fluidization and melting point depression by compressed and liquid n-alkanes. *Colloids and Surfaces, A: Physicochemical and Engineering Aspects*. 279(1-3):50-57.
- Bothun, G.D., Knutson, B.L., Berberich, J.A., Strobel, H.J. and S.E. Nokes. 2005. Molecular and phase toxicity of compressed and supercritical fluids in biphasic continuous cultures of *Clostridium thermocellum*. *Biotechnology and Bioengineering*. 89(1): 32-41.

- Bothun, G.D., B.L. Knutson, H.J. Strobel, and S.E. Nokes. 2005. Liposome fluidization and melting point depression by pressurized CO₂ determined by fluorescence anisotropy. *Langmuir*. 21(2):530-536.
- Carter, S.B., S.E. Nokes, and C.L. Crofcheck. 2004. The influence of environmental temperature and substrate initial moisture content on *Aspergillus niger* growth and phytase production in solid-state. *Trans. of ASAE*. 47(3):945-949.
- Bothun, GD, Knutson, BL, Berberich, JA, Strobel, HJ and SE Nokes. 2004. Metabolic selectivity and growth of *Clostridium thermocellum* in continuous culture under elevated hydrostatic pressure. *Applied Microbiology and Biotechnology*. 65:149-157.
- Chinn, M.S. and S.E. Nokes. 2003. Temperature control of a solid substrate cultivation deep-bed reactor using an internal heat exchanger. *Trans. of ASAE*. 46(6): 1741-1749.
- Bothun, G.D., B.L. Knutson, H.J. Strobel and S.E. Nokes. 2003. Mass transfer in hollow fiber membrane contactor extraction using compressed solvents. *Journal of Membrane Science*. 227:183-196.
- Chinn, M.S., S.E. Nokes, and R.S. Gates. 2003. PC based data acquisition for a solid state cultivation deep bed reactor. *Applied Engineering in Agriculture*. 19(2): 237-245.
- Bothun, G.D., B.L. Knutson, H.J. Strobel, S.E. Nokes, E.A. Brignole, and S. Diaz. 2002. Compressed solvents for the extraction of fermentation products within a hollow fiber membrane contactor. *Journal of Supercritical Fluids*. 25:119-134.
- Fife, J.P., and S. E. Nokes. 2002. Evaluation of the effect of rainfall intensity and duration on the persistence of chlorothalonil on processing tomato foliage. *Crop Protection*. 21:733-740.
- Crofcheck, C. L., Payne, F. A., Hicks, C. L., Mengüç, M. P., and Nokes, S.E. 2002. Fiber optic sensor response to high levels of fat in cream. *Transactions ASAE*. 45(1):171-176.
- Papagianni, M., S.E. Nokes, and K. Filer. 2001. Submerged and solid-state phytase fermentation by *Aspergillus niger*: Effects of agitation and medium viscosity on phytase production, fungal morphology, and inoculum performance. *Food Technology and Biotechnology*. 39(4): 319-326.
- Patterson, J.M., S.E. Nokes, M.A. Bennett, and R.E. Reidel. 2001. Evaluation of residual chlorothalonil levels on processing tomato foliage using the TOM-CAST spray program. *Applied Engineering in Agriculture*. 17(4): 445-448.
- Krishna, C. and S.E. Nokes. 2001. Influence of Inoculum Size on Phytase Production and Growth in SSF by *Aspergillus niger*. *Transactions of ASAE*. 44(4): 1031-1036.
- Krishna, C. and S.E. Nokes. 2001. Predicting vegetative inoculum performance to maximize phytase production in solid-state fermentation using response surface methodology. *Journal of Industrial Microbiology and Biotechnology*. 26: 161-170.
- Zolnier, S., R.S. Gates, R.G. Anderson, S.E. Nokes, and G.A. Duncan. 2001. Non-water-stressed Baseline as a Tool for Dynamic Control of a Misting Systems for Propagation of Poinsettias. *Trans. Of ASAE*. 44(1):137-147.
- Berberich, J. A., B. L. Knutson, H. J. Strobel, S. Tarhan, S. E. Nokes, and K. A. Dawson. 2000. Product Selectivity Shift in *Clostridium thermocellum* in the Presence of Compressed Solvents. *Ind. Eng. Chem. Res*, 39(12):4500-4505.
- Berberich, J. A., B. L. Knutson, H. J. Strobel, S. Tarhan, S. E. Nokes, and K. A. Dawson. 2000. Toxicity effects of compressed and supercritical solvents on thermophilic microbial metabolism. *Biotechnol. Bioeng*. 70(5): 491-497.
- Nokes, S. E., F.M. Landa, and J.D. Hanson. 1996. Validation of the Root Zone Water Quality Model (ver 2.1) from a crop growth perspective. *Trans. of ASAE*. 39(3): 1177-1184.

- Stombaugh, D.P. and S. E. Nokes. 1996. Development of a biologically-based aerobic composting simulation model. *Trans. of ASAE*. 39(1): 239-250.
- Workman, S.R., A.D. Ward, N.R. Fausey, and S.E. Nokes. 1995. Atrazine and alachlor dissipation rates from field experiments. *Trans. of ASAE*. 38(5):1421-1425.
- Nokes, S. E. and R. J. Gustafson. 1994. Recruiting and retaining women in agricultural engineering. *NACTA Journal*. March, 1994. Vol. XXXVIII(1). p. 49-53.
- Nokes, S. E. and J. H. Young. 1992. Predicting the persistence and efficacy of chlorothalonil on peanut leafspot. *Trans. of ASAE*. 35(5):1699-1708.
- Nokes, S. E. and J. H. Young. 1991. Sensitivity analysis of leafspot progression parameters in the simulation model PEANUT. *Trans. of ASAE*. 34(3):1040-1046.
- Nokes, S. E. and J. H. Young. 1991. Simulation of the temporal spread of leafspot and the effect on peanut growth. *Trans. of ASAE* 34(2):653-662.
- Nokes, S. E. and J. H. Young. 1991. Simulation of the defoliation in peanut from soil water stress. *Trans. of ASAE*. 34(1):334-339.
- Workman, S. R., Nokes, S. E., Ward, A. D., and N. R. Fausey. 1991. Overview of the Ohio Management Systems Evaluation Area. *Irrigation and Drainage Proc. IR Div/ASCE*. p. 725-731.

BOOK CHAPTERS

- Hatch, S.E. Changing our world: True Stories of Women Engineers. 2006. Powered by Corn. p. 37. American Society of Civil Engineers. Reston, Virginia. 222pp.
- Nokes, S. E. 1999. Enzyme production using surface culture fermentation. P. 451-460. In: *Under the Microscope. Focal Points for the New Millenium. Biotechnology in the Feed Industry. Proceedings of Alletch's 15th Annual Symposium*. Eds. T.P. Lyons and K.A. Jacques. Nottingham University Press. 596 pages.
- Nokes, S.E. 1998. Because I didn't know I was different. In: *Women in Science*. Angela M. Pattatucci (ed). Sage Publications.
- Nokes, S. E. 1995. Evapotranspiration. In *Principles of Hydrology*. A. D. Ward and W. J. Elliot (eds). Lewis Publishers.

GRADUATE STUDENT SUPERVISION

MAJOR PROFESSOR

- Rilwan Oyetunji. PhD students. Biosystems and Agricultural Engineering. Expected Graduation Date: December, 2020. Thesis Topic: Isolation and Storage of Isoflavones from Red Clover for use in Ruminants as an Antimicrobial Compound.
- Megan Walz. MSc student. Biosystems and Agricultural Engineering. Expected Graduation Date: December, 2018. Thesis Topic: Use of Mesoporous Silicon Particles to Concentrate Glucose from Lignocellulosic Hydrolysate for Downstream Fermentation.

PREVIOUS STUDENTS

- William Sympson. MSc. , Biosystems and Agricultural Engineering. Graduation Date: May, 2017. Thesis Title: Recirculating Calcium Hydroxide Solution: A Practical Choice for On-Farm High Solids Lignocellulose Pretreatment.
- Mathew Ruwaya, MSc. Biosystems and Agricultural Engineering. Graduation Date: May, 2017. Thesis Title: Automated Solid-Substrate Cultivation of the Anaerobic Bacterium *Clostridium thermocellum*.

- Danielle Empson. MSc. , Biosystems and Agricultural Engineering. Graduation Date: August, 2016. Induction of cellulase in high-solids cultivation of *Trichoderma reesei* for Enhanced Enzymatic Hydrolysis of Lignocellulose.
- Evan Simon, MSc. Biosystems and Agricultural Engineering. Graduation Date: May, 2015. Thesis Title: Investigation of *Phanerochaete chrysosporium* and *Clostridia thermocellum* for Improved Saccharification of Lignocellulose under Non-Sterile Conditions.
- Amanda Hickman, MSc. , Biosystems and Agricultural Engineering. Graduation Date: May, 2015. Thesis Title: Inoculum methods and aeration requirements for pilot-scale fermentation of switchgrass by *Phanerochaete chrysosporium*.
- Bobby Carey, MSc. Biosystems and Agricultural Engineering. Expected Graduation Date: December, 2014. Thesis Title: Genetic marker methods for determining the purity of *Phanerochaete chrysosporium* cultures in solid-substrate pilot-scale cultures of switchgrass.
- Noelia Elia, MSc. Biosystems and Agricultural Engineering. Graduation Date: January, 2014. Thesis Title: Fermentation of switchgrass in a continuous flow-through reactor for biofuel production.
- Mary Kathryn Gray. MSc. Biosystems and Agricultural Engineering. Graduation Date: December, 2013. Thesis Title: Alkaline Hydrogen Peroxide Pretreatment for its use in an on-farm Bioprocessing Facility.
- Alicia Abadie, PhD. Biosystems and Agricultural Engineering. Graduation Date: August, 2013. Dissertation Title: Novel materials for separating C5 and C6 sugars during saccharification of lignocelluloses. **National Science Foundation Fellowship.**
- Bless Adotey, PhD. Biosystems and Agricultural Engineering. Expected Graduation Date: May, 2010. Dissertation Title: Mathematical modeling of *Clostridium thermocellum*.
- Alicia Abadie, MSc. Biosystems and Agricultural Engineering. Graduation Date: August, 2008. Thesis Title: Bioconversion of lignocellulose for biochemical production.
- Bless Adotey, MSc. Biosystems and Agricultural Engineering. Graduation Date: December, 2006. Thesis topic: Metabolic modeling of *Clostridium thermocellum*.
- Vidya Dharmagadda. Post-Doctoral Scientist. 2004-2006. Project: Development of novel technology for in-situ saccharification and biomass conversion
- Mari Chinn, Ph.D. Biosystems and Agricultural Engineering. Graduation date 12/03. Thesis Title: Enzyme production in thermophilic, anaerobic solid substrate cultivation. **National Science Foundation Fellow.** Currently an Assistant Professor at North Carolina State University.
- Nick Coleman, M.Sc. Biosystems and Agricultural Engineering. Graduation date June, 2003. Thesis Title: The effects of growth medium pH and reaction water activity on the reduction of acetophenone by immobilized yeast in hexane. **National Science Foundation Fellow.** Currently in Law School at UK.
- C. Krishna. Post-Doctoral Scientist. 1999-2001. Project: Optimization of solid-substrate cultivation for production of phytase with *Aspergillus niger*.
- Sefa Tarhan, Ph.D. Biosystems and Agricultural Engineering. Graduation date: 8/01. Dissertation Title: Kinetics and modeling of non-growing *Clostridium thermocellum* cells. Currently an Associate Professor at Gaziosmanpasa Universitesi, Tokat, Turkey.

- Mari Chinn, M.Sc. Biosystems and Agricultural Engineering. Graduation date: 12/00. Thesis Title: Temperature control of a solid state cultivation deep bed reactor for the production of xylanase by *Trichoderma longibrachiatum*. **National Science Foundation Minority Fellowship**. Continued on for a PhD at UK.
- Seaborn Carter, MSc. Biosystems and Agricultural Engineering. Graduation date: 5/00. Thesis Title: Quantification of biomass and phytase production using solid-state fermentation of *Aspergillus niger* on wheat bran. **Lyman T. Johnson Minority Fellowship**. Currently in the PhD program and an instructor at Florida A & M University.
- Maria Papagianni. Post-doctoral Scientist. 1997-1999. Project: Optimization of solid-substrate cultivation for production of phytase with *Aspergillus niger*
- Elizabeth R. Ridder, MSc., Biosystems and Agricultural Engineering, University of Kentucky, Graduation Date 5/98 Thesis Title: Optimization of process variables for the production of xylanase on wheat bran by solid state fermentation.

In addition I have served on over 75 graduate committees.

SERVICE - SPECIAL ASSIGNMENT

Kentucky Rural Energy Consortium, This organization is a partnership between the University of Louisville, the College of Agriculture, the Center for Applied Energy Research, the Governor's Office of Energy Policy, and sixteen different state organizations with interests in promoting energy efficiency and renewable energy research and deployment for the benefit of Kentucky citizens. My activities with KREC included:

- Technical coordinator for UK, 2006-2009
- Kentucky Rural Energy Consortium Steering Committee 2004-2006
- Represented KREC at the Kentucky Farm Bureau Energy Policy Committee meeting, September, 2006.
- Negotiated terms for Panel Manager to review KREC proposals, November, 2005.
- Represented UK at DOE, Golden, CO to learn how to write proposal for KREC to DOE. March, 2005.
- Participated in College of Agriculture Energy Coordination meeting, May, 2003
- Participated in the State Energy Program (SEP) meeting at UK. Steve Holtan from DOE was brought in to assist UK in the writing of successful SEP grant proposals. Feb., 2004
- Represented UK at the organizational meeting for USDA project meeting – The Science and Engineering of a Biobased Economy, May, 2003
- Natural Product Alliance 2002-2006
- Internship Selection Committee 2003
- Hosted Jim Fischer, Department of Energy, Energy Efficiency and Renewable Energy's liaison to Universities, January, 2004
- Attended Regional Planning meeting for Sun Grant Initiative, August, 2002
- Participated in planning for College of Ag response to the Kentucky Innovations Act, 2001-2002

DEPARTMENTAL SERVICE

- Department Liaison to College of Engineering Grand Tours Revision Committee. July 2018-present.

- Department Chair, July, 2011 – June, 2017.
- Director of Undergraduate Studies. June, 2007-June, 2011.
- Curriculum Committee 2008-present
- Fundamentals of Engineering Exam Review Session for BAE undergraduates, April, 2006
- Chair of Awards Committee, 2003-2010
- Member of Food Engineering Extension Engineer Search Committee, 2005
- Student Branch Advisor, 2004-2005
- Fundamentals of Engineering Exam Review Session for BAE undergraduates, April, 2003
- Chair of search committee for Controlled Environment Systems Engineering position, Summer/Fall, 2002.
- Department Seminar committee, 2001-2002
- Recruitment and Retention Committee – Chair, 1999-present
- Undergraduate Curriculum Committee 1995-1998
- ABET Review Preparation Committee – assisted with document preparation for the 6-year recurring accreditation visit – Fall, 1998
- Departmental Retreat Planning Committee 1996-1997
- Chaired subcommittee for curriculum revision – faculty retreat 1996-1997
- Recruitment and Retention Committee 1995-2000
- Departmental committee for Engineering Enhancement Funds 1995-1997
- Ad-hoc Graduate Program Review Committee 1995-1996

COLLEGE SERVICECollege of Agriculture

- Senate Council 2009-May, 2012
- Faculty Senate, 2009-May, 2012
- Review Committee for Agricultural Biotechnology Program, 2008
- Search Committee, Horticulture 2007
- Honors Committee, 2005-2006
- Agricultural Biotechnology Coordination Committee, 2005-present.
- Southeast Region National Association of State Universities and Land-Grant Colleges (NASULGC) Conference Planning Committee, 2005.
- Ag Faculty Council, 2002-2004
- Ag Faculty Council. 1998-2000
- Promotion and Tenure Committee, Alternate, 2001-2003
- Food Science and Technology Planning Committee , 2002-2004
- College of Agriculture Food Safety and Nutrition Task Force, 1998 – 2001
- Hosted a group for UKSMASH, 2001.
- College of Agriculture, Ag Ambassador Faculty Advisor, 1999-2002
- Gamma Sigma Delta Master Teacher Award selection committee, chair 2001, 2002
- Agricultural Faculty Council Member, 2000-2002
- Member of Review committee for the Department of Biosystems and Agricultural Engineering periodic review, Fall, 1998
- Search committee for the Associate Dean for Research, College of Agriculture. 1998.
- Gamma Sigma Delta Membership Committee, Chair 99; member 98
- College of Agriculture Professional Development Committee –1997 – 2000

- Agricultural Biotechnology Curriculum Coordinating Committee 1995-1998

College of Engineering

- Chair of Chairs, Academic Year 2016-2017
- SWE Scholarship selection committee, Spring, 2009
- Dean's Advisory Committee, 2007-2009
- Engineer's Day, February 2005: Organized BAE representation and displays and student participation: Interviewed on TV-WLEX at noon for E-Day promotion
- Organized an Assistant Professor coffee for new women assistant professors in the College of Engineering, at the request of Sue Scheff, Director of the Women in Engineering Program, Feb. 2004.
- Attended Region G SWE (Society of Women Engineers) Conference representing UK, Feb., 2003, Columbus, Ohio
- Committee for Undergraduate Degree in Biomedical Engineering 2002. Charged with determining future of undergraduate biomedical engineering program.
- CQI Team for Pre-Engineering Course Development 1998-2000
- CQI Team for Recruitment and Retention of Underrepresented Populations 1997-1999
- Scholarship Selection Committee 1996-1999
- Assisted in organizing the workshop "Successful Strategies for Recruitment and Retention: Building an Inclusive University". Spindletop, May, 1996.

UNIVERSITY SERVICE

- Advisory Council, Vice-Provost for Faculty Development, 2010-2016.
- Institutional Diversity Advisory Council; Senate Council Liaison. September 2010-July, 2011. (resigned to become Department Chair)
- Senate Council member, January, 2010-July, 2011. (resigned to become Department Chair)
- Physical Sciences and Engineering Area Committee Member. September 1, 2009-Aug. 30, 2012.
- Curriculum Committee, General Education Reform, Quantitative Reasoning, Spring, 2009
- Dissertation Year Fellowship Selection Committee, Graduate School, Feb., 2009
- Kirwan Creativity and Scholarship Award Selection Committee, Graduate School, Feb. 2006 (approx. 15 nominations)
- Vice President for Research, External Review Committee for the Center for Biomedical Engineering, April, 2004. I was the UK representative and host to reviewers from Dean of Engineering, Michigan State and Chair of BME, University of Tennessee.
- Provost's committee to develop undergraduate Biomedical Engineering curriculum, 2002-2003
- Participated in the filming of a new recruitment video for the University of Kentucky. May, 2002.
- University Senate, 2001-2004 (Agriculture Faculty Representative).
- Senate Committee on Undergraduate Advising (4-year contract for students)
- Chancellor's Teaching Award selection committee, 2001
- Undergraduate Research and Creativity Grants selection committee, 2001

- High School Merit Scholars Program, Reviewer for:
- College of Agriculture applicants Spring, 2003
- University applicants, Spring, 2001
- University, applicants, Spring, 2000
- Faculty Advisor to the UK Girl Scouts Troop, 2002-2004
- Major Research Equipment Grant Proposal Review Committee, December 1999- January 2000
- Task Force for Math, Science, and Technology Education, 1998-1999

NATIONAL COMMITTEES

- ASABE President-Elect July, 2018-June, 2019.
- ASABE Treasurer, July, 2013 - 2017
- ASABE Nominating Committee, July, 2010-June, 2011
- ASABE Finance Committee, July, 2009-June, 2017
- ASABE Publications Council Liaison, July, 2009-June, 2014
- ASABE PAK committee for Professional Engineering Exam Summer, 2008-Summer 2009
- ASAE Meetings Council, Biological Engineering Division Representative, 2002 – 2003.
- ASAE Nominating Committee, 2002-2003.
- ASAE Associate Editor, Transaction of ASAE, IET Division. 2001-2006.
- ASAE, Chair, Biological Engineering Technical Committee, 2001-2002
- ASAE, Chair, Young Educator Award Committee, 2001-2002
- ASAE/IBE Program chair for 2001 technical meeting
- ASAE Nominating Committee 1998, 1999
- IBE Counselor 1999-2001

REVIEW PANELS

- External Reviewer, Virginia Tech BAE Department, 2016.
- Chaired the review committee for the Department of Family Sciences, Winter, 2016.
- External Reviewer, Texas A&M BAE Department. March, 2015.
- Chaired the review committee for the Agricultural Biotechnology Program, Spring, 2014.
- External Reviewer, UC-Davis Graduate Program. January 20-21, 2011.
- ABET Program Reviewer, 2007-current (5 visits completed)
- USDA/DOE Biomass Research Initiative Full Proposal Review – Biomass Conversion Technology. Aug, 2007.
- USDA/DOE Biomass Research Initiative Full Proposal Review – Feedstock Handling. July, 2006.
- Invited participant at the Southeast Regional Biomass Workshop organized by DOE, May, 2006.
- National Science Foundation, SBIR/STTR, Biotechnology and Bioengineering, March 2006.
- National Science Foundation, SBIR/STTR, Biotechnology and Bioengineering, March 2004.
- USDA-NRI Non-food value added panel, April, 2002.
- USDA/DOE Biomass Research Initiative Site Review, Vermont Biorefinery, April 2005.

- Ad-hoc reviewer for Biotechnology Progress, Iowa Energy Center, Microbiology, Bioresource Technology, and Trans. of ASAE.
- Reviewer for the Center for Plant Biotechnology Research. 2006.
- Ad-hoc reviewer for USDA-NRICGP Wood and Wood Fiber Utilization, April, 2003.

TEACHING SEMINARS AND WORKSHOPS ATTENDED**Examples of Continuing Education for Technical Content**

- Represented UK at Oak Ridge National Lab Genome to Life Center meeting of researchers from the south east, July 25 and 26, 2007.
- Represented UK at the USDA project meeting SDC 325 Sept. 24 & 25, 2007– The Science and Engineering of a Biobased Economy, 2007, 2008
- Represented UK at the USDA project meeting - Biofuels, Bioproducts, Hybrid Biomaterials, Composite Production, and Traditional Forest Products. 2008.
- Reviewed the Department of Agricultural and Biological Engineering at Texas A & M University, February 5-7, 2007.
- Lauffenbergher, D. October 22, 2006. Seminar on Modeling cellular control systems. Professor at MIT in Biochemical Engineering.
- Jump Genomics workshop, July, 2006. Sponsored by SAS and the Southeastern Statisticians Association.
- Participated in the First Workshop for the Billion-Ton Initiative, Sponsored by DOE, 2006.
- Kentucky Division of Energy. Biodiesel Showcase. February 8, 2005. Frankfort, Kentucky.
- Tour of the National Renewable Energy Laboratory. Golden, Colorado. October, 2004.
- Tour of the Hopkinsville Ethanol Plant. Hopkinsville, KY. July, 2004.
- Van Noort, D. 2004. Biomolecular Modeling. Computer Science Colloquium. February 16, 2004. Presenter from Princeton University.
- U.S. Department of Energy, Ethanol Workshop Series. Ethanol in Kentucky – A Growing Opportunity. Frankfort, Kentucky. February 3, 2003.

Examples of Continuing Education for Teaching Methods

- ABET Summit, Louisville, KY October 29, 2008.
- College of Agriculture Workshop on Teaching and Advising, August, 18, 2008
- ABET Program Evaluator Training, Observer Visit, Minnesota, November 11-13, 2007
- College of Agriculture Workshop on Teaching and Advising, August 15, 2007
- Attended Service Learning workshop at the University of Kentucky, August 8-10, 2006.
- Attended Lilly Conference, Ohio University, Miami of Ohio, Summer, 1996.

TEACHING: COURSE DESCRIPTIONS**EGR 101 INTRODUCTION TO ENGINEERING**

This course introduces the engineering profession and the skills and expectations required for success. Engineering applications of calculus are also presented. Lecture, three hours; laboratory, two hours per week.

BAE 102 INTRODUCTION TO BIOSYSTEMS AND AGRICULTURAL ENGINEERING

An introduction to the engineering of food and fiber production and processing systems. Professionalism and the engineering approach is emphasized.

BAE 400 SENIOR SEMINAR

A course for senior students in biosystems engineering with emphasis on oral communications skills. Students will do literature searches on topics related to the biosystems engineering profession and present oral and written reports. Prereq or concur with BAE 402.

BAE 447 BIOPROCESS ENGINEERING FUNDAMENTALS

Design principles and equipment selection for the most common processing operations are studied for the manufacturing and preservation of biological materials. Topics will include the design of fluid flow systems, transient heat transfer, heat exchangers, psychometrics, and refrigeration. Prereq: ME 325 and engineering standing.

BAE 502 COMPUTER SIMULATION OF BIOLOGICAL SYSTEMS

The course will focus on the mathematical description and computer simulation of the complex interactions involved in biological systems. Computer simulation will be used as a tool to analyze and suggest design changes to optimize performance. Prereq: Bio science elective, ME 340, and two "core" courses.

BAE 504 BIOFUELS

An introduction to the basic principles for the production and utilization of biofuels with special emphasis on ethanol and biodiesel. Process chemistry of biofuel manufacturing, fuel properties and the use of ethanol in internal combustion engines and biodiesel in diesel engines will be discussed.

BAE 680 BIOCHEMICAL ENGINEERING

Principles and design of processes involving biochemical reactions, including aerobic and anaerobic respirations and fermentations, and involving pure and mixed cultures. Energy considerations, heat and mass transfer, biochemical kinetics, and application to biological waste treatment. Prereq: CME 550, CME 630, CHE 440G or consent of instructor. (Same as CME 680.)

BAE 502 COMPUTER SIMULATION OF BIOLOGICAL SYSTEMS (SPECIAL PROBLEMS IN BIOSYSTEMS AND AGRICULTURAL ENGINEERING) A graduate course in the Biosystems and Agricultural Engineering Department. This course will introduce the student to the field of computer simulation: including history and terminology. We explore practical simulation applications in biological systems, and learn the steps involved in developing a computer simulation. We also explore some of the "art" involved in computer simulation.

BAE 503 BIORENEWABLE RESOURCE ENGINEERING (SPECIAL PROBLEMS IN BIOSYSTEMS AND AGRICULTURAL ENGINEERING) A graduate course in Biosystems and Agricultural Engineering

Department. This course is a survey of the biomass industry beginning with biomass production, harvesting, processing and carrying on through to biochemicals produced.

LIST OF COURSES TAUGHT (DID NOT TEACH FROM '11 - '17 WHILE I SERVED AS DEPARTMENT CHAIR)

Semester	Course Number	Title	Number of students	Overall Teaching Rating
Spring, '11	BAE 502	Computer Simulation of BioSys	10	3.8
Spring, '11	BAE 503	Fundamentals of Bioresource Engineering	4	not rated
Fall, '10	BAE 102	Introduction to Biosystems Engineering	57	3.5/4.0
Fall, '10	BAE 504	Biofuels	5	4.0
Spring, '10	BAE 502	Computer Simulation of BioSys	18	2.8
Spring, '10	BAE 503	Fundamentals of Bioresource Engineering	6	3.8
Fall, '09	BAE 102	Introduction to Biosystems Engineering	12	3.4
Fall, '09	BAE 504	Biofuels	5	3.5
Spring, '09	BAE 502	Computer Simulation of Biosystems	7	3.8
Spring, '09	BAE 599	Fundamentals of Biorenewable Resources	6	3.7
Fall, '08	BAE 599	Biofuels	15	3.4
Fall, '08	BAE 102	Introduction to Biosystems Engineering	21	3.8
Spring, '08	BAE 750	Fundamentals of Bioresource Engineering	5	not rated
Fall, '07	BAE 102	Introduction to Biosystems Engineering	23	3.4
Spring, '07	BAE 502	Computer Simulation of Biological Systems	4	not rated
Fall, '06	BAE 447	Principles of Process Engineering	12	3.6
Spring, '06	BAE 502	Computer Simulation of Biological Systems	10	3.8
Fall, '05	BAE 447	Principles of Process Engineering	12	3.5
Fall, '05	BAE 750	Biorenewable Resource Engineering	7	not rated
Fall, '05	EGR 101	Introduction to Engineering	23	3.4
Spring, '04	BAE 502 ¹	Computer Simulation of Biological Systems	14	3.4
Fall, '03	BAE 102	Introduction to Biosystems Engineering	20	3.2
Fall, '03	BAE 447	Principles of Process Engineering	14	3.3
Spring, '03	BAE 502 ¹	Computer Simulation of Biological Systems	8	3.8

¹ Team taught - responsible for approximately 50% of the lectures.