

MICHAEL O. NGADI, Ph.D., P.Eng.

Associate Professor, William Dawson Scholar

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FOOD/BIO-PROCESS ENGINEER, RESEARCHER AND EDUCATOR

Dr. Ngadi is a registered professional Engineer (APENS) with over twenty years experience in conducting research, teaching and supervising projects related to food and bio-process engineering. His expertise covers food quality and safety with emphasis on heat and mass transfer processes in foods, microstructure and properties of foods, packaging and advanced emerging technologies for food processing, as well as biofuels and bioproducts. He is internationally recognized for his work on fat absorption during frying, hyperspectral imaging and non-thermal technologies such as pulsed electric field, ultraviolet light and ozone. Dr. Ngadi has taught several courses including food engineering, biothermodynamics, material science, engineering design, mechanics of materials and linear algebra. He has graduated several students at the Master's and Doctoral levels as well as trained Post-doctoral fellows. He was the Vice-President (Regional) of the Canadian Society for Biological Engineers (CSBE) and he is very active in several other regional, national and international professional organizations. He was appointed the prestigious William Dawson Scholar (Canada Research Chair, Tier 2 equivalent) at McGill University in 2004 and was the recipient of the CSBE John Clark Award in 2008.

EDUCATION:

Ph.D.	1995	Food Engineering	DalTech, Dalhousie University, Nova Scotia
M.A.Sc.	1991	Agric. & Food Engineering	DalTech, Dalhousie University, Nova Scotia
B.Eng.	1986	Agricultural Engineering	University of Nigeria, Nigeria

TEACHING/RESEARCH EXPERIENCE

Associate Professor (Current): Department of Bioresource Engineering, McGill University, Quebec. Canada.

Visiting Professor (2009): Ecole Nationale Ingénieurs Technol. Indust. Agric. Alimentaires (ENITIAA), Nantes, France.

Assistant Professor (1998-2003): Department of Agric. & Biosys. Engineering, McGill University, Quebec. Canada.

Research Associate (1997-98): CFSQE., University of Georgia, Griffin, GA. USA.

Research Consultant (1997): CAFT, Rutgers University, New Jersey. USA.

Post-doctoral Fellow (1995-97): HRC, Laval University, QC. Canada.

Graduate Research Assistant (1988-95): Dept. of Biological Engineering, DalTech, Halifax, NS. Canada.

Lecturer (1987-88): Department of Agricultural Engineering, University of Nigeria, Nigeria.

SELECTED PROFESSIONAL AWARDS

2008: Recipient of the Canadian Society for Biological Engineers (CSBE) **John Clark Award**, Vancouver, Canada.

2004: Appointed **William Dawson Scholar** (equivalent to Canada Research Chair, Tier II), McGill University.

2003: Recipient of the Canadian Society of Agricultural Engineers (CSAE) **Young Engineer of the Year Award**. Montreal, Canada.

SCIENTIFIC AND PROFESSIONAL SOCIETY MEMBERSHIP

- Registered Professional Engineer. APENS
- Professional Member. Institute of Food Technologist (IFT)
- Member. American Society of Agricultural and Biological Engineers (ASABE)
- Member. Canadian Society for Biological Engineers (CSBE)

SELECTED PROFESSIONAL ACTIVITIES

Member: McGill University Senate

Chair: FAES Faculty Promotion Committee

Associate Editor: Canadian Biosystems Engineering;

Associate Editor: Transactions of the ASAE.

Special Editor: Stewart Postharvest Reviews

Professional member: ASAE, CSAE, IFT and APENS.

Technical reviewer for several Journals and funding agencies in Canada and USA.

SELECTED INTERNATIONAL DEVELOPMENT ACTIVITIES

Principal Investigator: McGill-WARDA CGIAR-Canada Linkage Fund (CCLF) Project. Participated in projects in Nigeria, Benin, Ghana, Rwanda, India and Mexico.

PUBLICATIONS

Published over 100 book chapters and referred papers in International Journals in the areas of deep-fat frying, hyperspectral imaging for food quality, mathematical modeling, emerging technologies in food processing; and packaging.

RESEARCH FUNDING

Received over \$1 million funding support together with various collaborators from various Government and industrial agencies in the past 10 years.

TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP)

Trained over 40 postdoctoral fellows, graduate students at the Masters' and Doctoral levels, research technicians and undergraduate students.

PARTIAL LIST OF PUBLICATIONS (Students' names are in bold)

Referred Publications (ONLY Partial List: 2009-2006. Total 102)

- Wang, Y.**; Ngadi, M. O.; **Adedeji, A. A.** 2009. Shrinkage of chicken nuggets during deep-fat frying. International Journal of Food Properties. In Press.
- Adedeji, A. A.**; Ngadi, M. O.; Raghavan, G.S.V. 2009. Kinetics of mass transfer in microwave precooked and deep-fat fried chicken nuggets. Journal of Food Engineering, 91: 146-153.
- Ngadi, M. O.; **Wang, Y.**; **Adedeji, A. A.**; Raghavan, G. S. V. 2009. Effect of microwave pretreatment on mass transfer during deep-fat frying of chicken nugget. LWT--Food Science and Technology, 42(1): 438-440.
- Xue, J.**; Ngadi, M. 2009. Effects of methylcellulose, xanthan gum and carboxymethylcellulose on thermal properties of batter systems formulated with different flour combinations. Food Hydrocolloids, 23(2): 286-295.
- Dehghannya, J.**; Ngadi, M.; Vigneault, C. 2008. Simultaneous aerodynamic and thermal analysis during cooling of stacked spheres inside ventilated packages. Chemical Engineering & Technology, 31(11): 1651-1659.
- Li, Y.**; Ngadi, M.; Oluka, S. 2008. Quality changes in mixtures of hydrogenated and non-hydrogenated oils during frying. Journal of the Science of Food and Agriculture, 88(9): 1518-1523.
- Gallardo-Reyes, E. D.**; Valdez-Fragoso, A.; Nevarez-Moorillon, G. V.; Ngadi, M. O.; Ortega-Rivas, E. 2008. Comparative quality of orange juice as treated by pulsed electric fields and ultra high temperature. Agro Food Industry Hi-Tech, 19(1): 35-36.
- Gachovska, T. K.**; **Adedeji, A. A.**; Ngadi, M.; Raghavan, G.S.V. 2008. Drying characteristics of pulsed electric field treated carrot. Drying Technology. 26(10): 1244-1250(7)
- Gachovska, T. K.**; **Adedeji, A. A.**; Ngadi, M.; Raghavan, G.V. S. 2008. Effect of Pretreatments on Drying Characteristics of Okra. Drying Technology. 26(10): 1251-1256(6)
- Ngadi, M.; **Li, Y.**; **Oluka, S.** 2007. Quality changes in chicken nuggets fried in oils with different degrees of hydrogenation. LWT--Food Science and Technology, 40(10): 1784-1791.
- Xue, J.**; Ngadi, M. 2007. Thermal properties of batter systems formulated by combinations of different flours. LWT--Food Science and Technology, 40(8): 1459-1465.
- Xue, J.**; Ngadi, M. 2007. Rheological properties of batter systems containing different combinations of flours and hydrocolloids. Journal of the Science of Food and Agriculture, 87(7): 1292-1300.
- Hong, T., **Qiao, J.**, Ning, W., Ngadi, M. O., Zhao, Z., Li, Z. 2007. Non-destructive inspection of Chinese pear quality based on hyperspectral imaging technique. Nongye Gongcheng Xuebao/Transactions of the Chinese Society of Agricultural Engineering 23(2): 151-155.
- Ngadi M.O. and **Hwang D-K.** 2007. Modelling heat transfer and heterocyclic amines formation in meat patties during frying. Agricultural Engineering International: the CIGR Ejournal. Manuscript BC 04 004. Vol. IX. August, 2007.
- Amiali, M.**, Ngadi M.O. Smith J.P. Raghavan G.S.V. 2007. Synergistic effect of temperature and pulsed electric field on inactivation of Escherichia coli O157:H7 and Salmonella enteritidis in liquid egg yolk. Journal of Food Engineering 79: 689-694.
- El Masry G.**, Wang N., **El Sayed A.**, Ngadi M. 2007. Hyperspectral imaging for nondestructive determination of some quality attributes for strawberry. Journal of Food Engineering, 81(1): 98-107.

- Ahmed J., **Prabhu S.T.**, Raghavan, G.S.V., Ngadi M. 2007. Physico-chemical, rheological, calorimetric and dielectric behavior of selected Indian honey. *Journal of Food Engineering* 79(4): 1207-1213.
- Qiao J.**, Wang N., Ngadi M.O., Gunenc A., Monroy M., Gariepy C., Prasher S.O. 2007. Prediction of drip-loss, pH, and color for pork using a hyperspectral imaging technique. *Meat Science* 76(1):1-8.
- Juan X.**, Ngadi M., **Gunenc A.**, Prasher S., Gariepy C. 2007. Use of visible spectroscopy for quality classification of intact pork meat. *Journal of Food Engineering* 82: 135-141.
- Qiao J.**, Wang N., Ngadi M.O. and **Kazemi S.** 2007. Predicting mechanical properties of fried chicken nuggets using imaging technique. *Journal of Food Engineering*, 79: 1065-1070
- Qiao J.**, Ngadi M.O., Wang N., Gariepy C., Prasher S.O. 2007. Pork quality and marbling level assessment using a hyperspectral imaging system. *Journal of Food Engineering* 83: 10–16.
- Qiao J.**, Ngadi M.O., Wang N., Gunenc A., Monroy M., Gariepy C., Prasher S.O. 2007. Pork quality classification using a hyperspectral imaging system and neural network. *International Journal of Food Engineering* 3(1): 6
- Ngadi M., **Dirani K.**, Oluka S. 2006. Mass transfer characteristics of chicken nuggets. *International Journal of Food Engineering* 2(3): A8.
- Bazhal M.I.**, Ngadi M.O., Raghavan G.S.V. and Smith J.P. 2006. Inactivation of *Escherichia coli* O157:H7 in liquid whole egg using combined pulsed electric field and thermal treatments. *LWT - Food Science and Technology*, 39(4): 420-426
- Cheng W.M.**, Raghavan G.S.V., Ngadi M. and Wang N. 2006. Microwave power control strategies on the drying process I. Development and evaluation of new microwave drying system. *Journal of Food Engineering*, 76(2):188-194
- Cheng W.M.**, Raghavan G.S.V., Ngadi M. and Wang N. 2006. Microwave power control strategies on the drying process II. Phase-controlled and cycle-controlled microwave/air drying. *Journal of Food Engineering*, 76(2): 195-201.
- Bajgai T.R.**, Hashinaga F., Isobe S., Raghavan G.S.V and Ngadi M.O. 2006. Application of high electric field (HEF) on the shelf-life extension of emblic fruit (*Phyllanthus emblica* L.). *Journal of Food Engineering*, 74(3): 308-313.
- Bajgai T.R.**, Raghavan G.S.V., Hashinaga F., Ngadi M.O. 2006. Electrohydrodynamic drying – a concise overview. *Drying Technology* 24(7): 905-910.
- Amiali M.**, Ngadi M.O., Raghavan V.G.S., Nguyen D.H. 2006. Electrical conductivities of liquid egg products and fruit juices exposed to high pulsed electric fields. *International Journal of Food Properties* 9(3): 533-540.
- Amiali M.**, Ngadi M.O., Smith J.P., Raghavan V.G.S. 2006. Inactivation of *Escherichia coli* O157:H7 and *Salmonella enteritidis* in liquid egg white using pulsed electric field. *Journal of Food Science* 71(3): M88-M94.
- Xue J.** and Ngadi M.O. 2006. Rheological properties of batter systems formulated using different flour combinations. *Journal of Food Engineering*, 77(2): 334.
- Dehghannya, J.**; Emam-Djomeh, Z.; Sotudeh-Gharebagh, R.; Ngadi, M. 2006. Osmotic dehydration of apple slices with carboxy-methyl cellulose coating. *Drying Technology* 24(1): 45-50.
- Gachovska, T.K.**; Ngadi, M.O.; Raghvan, G.S.V. 2006. Pulsed electric field assisted juice extraction from alfalfa. *Canadian Biosystems Engineering/Le génie des biosystèmes au Canada* 48: 3.33 - 3.37.
- Kazemi S.**, Ngadi M.O., Wang N., Prasher S.O. 2006. The use of vis/nir hyperspectral analysis on moisture and fat content predictions for breaded-fried chicken nuggets. *Asian Journal of*

Information Technology 5(12): 1343-1350.

Ngadi, M.; **Bazhal**, M. 2006. Pulsed electric field assisted juice extraction. *Stewart Postharvest Review*, 2(4): 1-8

Xue J. and Ngadi M.O. 2006. Effect of carboxymethylcellulose on thermal and rheological properties of batter systems formulated with different combinations of flours. *Proceedings of the 2006 CIGR International Symposium, Future of Food Engineering*, Da-wen Sun (Ed.), April 26-28, 2006. Warsaw, Poland.

Books and Book Chapters (Partial list)

Malikarjunan, K. Manjeet, C. Ngadi, M.O. 2009. *Breaded Fried Foods*. In Press. Taylor & Francis/CRC Press.

Ngadi, M., **Adedeji, A., Kasama, L.** 2009. Microstructural changes during frying of foods. In: *Advances in Deep-fat Frying of Foods* (Ed. Sopil Sahin). In Press. Taylor & Francis/CRC Press.

Ngadi, M.O., **Deghannya, J.** 2009. Non-thermal pre-processing of foods: Pulsed electric fields processing. In: *Mathematical Modeling of Food Processing* (Ed. Mohammed Farid). In Press. Taylor & Francis/CRC Press.

Ngadi M. O.; **Yu L-J; Amiali M.**; Ortega-Rivas E. 2009. Food quality and safety issues during pulsed electric field processing. In: *Processing Effects on Safety and Quality of Foods* (Ed. Enrique Ortega-Rivas). In Press.

Non-Refereed Contributions (ONLY 2008 LIST. More than 40 in the past 6 years)

Abdel-Nour, N., Ngadi, M.O. and Prasher, S. 2008. Prévoir la qualité d'oeufs en utilisant la technique hyperspectrale. Paper reference C-203. Presented at the 76e Congrès de l'ACFAS 2008. Quebec City, 8th May 2008.

Chaudhary, N., Ngadi, M.O., Lefsrud, M. and Bergthorson, J. 2008. Croissance anaérobique d'*Escherichia coli* dans le glycérol pour la production d'éthanol. Paper reference C-203. Presented at the 76e Congrès de l'ACFAS 2008. Quebec City, 8th May 2008.

Adedeji A. A and Ngadi M.O. 2008. The use of X-ray micro-CT in characterizing microstructural properties of deep-fat fried chicken nuggets. Paper number 084618, Presented at the Annual International Meeting (AIM) of the ASABE. Providence, Rhode Island, June 29 – July 2, 2008.

Gachovska Tanya; Simpson Marian; Ngadi Michael. 2008. Pulsed electric field pre-treatment for dehydration of carrots. Paper number, Presented at the Annual International Meeting (AIM) of the ASABE. Providence, Rhode Island, June 29 – July 2, 2008.

Ngadi, M.O. 2008. Food process research program. Paper presented to CINTTECH, February 8, 2008. McGill University, Macdonald campus.

Xiang, B. Y.; Ngadi, M. O.; Ochoa-Martinez, L. A. 2008. Pulsed electric field-induced structural modification of whey protein as studied by fluorescence spectroscopy. Paper number 084615, Presented at the Annual International Meeting (AIM) of the ASABE. Providence, Rhode Island, June 29 – July 2, 2008.

Deghannya, Jalal; Ngadi, Michael; Vigneault, Clement. 2008. Mathematical Modeling of Transport Phenomena as a Package Design Tool for Forced-air Precooling of Produce. Paper number 084609, Presented at the Annual International Meeting (AIM) of the ASABE. Providence, Rhode Island, June 29 – July 2, 2008.

- Xiang, B. Y.;** Ngadi, M. O.; Simpson, M.V.; Ochoa-Martinez, L. A. 2008. Effect of pulsed electric field on structural modification and thermal properties of whey protein isolate. Paper 08135 presented at the annual meeting of CSBE. North Vancouver, British Columbia, July 13 - 16, 2008.
- Dehghannya, Jalal;** Ngadi, Michael; Vigneault, Clement. 2008. Simulation of airflow during forced-air precooling of bulk produce in vented package. Paper presented at ICEF 10 – International Congress of Engineering and Food. Santiago, Chile, April 20 – 24, 2008.
- Adedeji, A.A.;** Ngadi, M.O. 2008. Microstructural characterization of deep-fried breaded products using x-ray micro-computed tomography. Paper presented at ICEF 10 - International Congress of Engineering and Food. Santiago, Chile, April 20 – 24, 2008.
- Ngadi, M.O. 2008. Influence of feedstocks on biofuel conversion processes. California-Canada Biofuels Symposium, Montreal, Canada. July 9, 2008.
- Bob Y. Xiang,** Michael O. Ngadi & M. V. Simpson. 2008. Structural modification of soy protein treated by pulsed electric field. Paper presented at NABEC meeting, July 27–30, 2008, Aberdeen, MD
- Jalal Dehghannya,** Michael Ngadi and Clement Vigneault. 2008. Optimization of cooling performance in vented packages containing stacked spherical produce. Paper presented at NABEC meeting, July 27–30, 2008, Aberdeen, MD
- Akinbode A. Adedeji** and Michael Ngadi. 2008. Use of confocal laser scanning microscopy in the study of breaded food microstructures. Paper presented at NABEC meeting, July 27–30, 2008, Aberdeen, MD