

**Jaya Sundaram, Ph.D.****Email:** [jayas@engr.uga.edu](mailto:jayas@engr.uga.edu)**Phone:** 706 542 3815**EDUCATION**

|       |   |      |
|-------|---|------|
| Ph.D. | Food Engineering, Indian Institute of Technology, Kharagpur, India          | 2003 |
| M.S.  | Agricultural Process Engineering, Tamil Nadu Agricultural University, India | 1999 |
| B.S.  | Agricultural Engineering, Tamil Nadu Agricultural University, India         | 1997 |

**PROFESSIONAL POSITIONS**

|                                 |   |               |
|---------------------------------|---|---------------|
| Assistant Research Scientist    | College of Engineering, Univ. of Georgia. | 2014- Present |
| Adjunct Lecturer                | College of Engineering, Univ. of Georgia. | 2014- Present |
| Visiting Scientist              | U.S. Poultry Research Center, Athens, GA  | 2016-         |
| Research Food Technologist      | ARS, USDA.                                | 2010 – 2012   |
| Agriculture Engineer            | National Peanut Research Lab, USDA.       | 2008 – 2010   |
| NSERC Postdoctoral Fellow       | University of British Columbia, Canada    | 2005 – 2008   |
| Postdoctoral Research Associate | University of British Columbia, Canada,   | 2004 – 2005   |
| Research Engineer               | University of Saskatchewan, Canada        | 2003 – 2004   |

**PROFESSIONAL MEMBERSHIP**

|   |                |
|---|----------------|
| Member University of Georgia cancer center                            | 2015- Present  |
| Member University of Georgia Nanoscale Science and Engineering Center | 2015-Present   |
| American Society of Agricultural and Biological Engineers (ASABE)     | 2004 - Present |
| Institute of Electrical and Electronic Engineers (IEEE)               | 2011 – Present |
| Canadian Biomaterials Society (CBS)                                   | 2006-2008      |
| Institute of Food Technologists (IFT)                                 | 2002-2004      |

**HONORS and AWARDS**

**2011 Superior award:** Given by the Russell Research Center, QSARU, ARS, USDA, Athens, GA, for the research accomplishments on food safety engineering during the fiscal year 2010-2011.

**2009 Outstanding award:** Given by the National Peanut Research Laboratory, ARS, USDA, Dawson, GA, for the research accomplishments on rapid and non-destructive analysis of peanut quality and grading during the year 2008-2009.

**2007 CBS travel award:** Awarded by Canadian Biomaterials Society (CBS) for submitting top ranked abstract to present in CBS conference, May 2007 at London, Ontario.

**2005 NSERC PDF award:** Awarded by Natural Science and Engineering Research Council of Canada for doing postdoctoral research based on the academic excellence, for 2 years.

**2004 Gold Medal:** Awarded by Indian Council of Agricultural Research (ICSR), India for the top ranked research in doctoral program

**2000-2002 Institute Top-up fellowship:** Given by Indian Institute of Technology for the research accomplishments during PhD program.

**1999-2002 Institute fellowship:** Given by Ministry of Human Resource, Government of India for PhD research.

**1997-1999 University Merit Scholarship:** Given by TamilNadu Agricultural University for the academic excellence in the field Agricultural Process Engineering to pursue Master's Degree.

## TEACHING

### *Current courses at College of Engineering, University of Georgia*

ENGR 3520 - Mass transport and rate phenomena  
 ENGR 2110 – Engineering Decision Making  
 BCHE 2910- Introduction to Biochemical Engineering Design

### *Course assisted at Food, Nutrition and Health Program, Univ. of British Columbia, Canada*

FHN 425 – Food Science Laboratory III  
 FNH 309 – Food Process Science

### *Course assisted at Department of Agricultural and Food Engineering, IIT, Kharagpur, India*

Food Chemistry and Microbiology  
 Food Engineering Lab I and II

## GRANTS

### Currently funded

1. Faculty Research Grants in the Sciences, University of Georgia 07/2015-06/2017  
 Development of advanced system for accurate detection of aflatoxin to improve food safety and human health  
 Role: PI \$10,000

### Result pending

2. USDA-AFRI-NIFA-Foundation Research Program 01/2017 – 12/2021  
 Molecular probing and early detection of life threatening food borne pathogens using optically tuned plasmonic nanoparticles  
 Role: PI
3. USDA-AFRI-NIFA-Foundation Research Program 01/2017 – 12/2021  
 Development of nanocellulose based anti-microbial food packaging material for improved self-life of fresh foods  
 Role: Co-PI
4. NIH-R21-NIAID 07/2016-06/2018  
 Assembled Nanoscale material development with targeted optical properties  
 Role: PI

### Funded and Completed:

5. Natural Science and Engineering Research Council (NSERC) of Canada Cellular Solids Using Vacuum Microwave Technology for Tissue Engineering and Biomedical Application  
 Role: PI Funded for postdoctoral research (\$40,000/yr) 06/2005-02/2008

## 6. Natural Science and Engineering Research Council (NSERC) of Canada

Research Tools and Instrument grant – Category I

Porosity analyzer

Funded

2005

Written in collaboration with Dr. Timothy Durance, University of British Columbia, Vancouver, Canada.

## 7. Indian Council of Agriculture Research, New Delhi, India,

Application of Vacuum drying Technology for Vegetable Powder Production- Funded -2002

Written in collaboration with Prof. H. Das, Indian Institute Technology, Kharagpur, India

**COMPUTATIONAL SKILLS**

Expert knowledge in Unscrambler Multivariate data analysis software.

Advanced skills in SuperPro design software for biochemical process simulation and modeling.

**OTHER EXPERIENCES & SERVICES**

Editor, Food Science, De Gruyter Open (Versita), Poland

2012-present

Grant proposals and refereed journal reviewer

2008-present

Food Industry consultant, Vancouver, Canada

2004-2005

Technical committee member on Food safety and Instrumentation divisions of American Society of Agricultural and Biological Engineering (ASABE) professional organization

2011-present

**PUBLICATIONS**

Patents

6

Peer reviewed journal articles

44

Book chapters

2

Conference proceedings, abstracts and presentations

48

Technical reports

2

**POPULAR NEWS RELEASES**

1. <http://phys.org/news/2012-04-high-tech-tactic-expose-stealthy-salmonella.html>
2. <http://www.ars.usda.gov/is/AR/archive/apr12/salmonella0412.htm>
3. <http://www.photonics.com/Article.aspx?AID=50600>
4. <http://globalbiodefense.com/2012/04/10/the-future-of-usda-foodborne-pathogen-detection/>
5. [http://article.wn.com/view/2012/04/09/Hightech\\_Tactic\\_May\\_Expose\\_Stealthy\\_Salmonella/](http://article.wn.com/view/2012/04/09/Hightech_Tactic_May_Expose_Stealthy_Salmonella/)
6. [http://www.foodsafetynews.com/2012/04/pathogen-test-rapidly-hones-in-on-salmonella/#.U\\_I1r01OVHg](http://www.foodsafetynews.com/2012/04/pathogen-test-rapidly-hones-in-on-salmonella/#.U_I1r01OVHg)
7. <http://www.foodproductiondaily.com/content/view/print/628292>
8. EnWave appreciation for NSERC award - <http://www.enwave.net/news.php?id=19>

**SELECTED LIST OF PUBLICATIONS****Patents**

1. **Jaya, S.**, Pant, J., Goudie, M., Mani, S., Handa, H. 2016. Nitric oxide releasing antimicrobial biodegradable nanocellulose- chitosan packaging membranes (Provisional patent under review).
2. Durance, T, D., **Jaya, S.** and M. Ressing. 2014. Method for producing hydrocolloid foams. Europe patent Publication No. EP1771503 B1
3. Durance, T, D., **Jaya, S.** and M. Ressing. 2013. Method for producing hydrocolloid foams. US patent Publication No. US 8,722,749 B2

4. Durance, T. D., **Jaya, S.** and M. Ressing. 2010. Method for producing hydrocolloid foams. Canadian Patent Publication No. 2,571,232C.
5. Durance, T. D., **Jaya, S.** and M. Ressing. 2006. Method for producing hydrocolloid sponges & foams. PCT/CA2005/001192 (This work was licensed by **EnWave Corporations**, Vancouver, Canada)
6. **Jaya, S.** and H. Das. 2000. Production technology for fruit juice powders. Indian Patent. No. 192040.

### Peer Reviewed Journal Articles

1. **Jaya, S.**, Pant, J., Goudie, M., Mani, S., Handa, H. 2016. Antimicrobial and physiochemical characterization of biodegradable, nitric oxide releasing nanocellulose- chitosan packaging membranes. Journal of Agriculture and Food Chemistry, DOI: 10.1021/acs.jafc.6b01936.
2. Chari V. Knadala and **Jaya, S.** 2014. Nondestructive moisture content determination of three different market type in-shell peanuts using Near Infrared Reflectance Spectroscopy. Journal of Food Measurements and characterization. 8(2). DOI: 10.1007/s11694-014-9173-8.
3. **Jaya, S.**, B. Park, Yongkuk Kwon and Kurt C. Lawrence. 2013. Surface Enhanced Raman Scattering (SERS) methodology for rapid and reliable identification of foodborne pathogens. International Journal of Food Microbiology, 167: 67-73.
4. **Jaya, S.**, B. Park and Yongkuk Kwon. 2013. Stable silver/Biopolymer hybrid Plasmonic Nano structure for high performance Surface Enhanced Raman Scattering (SERS) through well-known citrate reduction. Journal of Nanoscience and Nanotechnology, 13(8): 5382-5390.
5. **Jaya, S.**, B. Park, A. Hinton, Jr. K. C. Lawrence, Yongkuk Kwon. 2013. Silver biopolymer colloid as surface enhanced Raman scattering substrate in *Salmonella* detection. Journal of Food Measurements and characterization, 7: 1-7, DOI: 10.1007/s11694-012-9133-0.
6. **Jaya, S.** and C.V. Kandala, K.N. Govindarajan and Jeyam Subbiah. 2012. Sensing of Moisture Content of In-Shell Peanuts by NIR Reflectance Spectroscopy. Journal of Sensor Technology, 2012, 2, 1-7
7. Park, B., S. C. Yoon, **Jaya, S.**, A. Hinton, Jr, W. R. Windham, K. C. Lawrence. 2012. Acousto-Optic Tunable Filter Hyperspectral Microscope Imaging for Identifying Foodborne Pathogens. Transaction of ASABE, 55(5): 1997-2000.
8. **Jaya, S.**, B. Park, S. C. Yoon, A. Hinton, Jr, W. R. Windham, K. C. Lawrence. 2012. Classification and structural analysis of live and dead *Salmonella* cells using Fourier Transform Infrared (FT-IR) spectroscopy and Principle Component Analysis (PCA). Journal of Agriculture and Food Chemistry, 60: 991-1004.
9. **Jaya, S.**, C.V. Kandala, Ronald A. Holser, C.L. Butts and W.R. Windham. 2010. Determination of in-shell peanuts moisture, oil and fatty acid composition using near infrared reflectance spectroscopy. Journal of American Oil Chemist's Society. 87:1103-1114.
10. **Jaya, S.**, Durance, T.D. and Wang, R. 2010. Physical Characterization of Drug Loaded Microcapsules and Controlled In-Vitro Release Study. The open Biomaterials Journal. 2:9-17.
11. **Jaya, S.**, C.V. Kandala and C.L. Butts. 2009. Classification of in-shell peanut kernels nondestructively using VIS/NIR reflectance spectroscopy. Sensing and Instrumentation for Food Quality and Safety, 4:82-94. DOI 10.1007/s11694-010-9098-9.
12. **Jaya, S.**, Durance, T.D. and Wang, R. 2009. Physical characterization of gelatin starch/hydroxyapatite porous scaffold fabricated using microwave energy under vacuum technique. Journal of Composite Materials. 43(13):1451-1460.

13. **Jaya, S.**, Durance, T.D. and Wang, R. 2009. Effect of alginate-pectin composition on drug release characteristics of microcapsules. *Journal of Microencapsulation*, 26(2):143-153.
14. **Jaya, S** and Durance, T.D. 2008. Tailor-made biopolymers porous scaffold fabrication for tissue engineering: Usefulness of radiant energy application in the form of microwave under vacuum. *Bio-Medical Materials and Engineering*, 18:357-366.
15. **Jaya, S.**, Durance, T.D. and Wang, R. 2008. Porous scaffold of gelatin–starch with nano hydroxyapatite composite processed via novel microwave vacuum drying. *Acta Biomaterialia*, 4(4): 932-942.
16. **Jaya, S** and Durance, T.D. 2008. Water sorption and physical properties of Locust bean gum -pectin-starch composite gel dried using different drying methods. *Food Hydrocolloids*, 22, 1352-1361.
17. **Jaya. S.** and H. Das. 2008. Glass transition and sticky point temperatures and state diagram of fruit powders. *Food and Bioprocess Technology*, 2(1): 89-95
18. **Jaya, S.** and Durance, T.D. 2007. Influence of processing methods on mechanical and structural characteristics of vacuum microwave dried biopolymer foams. *Food and Bio-products Processing, Trans IChem E: Part C 85 (C3): 264-272.*
19. **Jaya, S.** and H. Das. 2005. Effect of accelerated storage on shelf life on color of mango powder. *Journal of Food Processing and Preservation*, 29: 45-62.
20. **Jaya, S.**, N. Varadharaju and Z. J. Kennedy. 2004. Inactivation of micro-organisms in the fruit juice using pulsed electric field. *Journal of Food Science & Technology*, 41(6): 652-655.
21. **Jaya, S.** and H. Das. 2003. Effect of maltodextrin, glycerol monostearate and tri calcium phosphate on vacuum dried mango powder properties. *Journal of Food Engineering*, 63 (2): 125-134

#### **Book Chapter**

1. **Jaya, S.**, B. Park and Yongkuk Kwon. 2013. Nanocolloid Substrate for Surface Enhanced Raman Scattering (SERS) Sensor for Biological Applications. *ACS Symposium Series*, Vol. 1143; Chapter 2, pp 21–41; DOI: 10.1021/bk-2013-1143.ch002