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The Honor Society of Food Science and Technology

Phi Tau Sigma Newsletter

April 2019

News:

Message from the President, Rakesh Singh, Ph.D.

Dear Colleagues and Friends – As active and past members of Phi Tau Sigma, you have embraced its mission “to raise the stature and recognize scholarly achievements of the Food Science and Technology profession.” We can only fulfill our mission and purpose when we have active members, many of whom volunteer for leadership in this organization. I thank those volunteer members who dedicate their time and financial support to enhance the value for all members. One of our purposes is “to recognize and honor professional achievements” and we do that by sponsoring the Dr. Carl Fellers Award, and several student scholarships (Dr. Daryl Lund International Scholarship, Founders’ Scholarship, Dr. Livingston Scholarship, 3 Student Achievement Scholarships, and Chapter of the Year Award). Thanks to the sponsors and members’ dues, which support these scholarships and other activities of your Honor Society.



As you know, we communicate with all of you via the excellent monthly Newsletter edited by Dr. Kathryn Kotula who deserves our thanks. The Newsletter has also provided a platform for young student researchers to disseminate their research findings to the membership (thanks to Associate Editor, Dr. Claire Zoellner). When you read about different events and programs in the Newsletter, please remember that a volunteer committee works very hard to make that activity or program a success. Just to name a few - the Membership Recruitment Committee lead by Dr. Daryl Lund has embarked an “Every member Get a Member” campaign, and the Chapter Affairs Committee lead by Dr. Amy Simonne has reached out to several food science programs to increase number of the active chapters. There are other committees within the organization that are working very hard to enhance our membership experience.

Phi Tau Sigma needs ALL of its members who have been inducted into the Society. We need you be an active member by renewing your membership. I hope that you will feel the same pride in renewing your membership as you felt when you were first inducted into Phi Tau Sigma – the sense of excellence and achievement. The membership form is available on our web site: www.phitausigma.org/membership/

Thank you for being a part of Phi Tau Sigma. Your membership is not only a benefit to you, but also an investment in recognizing excellence for the future Food Science and Technology professionals.

Growing Phi Tau Sigma

(Contributed by the Member Recruitment Committee: Daryl Lund, Ph.D., Chair, Claire Zoellner, Ph.D., Steve Campano, M.S., Liz Boyle, Ph.D., Ruth McDonald, Ph.D., and Rodrigo Tarte, Ph.D.)

Each of us knows colleagues who deserve recognition for their contributions to food science and technology (FST). That recognition can come in the form of membership in The Honor Society of Food Science and Technology, Phi Tau Sigma. All it takes is nomination by two members. So, Phi Tau Sigma has launched an every-member-get-a-member campaign, and we need your help.

We will be emailing all members in early April with

- documents explaining the benefits of Phi Tau Sigma membership (<http://www.phitausigma.org/value-proposition-2/>), <http://www.phitausigma.org/why-i-joined/>,
- a flyer describing the Honor Society (<http://www.phitausigma.org/pamphlet/>),
- a nomination form (<http://www.phitausigma.org/phi-tau-sigma-nomination-2019-3/>), and
- the latest newsletter (<http://www.phitausigma.org/wp-content/uploads/2019/03/Phi-Tau-Sigma-Newsletter-2019-03-March.pdf>).

Our goal is to grow the professional membership by 40% by August 31, 2019. With your help, we can get this accomplished.

Phi Tau Sigma Symposia during the IFT meeting

(Contributed by Liz Boyle, Ph.D., Program Committee Chair)

The following symposia are sponsored and/or organized by Phi Tau Sigma at the 2019 IFT Annual Meeting in New Orleans (June 2-5, 2019). The locations of the symposia will be published in a future article, once we receive the information from IFT.

Emerging Food Processing and Packaging Technologies: Current Status and Future Prospects

Wednesday June 5, 2019, 1:15pm to 2:45pm

Session Organizer: Hossein Daryaei, Ph.D. (Illinois Institute of Technology)

Session Moderators: Hao Feng, Ph.D. (University of Illinois Urbana-Champaign); Kathiravan Krishnamurthy, Ph.D. (Illinois Institute of Technology); Hossein Daryaei, Ph.D. (Illinois Institute of Technology)

Session Description: Three presentations will be delivered.

1) V.M. (Bala) Balasubramaniam (The Ohio State University) Development and Industrial Adaptation of High Pressure-Based Food Processing Technologies - High pressure processing has emerged as a technology of a choice for food manufactures to deliver microbiologically safe, preservative free, nutritious foods desired by modern consumers. This presentation will summarize recent research advances in the process development aspects of high pressure-based food technologies.

2) Petros S. Taoukis (National Technical University of Athens) Nonthermal Processing: From TRL1 to TRL9 - The High Pressure Paradigm in Research and Industrial Applications - Nonthermal processing has evolved as one of the more prolific fields of research and applications in Food Engineering. Among the nonthermal technologies prominent position as far as research and certainly with regards industrial implementation is High Pressure (HP) processing. HP has successfully advanced through all technology readiness levels (TRL) reaching TRL9. HP can in many cases achieve the results of thermal processing with regards

food safety and control of quality related parameters without the unavoidable detrimental side effects induced by high temperature. The overall objective is to produce products of superior quality in terms of sensorial, nutritional and biofunctional properties. The most successful commercial applications can be classified as nonthermal pasteurization were HP has replaced conventional thermal pasteurization or allowed pasteurization of products not amenable to heat processing, achieving optimization of quality and shelf life extension. Beyond nonthermal pasteurization and High Pressure High Temperature (HPHT) or Pressure assisted sterilization (PATS), current HP research is also focusing on aspects that mainly are related to targeted structural modification of food macromolecules. Selective modulation of enzymes leads to controlled inactivation or increase of activity of enzymes to achieve cheese maturation acceleration by affecting starter culture enzymes, increased tomato juice viscosity at lower Brix, enzymatic debittering of citrus juices or control of proteolysis in cheeses made with plant "rennet". Potential combined processes of HP and Transglutaminase can increase textural integrity at lower protein and fat content and enhanced bioactive properties of Greek yogurt. Structural changes as cellular deformation, cellular membrane damage and protein denaturation, may improve the mass transfer rate permeability in cells and enhance the extraction of active ingredients from plant sources with application e.g. on increased yields and quality of virgin olive oil with increased content in biofunctional ingredients.

3) Kit Keith L. Yam (Rutgers University) Emerging Packaging Technologies to Create Value in the Food Supply Chain - Emerging technology can be broadly defined as those science-based innovations that have passed the early stages of development and have potential commercial applications within five to ten years. This presentation will discuss the principles of several emerging active and intelligent packaging technologies, as well as the potentials and challenges of their applications to create value in the food supply chain.

This session is co-sponsored by Phi Tau Sigma - The Honor Society of Food Science and Technology.

Nonthermal Processing with Light and Plasma: Microbes and Mycotoxins

Session Presenters: Tatiana Koutchma, Ph.D. (Agri-food Canada) UV light applications; Carmen I. Moraru, Ph.D. (Cornell University) Recent developments in Visible & UV-LED technology: light sources and applications; Kathiravan Krishnamurthy, Ph.D. (Institute for Food Safety and Health, Illinois Institute of Technology) Recent advancements in pulsed light processing: Opportunities and challenges; Paula Bourke, Ph.D. (Technological University Dublin, Queens University Belfast) Plasma Grain: Cold plasma innovations for Cereal grains decontamination and functionality.

Session Description: Recent technological advances have opened new opportunities for energy-based antimicrobial interventions, with rapid increases in efficacy, power efficiency, and scalability in the context of commercial implementation. In this symposium, leading experts will present the latest research on ultraviolet light, high-intensity LEDs, pulsed light treatments, and cold plasma processing. The current state of the art for each of these technologies will be described, along with key areas of ongoing research for a variety of commodities. This session is co-sponsored by Phi Tau Sigma, The Honor Society of Food Science and Technology.

Collaborating Divisions: Nonthermal Processing; Food Microbiology. This session is co-sponsored by Phi Tau Sigma - The Honor Society of Food Science and Technology.

Calendar:

->Phi Tau Sigma Awards Schedule:

- November 30: Deadline to submit nominations to the Awards Committee for the Dr. Daryl B. Lund International Scholarship.
- February 1: Deadline to submit nominations to the Awards Committee for the Phi Tau Sigma Special Recognition Award, the Phi Tau Sigma Student Achievement Scholarship, the Dr. Gideon "Guy" Livingston Scholarship, and the Phi Tau Sigma Founders' Scholarship.
- April 1: Deadline to submit nominations to the Awards Committee for the Phi Tau Sigma Outstanding Chapter of the Year Award.

Send completed nomination forms to both Awards Committee Chair Poulson Joseph, Ph.D., (pjoseph@kalsec.com) and Executive Director Kathryn L. Kotula, Ph.D. (klkotula@msn.com). (More information: <http://www.phitausigma.org/awards/>)

- >December 18: Deadline to submit Nominations for the **Dr. Carl R. Fellers Award**, and other IFT Achievement Awards.
(More information: <http://www.ift.org/membership/awards-and-recognition/achievement-awards.aspx>)

->Phi Tau Sigma Chapter Schedule:

- November 1: Deadline to order Honor Cords and lapel pins to ensure delivery before Fall graduation dates
- March 15: Deadline for membership nominations to ensure decisions from the Membership and Qualifications Committee before the Annual Meeting
- April 1: Deadline to order Honor Cords and lapel pins to ensure delivery before Spring graduation dates
- May 1:** First call for Chapter annual reports
- June 1: Second call for Chapter annual reports
- July 1: Final call for Chapter annual reports
- August 1: Deadline for Chapter annual reports

Reminder to all Chapters: In order to receive the *Certificate of Merit* or *Certificate of Excellence*, Chapters must submit their annual reports for evaluation by August 1. Please send your annual report to the current Chair of the Chapter Affairs Committee, Amy Simonne, Ph.D. (asim@ufl.edu) with a copy to Dr. Kathryn L. Kotula (klkotula@msn.com).

->Election schedule:

- December 15: Nominations due to Nomination and Election Committee (Jamie Valenti-Jordan, M.S., Chair (jamie@catapultserv.com))
- January 2: Nominations and Elections Committee convenes
- January 21: Deadline for Nomination and Elections Committee to submit slate of candidates to President
- February 5: Last date on which nominations by petition may be submitted
- March 2: List of candidates will be emailed to the Members for balloting
- March 30: Deadline for casting ballots
- April 8: Deadline for tabulation of ballots
- July 15: Phi Tau Sigma President will present the newly elected individuals to the Membership at the Annual Business Meeting of Phi Tau Sigma

->June 2-5, 2019, Institute of Food Technologists Annual Meeting, New Orleans, LA:

June 2 (Sunday): (times tentative)

11:00am-12:15pm Phi Tau Sigma Executive Committee Meeting

12:15pm-1:30pm Lunch Break

1:30pm-3:00pm Phi Tau Sigma Leadership Council Meeting and Annual Business Meeting

12:30pm-1pm Student Competition Poster Set-up

1:00pm-2:30pm Student Poster Competition Judging

3:30pm-4:20pm Phi Tau Sigma and IFT Division Competition Awards Ceremony

6:00pm-7:00pm IFT Awards Celebration, includes the presentation of the

Dr. Carl R. Fellers, Ph.D. Award

(Meet the Award winners at the IFT Networking Reception immediately following.)

Student Research Synopsis: Encapsulation of lactase (β -galactosidase) into hydrogel beads with self-regulating internal pH microenvironments: Impact of bead characteristics on enzyme activity (Contributed by: Zipei Zhang, Ph.D. student under the direction of Prof. David Julian McClements, Department of Food Science, University of Massachusetts Amherst)

Introduction: Lactose intolerance is a common disease, occurring due to the deficiency of a specific enzyme (e.g., β -galactosidase), which is produced on the brush border of the small intestine in the human body¹⁻². Treatment of lactose intolerance can include several methods such as restriction of dietary lactose by creating lactose-free foods, substitution of dairy products with alternate nutrient sources, or ingestion of β -galactosidase supplements to promote lactose hydrolysis³. In particular, enzyme supplement treatment is the most promising method to alleviate the symptoms of lactose intolerance, because it is based on the specific enzymatic hydrolysis without any undesirable changes in food quality or nutritional profile. β -galactosidase (β -gal) is the commonly used enzyme for this target and numerous β -gal preparations are commercially available in the food and pharmaceutical industry⁴. However, limitations exist for the direct utilization of native β -gal in commercial products due to the fragile structure of this enzyme⁵. Encapsulation of enzymes in porous matrices can make enzymes more stable with a longer circulation lifetime⁶.



Purpose: The overall objective of this research was to explore the effect of hydrogel beads with self-regulating pH properties on the protection of the encapsulated β -gal from deactivation during the stomach digestion process.

Methods: We loaded the β -gal into the hydrogel beads with co-encapsulation of a buffer agent (i.e., $Mg(OH)_2$) and then exposed the buffer-loaded beads to an in vitro digestion model that simulated the conditions in the mouth, stomach and small intestine. Specifically, the pH change inside the bead samples was detected by a fluorescence probe method using confocal microscope. The relative activity of β -gal was assayed by a colorimetric test, using o-NPG as the substrate. A ratiometric method using confocal laser scanning microscopy was

also developed to measure the changes in the internal pH of the beads before and after simulated stomach digestion.

Results: The internal pH of buffer-free beads was sharply reduced from around 6.9 to below the limit of detection (pH < 4) after simulated stomach digestion. On the contrary, the internal pH of the buffer-loaded beads remained fairly stable after simulated stomach digestion, *i.e.*, pH 7.2 and pH 6.6 for samples before and after stomach digestion, respectively (Fig. 1). The substrate (o-NPG) hydrolysis reaction indicated that the enzymatic activity of β -gal could be maintained after stomach digestion when a certain amount of $Mg(OH)_2$ was co-encapsulated in the beads. Smaller beads needed higher amount of $Mg(OH)_2$, which was attributed to the higher diffused rate of hydrogen ion (H^+) within the beads based on the mathematical prediction.

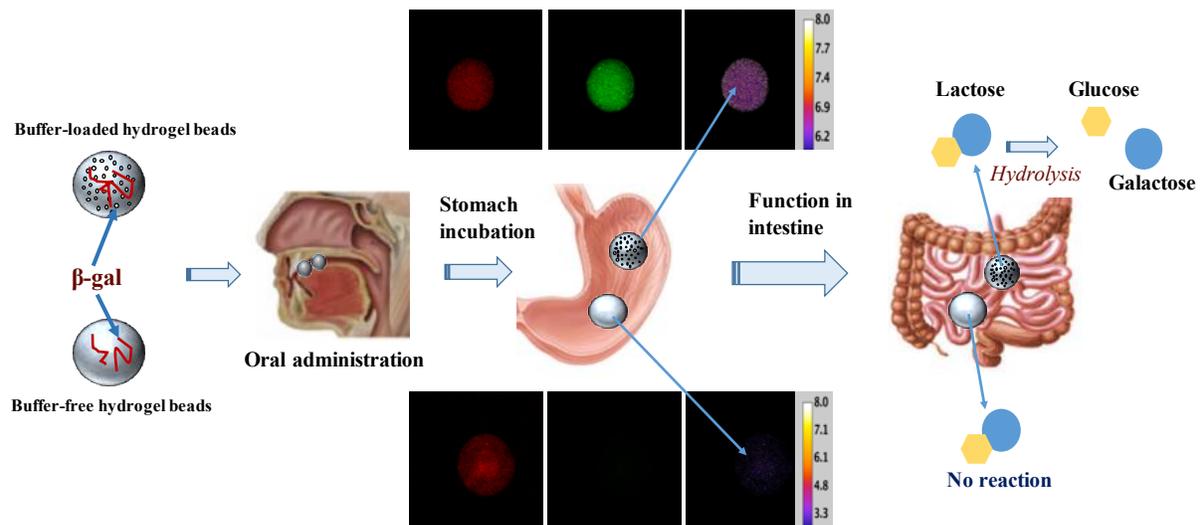


Figure 1. Schematic illustration of the protection effect of buffer-loaded beads on β -gal during digestion process.

Significance: People with lactose intolerance have a limited ability to digest and absorb lactose in the small intestine. Therefore, lactose may enter into the colon as the undigested form and induce a series of health problems, such as gut distension, stomach pain, flatulence, diarrhea, and nausea⁷. The results obtained from this study could provide valuable information for the effective treatment of lactose intolerance, which can greatly improve human health.

References:

1. Heyman, M.B. 2006. Lactose intolerance in infants, children, and adolescents. *Pediatrics*, 118(3):1279-1286.
2. Lomer, M., Parkes, G., Sanderson, J.J. 2008. Review article: Lactose intolerance in clinical practice—myths and realities. *Alimentary Pharmacology and Therapeutics*, 27(2):93-103.
3. Vasiljevic, T., Jelen, P.J. 2001. Production of β -galactosidase for lactose hydrolysis in milk and dairy products using thermophilic lactic acid bacteria. *Innovative Food Science and Emerging Technologies*, 2(2):75-85.
4. Husain, Q. 2010. Beta galactosidases and their potential applications: a review. *Critical Reviews in Biotechnology*, 30(1):41-62.

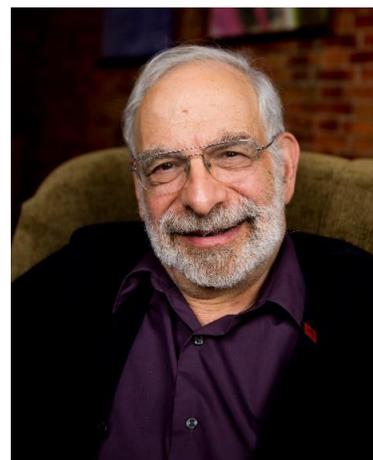
5. Kim, N.C., Jeon, B.J., Ahn, J., Kwak, H.S. 2006. In vitro study of microencapsulated isoflavone and beta-galactosidase. *Journal of Agricultural and Food Chemistry*, 54(7):2582-2586.
6. Desai, K.G.H., Park, H.J. 2005. Recent developments in microencapsulation of food ingredients. *Drying Technology*, 23(7):1361-1394.
7. Berth, G., Vukovic, J., Lechner, M.D. 2008. Physicochemical characterization of carrageenans-A critical reinvestigation. *Journal of Applied Polymer Science*, 110(6):3508-3524.

Lifetime Member Tribute: Joe M. Regenstein, Ph.D.

Professor Emeritus of Food Science, Cornell University, Ithaca, NY

Why did you become a Lifetime Member?

I believe that Phi Tau Sigma is an important part of the food science community in the US. I particularly like that it is focused on students. As an emeritus faculty member, I feel strongly we need to do as much as possible to help students succeed at all levels of education. So, I realized that by becoming a Lifetime Member of Phi Tau Sigma I was being supportive of my goals.



Education: B.A. in Chemistry from Cornell's College of Arts and Sciences; M.S. in Dairy Chemistry from Cornell's College of Agriculture (now Agriculture and Life Sciences); and a Ph.D. in Biophysics from Brandeis University in Waltham, MA. I then did a post-doctoral at Children's Hospital in Boston.

Experience/Accomplishments: Head of the Cornell Kosher and Halal Food Initiative, Initiated new courses over the years in Food Waste Management, Environmental Stewardship, Animal Welfare, Food Law and Chef's Chemistry (pairing a chef with a food scientist followed with hands-on work by the students). Helped to make the cookie line of Nabisco (now Mondelez) kosher, and also helped make Cornell's Dairy Plant the first university manufacturing facility to be kosher certified by a national certification organization.

Areas of Expertise: Kosher and Halal foods; Fish as food, especially minced fish and fish gelatin.

Awards and Honors (selected list): IFT's Elizabeth Stier Award for Humanitarian Service; IFT's Bor Luh International Award; IFT Fellow; Guest Fellow of the New Zealand Institute of Food Science and Technology; IFT's first Congressional Science Fellow where I worked in the office of Senator A. D'Amato; and IFT's Manfred Kroger Outstanding Reviewer. Currently the co-editor in chief of Food Bioscience, the first English language, peer-review journal sponsored by China (Jiangnan University, Wuxi, Jiangsu, China).

Personal: Family, Interests, Hobbies: I am blessed with a lovely family, my wife Carrie of 52 years, my two sons and their families: Elliot, Emily, Zoe (15) and Jamie (12) in River Forest, IL and Scott, Amanda, Spencer (7) and Landon (4) in Walnut Creek, CA. I have been a collector since childhood, first stamps and now picture post-cards, focused on geographic places (officially I am a "deltiologist"). (Note that I am happy to provide a home

for orphaned post-cards.) I still like to hike and snowshoe, replacing jogging and cross-country skiing when I was younger.

Advice to university students and career food scientists and technologists: Learn in the broadest sense of the meaning of that word. That certainly means learning your science, most importantly experimental design and critical review and understanding of your results. Do not let those fancy instruments take over your role as the thinker! And there is a need to also master soft skills like writing, presentations both oral and written, team work, and leadership. And have fun doing it. If you are not enjoying your work, you probably should consider a change. And look to lead a balanced life involving family, friends and commitment to community. As my wife likes to remind me: "Life is not a dress-rehearsal."

Careers: R&D Chemist

(Contributed by Randol J. Rodriguez, Ph.D. QualiTech Inc.)

Introduction/Background: As a recent graduate, I am glad to continue building a career in a path in which I can associate two areas that I am passionate about: Carbohydrate Chemistry and Agriculture.

As I grew up in eastern Guatemala, I developed a great interest in Agriculture due to the vast agricultural activity in that region and the professional connection of relatives to this field. I first received a High School degree with focus in Agriculture from ENCA (Escuela Nacional Central de Agricultura in Spanish) in Guatemala, and then complemented it with a B.Sc. in Food Science and Technology from Zamorano University, in Honduras. The B.Sc. program included coursework and field experience in Agriculture during the first two years. More recently, I received a Ph.D. in Food Chemistry, Structure and Function from Purdue University. At Purdue, I had the opportunity to work with Dr. Yuan Yao and be part of the Whistler Center for Carbohydrate Research which led to focus my research on Carbohydrate Chemistry, involving food and non-food applications. This also allowed me to interact with other great professionals in the field including Dr. Suzanne Nielsen and Dr. Bruce Hamaker.



Qualifications: The senior chemist position required a M.Sc. with previous experience, or Ph.D. degree in a related field to Chemistry. Expertise in interaction and protection of small molecules (specifically minerals) using carbohydrates and other polymers, as well as analytical chemistry was desired.

Positions:

- Senior Chemist, Ag Nutrition Division, QualiTech Inc.
- Graduate Research Assistant and Visiting Scholar, Food Science Department and Whistler Center for Carbohydrate Research, Purdue University.
- Supervisor and Field Assistant, Zamorano University.

Duties: My role involves leading the understanding and development of polymer complexes as ingredients in feed for improved nutrition in animals and plants. I work primarily on manipulating carbohydrate-mineral interactions to develop new ingredient technology. I also

support innovation and development for the stabilization of formulations via hydrocolloid and emulsion-based systems. QualiTech Inc. also includes a Food Solutions Division in which I can also support and continue growing my expertise in food applications.

Salaries: Starting salaries range between 75-90K/year.

Benefits: Complete insurance program including: health, long and short-term disability, travel, dental and vision insurance; 401-K program, annual bonus up to 8-15% salary.

Conclusion: Enjoying what we do is a great promoter to perform with excellence and be more innovative in our workplace. If it is possible to incorporate your different interests within your career, that makes the journey much more enjoyable and rewarding. In my case, being able to use Chemistry in a more applied field as Agriculture and Foods allows me to have cross-functional experience and gain useful and practical knowledge and interactions with my original educational roots and all my current professional networks. Such exposure can provide you with an advanced and holistic experience. Additionally, growing your network and learning from others (i.e., mentors, advisers, colleagues) in the field allows you to clarify your ideas and incorporate their experience within your career development.

Member News:

Phi Tau Sigma Scholarship and Award Recipients

Phi Tau Sigma Achievement Scholarships (3 recipients):

Amadeus Driando Ahnan, or Ando, is a food scientist with outstanding competencies in communication, multimedia, social movement, entrepreneurship, and culinary arts. Ando is doing his 4th year of PhD program in the Food Science Department, University of Massachusetts Amherst, with thesis research on manipulating previously-non-extractable polyphenols using tempeh fermentation for colon cancer prevention. Ando served as the Vice President of Institute of Food Technologists (IFT) Student Association (2016-2017) as well as the Vice Chair of Research Chef Association (RCA) Student Committee (2017-2018). Ando is the co-founder of the Indonesian Tempe Movement (www.tempemovement.com), an international non-profit organization that aims to give more access to affordable, nutritious, and sustainable protein source through promoting tempe - a traditional staple food from Indonesia.



Several notable awards Ando has received are the 1st Place win in GapSummit Voices of Tomorrow 2018 international biotechnology competition in Cambridge University, the 1st Place in IFT Smart Snacks 2018 international product development competition, the Northeast IFT (NEIFT)'s most-prestigious Graduate Suppliers Award 2017 & 2018, Feeding Tomorrow Graduate Scholarship 2017 & 2018, the 1st Place in Food Science in Action Video

Competition by Journal of Food Science Education 2017, and the 1st Place in International Union of Food Science & Technology Rose-Spiess Award 2018. Ando has been nominated to receive the Phi Tau Sigma Student Achievement Scholarship 2019.

Ando is navigating his professional development towards giving people access to affordable, nutritious, and sustainable protein source through his research and movement around tempeh.

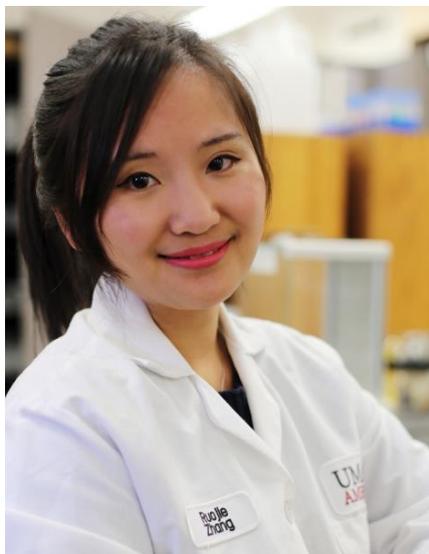
Shreya N Sahasrabudhe entered Purdue in Fall 2015 after completing her M.S. degree at University of Nebraska-Lincoln. Her research focuses on the study of surface and interfacial properties of oil at high temperatures, to understand the mechanisms of heat transfer and oil absorption during frying. Ultimately, her work will help identify the mechanisms that contribute to oil absorption during frying, to develop foods with reduced oil absorption without negative impact on sensory qualities. Shreya has gained valuable experience through internships at General Mills in India and Kellogg's in Battle Creek, MI, through which she was able to apply and build upon her food science knowledge.



Shreya has made significant contributions to the Phi Tau Sigma Hoosier Chapter. She was inducted as a student member in 2017, became Treasurer/Vice President for the Hoosier Chapter for the 2017-2018 academic year, and currently serves as the 2018-2019 Hoosier Chapter President. During this time, she has continually demonstrated strong dedication to the organization and has been instrumental in planning various events. Notably, this includes the Chapter's annual luncheon, mentorship events for undergraduate students interested in graduate school, and special seminars with industry professionals.

With her passion for food processing, Shreya has been active as a member of the College Bowl Team and participant at IFT poster competitions. She has also served as past Treasurer for the Purdue Food Science Graduate Student Association, student representative for the Food Science Graduate Program, and Phi-Tau Sigma vice-president. These involvements have enabled Shreya to create lasting connections with her colleagues, industry professionals, and academic experts, while taking responsibility for the organizational efforts for a variety of groups.

Given her exceptional scholastic achievements, dedication to Phi Tau Sigma, and passion for food science, Shreya is a most worthy recipient of a 2019 Phi Tau Sigma Student Achievement Scholarship.



Ruojie Zhang is a Research Assistant in Biopolymers & Colloids Research Laboratory in Food Science Department of University of Massachusetts Amherst with more than 10 years research experience. Her research mainly focuses on the food biopolymers and colloids, and in particular on the development of food-based structured delivery systems for bioactive components. Ruojie has published over 50 scientific articles in peer-reviewed journals with citations over 800 and one book chapter as co-author on nanoemulsion digestion biological fate. She is also a co-inventor on a patent disclosure (Self-regulating pH microenvironment hydrogel beads). Ruojie has been invited to be reviewer for many well-respected journals, such as Journal of Agriculture and Food Chemistry, Food Hydrocolloids, Food and Function and Food Chemistry.

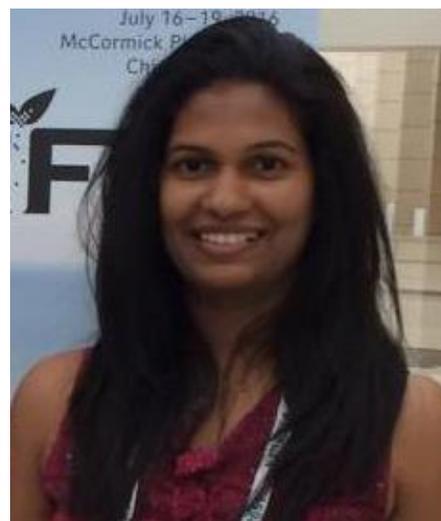
Ruojie is an active member in many scientific organizations, including IFT, NEIF, AOCS, GWIS, Phi Tau Sigma, etc., and has served in many elected and volunteer positions. She is the Chairman of the UMass Life Science Graduate Research Council to organize several graduate research activities among the campus to promote multi-discipline communication in UMass. She was the Vice President of UMass Phi Tau Sigma Chapter in 2017-2018 to take the responsibility sending the notifications to members and nominating new members to Phi Tau Sigma. The UMass Chapter won the Chapter of the Year award in her tenure. She is serving on Graduate Women In Science Fellowship Committee to manage the award applications. She is serving AOCS SCIG as chair to help in arranging educational resources, extracurricular learning opportunities, and networking events, which are designed to enhance the experience of the student members of the AOCS. Moreover, she has been active volunteer for serving many symposia, and international conferences in the field of food science.

As her excellent performance in academic, Ruojie has been recognized by various academic societies. She was granted the 2017- 2018 AOCS Thomas H. Smouse Memorial Fellowship Award, which is the most prestigious award for graduate students who showed highest standards of academic excellence and made significant contribution to the field of AOCS. She was honored with the Kaunitz Award from AOCS in 2017 to recognize her outstanding graduate research on delivery systems that facilitate the development of functional foods. She was also recipient of AOCS honored student and AOCS Lipid Processing and Biotechnology Award this year. She was one of the top students to win the 2017 NEIFT Graduate Scholarship to reward her outstanding achievement as a graduate student in a Food Science program. She got the ACS Travel Grant to do presentation in 1st ACS International Student Research Symposium in 2016. She was invited to give a presentation at the annual PepsiCo Journey through Science Day in 2017, in which only 50 students were invited worldwide. She was also the first place winner in 2016 AOCS Industrial Oil Poster Competition and 2017 IFT Food Product Development Poster Competition.

Dr. Gideon “Guy” Livingston Scholarship:

Gayathri Gunathilaka is a Ph.D. student in Food Science, Michigan State University, where she is working as a graduate research assistant. Her principal research interests lie in the field of food safety. After concluding her studies, she hopes to develop new modes and methods of food safety in the industry, through which she will be able to raise the standards of food safety and food quality for people across the world.

She has maintained a 4.0 GPA as a Ph.D. student while also being actively involved in different extracurricular activities. She was the first author of two research publications and coauthor of two research publications related to food safety and food science. Her most recent first author research article, “Phages in urban waste water have the potential to disseminate the antibiotic resistance,” was published in August 2017 in the International Journal of Antimicrobial Agents, addressing food safety-related health aspects. Presently, she is researching optimizing the conditions for engineered nanoparticles (ENP) removal in an existing Fresh cut pilot-scale processing lines. In her research, residual ENPs on fresh produce are evaluated, the conditions are optimized for ENP removal in processing practices (including existing fresh cut pilot-scale processing line at MSU), thus contributing to the reduction of ENP-related food safety risks and protecting humans.



She has received numerous academic recognitions at the university and regional level for her scholarly accomplishments, including the FMI Foundation Food Safety Auditing scholarship from Food Marketing Institute, Vegetable industry scholarship from Michigan Vegetable Council, Bounty and balance scholarship from California State University, Thomas Rumble fellowship, 2014 IFT Great Lakes section awards (Ph.D. achievement scholarship and Master of Science achievement scholarship), graduate travel awards, and a DAADs scholarship from Germany. Apart from academic interests, she has excelled in a range of extracurricular activities. Currently, she is serving as the president of MSU Phi Tau Sigma chapter and current student representative of national Phi Tau Sigma chapter affairs committee, and look forward to positively contribute to the organization in coming years. Previously, she served as the president in the IFT Phi Tau Sigma Chapter at WSU and the vice-president of the Food Science and Nutrition club at WSU (2013-2014), she organized several activities for the students in the department such as lab orientation programs, career development programs and product development competitions and she introduced new members to WSU Phi Tau Sigma chapter. She possesses outstanding qualities and has many scholarly achievements, dedication, and leadership skills which make her a worthy and deserving candidate for this Phi Tau Sigma Student Achievement Scholarship.

On a personal level, we find Gayathri to be an honest, intelligent, articulate person, who is self-motivated and also demonstrates leadership qualities that are admired by peers and supervisors. Her outstanding qualities and scholarly achievements make her a worthy and deserving candidate for the Phi Tau Sigma Dr. Guy Livingston scholarship.

Phi Tau Sigma Founders' Scholarship:



The research of **Dr. Claire Zoellner** has had, and is expected to continue to have, "a significant impact - a practical and meaningful application" and solves "vexing problems of the industry" as is the intent of the Phi Tau Sigma Founders' Scholarship.

With expanding globalization, changing consumer behaviors, and improvements in molecular methods, the impact of microbial contamination of foods has become more significant. Two notable examples are pathogenic *Escherichia coli* (*E. coli*) in fresh produce and *Listeria monocytogenes* (Lm) in ready-to-eat (RTE) and frozen foods, as outbreaks of foodborne illness and product recalls continue to occur with the source of contamination often elusive. While the industry strives for implementation of good agricultural and manufacturing practices to reduce contamination risks, emerging technologies in data collection, management, and analytics may allow for improved understanding, oversight, and decision-making. Dr. Zoellner's research integrates microbial prevalence and concentration data with computer and mathematical modeling to yield actionable information for fresh produce supply chains and frozen food manufacturers to manage food safety risks.

Solutions provided to the industry and research communities encompass modeling and decision-support tools, but also comprehensive review papers and resource databases. Highlights include an observational study and statistical models of indicator microorganisms on tomatoes in the postharvest supply chain from Mexico to US (for which she received the Dr. Daryl B. Lund International Travel Scholarship); a produce supply chain modeling tool and user interface for simulation of contamination scenarios and intervention strategies; a scoping review and searchable online database of resources on *Listeria* environmental monitoring in food processing facilities; a customizable simulation model of a food processing environment to model *Listeria* transmission and to optimize environmental monitoring; and, a quantitative microbial risk assessment tool to estimate listeriosis risk frozen vegetables consumed without cooking.

Claire has a B.S. in Food Science and Human Nutrition from the University of Illinois Urbana-Champaign, a Ph.D. in Food Science and Technology with minors in Epidemiology and Systems Engineering from Cornell University, and recently completed a Postdoctoral Research appointment under Dr. Renata Ivanek in the Department of Population Medicine and Diagnostic Sciences at Cornell. She started working as a Food Safety Scientist at iFoodDecisionSciences, Inc. in September 2018. Claire was inducted into Phi Tau Sigma in 2013 and is Associate Editor of the Newsletter, a Director, and the Incoming Chair of the Student Relations Committee.

Phi Tau Sigma Special Recognition Award:

Dr. Mary K. Schmidl, Lifetime Member, represents the aim of the Phi Tau Sigma Special Recognition Award which "shall be given to a professional Member of Phi Tau Sigma who has shown exceptional dedication to Phi Tau Sigma - The Honor Society of Food Science and Technology, as evidenced by significant accomplishments towards the goals and/or administration of Phi Tau Sigma." "Preference shall be given to Lifetime Members of Phi Tau Sigma." Dr. Schmidl was inducted into Phi Tau Sigma in 1990, and has been a Lifetime Member since September 16, 2011.



Dr. Schmidl was President Elect, President, and Past President of Phi Tau Sigma (2012 through 2015).

- As President Elect (2012-2013), Mary chaired the Program Committee, was a liaison between IFT and Phi Tau Sigma for sessions and meeting logistics, and determined the committee Chairs and membership for the upcoming 2013-14 administrative year.
- As President (2013-2014), Mary led the monthly conference calls. She organized and ran the meetings and Phi Tau Sigma and IFT Division Competition Awards Ceremony that are concurrent with the IFT meeting. In addition to preparing power point presentations for all of the Phi Tau Sigma Annual Meeting events, Mary prepared presentations with Phi Tau Sigma history and trivia. Mary prepared large stars that were affixed to the posters of all Phi Tau Sigma members. Mary sent welcome letters, receipts, and certificates to all new Lifetime Members. Mary provided articles for the Phi Tau Sigma Newsletter encouraging the payment of dues. She instituted and initiated the policy whereby three times per year the President sends emails encouraging dues payment to everyone on the membership list whose dues are due. Mary developed the format for Committee annual reports. Mary also instituted the Phi Tau Sigma Outstanding Chapter of the Year Award which "shall be given to honor a Chapter of Phi Tau Sigma that has achieved excellence in the areas of research, scholarship, leadership and service." Additionally, Mary wrote an Action Plan for Phi Tau Sigma.
- As Past President (2014-2015), Mary attended the monthly conference calls and Annual meeting events, providing guidance and many opinions.

Dr. Schmidl has also served on, and chaired, many committees:

- Dr. Schmidl has served on the Finance Committee from 2013 to the present.
- Dr. Schmidl instituted and served on the *ad hoc* Lectureship Award Program 2015-16, 2016-17.
- Dr. Schmidl served the Awards Committee 2016-17, 2017-18, 2018-19.
- Dr. Schmidl instituted and Chairs the *ad hoc* "Building a Science Bridge" Committee 2017-18.
- Dr. Schmidl has served on the *ad hoc* Internship Organization Committee 2017-18.
- To give an example of Dr. Schmidl's attention to detail and accomplishment of goals: Dr. Schmidl served, and continues to serve on the Chapter Affairs 2016-17, 2017-18, 2018-19. Mary was Chair of this Committee in 2017-18. As Chair of the Chapter Affairs Committee (2017-18) Mary held regular conference calls with her Committee, and brought up-to-date the list of Chapters, their faculty and student representatives, and

contact information. She determined which Chapters were active, and which were not. Mary reached out to start or re-start Chapters. The University of Nebraska Chapter was started under Mary's guidance. Mary conceived and implemented the Chapter of Excellence and Chapter of Merit programs to reward and encourage Chapters to be more active. Mary wrote and updated the Guidelines ('how-to') document of the Committee to list and explain the activities of the Committee, and deadlines for each.

Dr. Schmidl has brought passionate innovation to all of her assignments, and has made a significant positive impact on Phi Tau Sigma. She has shown great dedication to Phi Tau Sigma, spanning years, and frequently with over-lapping responsibilities. In light of these important accomplishments, Mary should be granted this award and honor.

Dues Reminder:

Your dues status is listed in the cover email of this Newsletter. If you have not already paid your dues, Phi Tau Sigma Member dues are \$40 per year, but students get a discount so their dues are \$20 per year. Lifetime Membership is \$400 (just once). Please access the Phi Tau Sigma Membership Dues Page at: <http://www.phitausigma.org/membership-dues/>. Proceed on to pay by PayPal. Once you are successful with your PayPal payment, you will receive a receipt. If you do not receive a receipt, please try again.

Dues can also be paid by check payable to **Phi Tau Sigma**, (made with U.S. Funds and drawn on a U.S. Bank). (Do not send a money order.)

Mail your check to: **Kantha Shelke, Ph.D.** (Do **not** address to Phi Tau Sigma.)
33 West Ontario, Suite 57F, Chicago, IL 60654.

You are welcome at any time to give a donation to the Dr. Carl R. Fellers Award Fund, the Dr. Gideon "Guy" Livingston Scholarship Fund, Phi Tau Sigma Student Achievement Awards Fund, Phi Tau Sigma Special Recognition Award Fund, Dr. Daryl B. Lund International Scholarship Fund, Phi Tau Sigma Founders' Scholarship, Phi Tau Sigma Chapter of the Year Award, Honorary Society Advancement Fund, or the President's Fund.

We also ask each Chapter to send a list of their current, and lapsed, members along with contact information to the Chapter Affairs Committee Chair, Amy Simonne, Ph.D. at: asim@ufl.edu, to help ensure our records are accurate.

Phi Tau Sigma Store

Phi Tau Sigma has an online store. Items featured include Honor Cords, Official Lapel Pins, Banners (podium and wall/table), Annual and Lifetime Member dues, printed Certificates of Membership, and an opportunity to make tax deductible donations to Phi Tau Sigma. The Society Store can be found by going to www.phitausigma.org/store.

Editorial:



Stop. Wait. Did you miss it?

This month we highlight most of the recipients of our Phi Tau Sigma scholarships and awards. We started in February with the Dr. Daryl B. Lund Student International Travel Scholarship, Molly Higgins, B.S.. This month we

highlight the recipients of the Phi Tau Sigma Achievement Scholarships, Dr. Gideon “Guy” Livingston Scholarship, the Phi Tau Sigma Founders’ Scholarship, and the Phi Tau Sigma Special Recognition Award. In June we will highlight the recipient of the Phi Tau Sigma Chapter of the Year Award.

If you just scrolled on by, please go back and read the short biographs about the Phi Tau Sigma scholarship and award recipients. I think you will agree that they are very impressive.

About Phi Tau Sigma Communications:

The Phi Tau Sigma Newsletter Committee includes: Kathryn Kotula, Ph.D., Editor-in-Chief, Chair (klkotula@msn.com), Claire Zoellner, Ph.D., Associate Editor (cez23@cornell.edu), Anthony W. Kotula, Ph.D., Afef Janen, Ph.D., Hossein Daryaei, Ph.D., Tianxi Yang, Ph.D., and Yiren Yue, B.S. (Ph.D. Candidate). Please be responsive to their inquiries for information for the Newsletter.

The Newsletter Committee particularly wishes to share news from Phi Tau Sigma Members and Chapters. Any items for the monthly Phi Tau Sigma Newsletter should be emailed in Word (97-2003 compatibility mode) to Editor Kathryn L. Kotula, Ph.D. at klkotula@msn.com or Associate Newsletter Editor Claire Zoellner at cez23@cornell.edu. Write “*Phi Tau Sigma Newsletter*” in the subject line. Please provide the information by the 1st of the month. Thanks.

Documents:

Phi Tau Sigma Documents can be found on our website at: www.phitausigma.org.

Phi Tau Sigma Membership Nominations

<http://www.phitausigma.org/membership-nomination-form-pdf/>

<http://www.phitausigma.org/membership-nomination-form-word/>

Phi Tau Sigma Scholarships and Awards Forms

<http://www.phitausigma.org/awards/>

Phi Tau Sigma Constitution and By-Laws

<http://www.phitausigma.org/constitution/>

<http://www.phitausigma.org/bylaws/>

Phi Tau Sigma Mentorship Program

<http://www.phitausigma.org/mentorship/>

Donors, Sponsors, and Contributing Partners:

Phi Tau Sigma accepts donations and has a variety of available sponsorship opportunities.

Phi Tau Sigma is a non-profit 501(c)(3) charitable organization, so your contributions are tax deductible to the extent provided by U.S. law.

Donations and sponsorships may come from, but are not limited to, Corporations, Companies, Universities, Government agencies, Associations, Consultants, and individuals.

Contributions are appreciated in any amount, and can be made by way of the Phi Tau Sigma website (<http://www.phitausigma.org/sponsor/>). Donations by check can be made by contacting: Treasurer Kantha Shelke, Ph.D. (kantha@corvusblue.net), 33 West Ontario, Suite 57F, Chicago, IL 60654. Please write "Donation" or "Sponsorship" in the subject line.

Contributions of \$500 or more will be recognized publicly by the Society at the annual meeting, on the Phi Tau Sigma website, in printed material associated with relevant programs and events, and in the Phi Tau Sigma monthly Newsletter. Sponsorships of awards and scholarships are also available at levels of contribution sufficient to cover the associated cost of the award or scholarship. Endowments are also accepted.

Sponsorship opportunities are available for the Phi Tau Sigma Annual Recognition Event, Phi Tau Sigma Special Recognition Award, Phi Tau Sigma Student Achievement Award (up to 3 will be awarded), the Dr. Gideon "Guy" Livingston Scholarship Fund, the Phi Tau Sigma Founders' Scholarship, the Dr. Daryl B. Lund International Scholarship Fund, and the Phi Tau Sigma Outstanding Chapter of the Year Award. Donations can be made towards the awards and scholarships listed above, as well as the Program fund and the General fund. There are also endowment opportunities for student scholarships named for the sponsoring company.

Phi Tau Sigma has a **Contributing Partners Program** with five levels of sponsorships as described below. The Contributing Partner receives all of the benefits in the previous levels, plus the addition of the benefit listed for that level.

Bronze (\$5000)

- Company listing in the "Donors and Sponsors" section of the Phi Tau Sigma Newsletter.
- Recognition with company name on www.PhiTauSigma.org
- Prominent recognition at all major Phi Tau Sigma events

Silver (\$10,000)

- Bronze benefits.
- Posting your company's job openings and internships in the Phi Tau Sigma Newsletter.

Gold (\$15,000)

- Silver benefits.
- Acknowledgement of sponsorship and placement of corporate logo on plaque or scholarship/award memorabilia.

Platinum (\$20,000)

- Gold benefits.
- A press release associated with significant contributions, distributed to allied professional and trade associations for circulation to their membership via their publications, e-news and/or listservs.
- Complimentary access to student resume database.

Diamond (\$25,000)

- Platinum benefits.
- Prominent multi-year listing on the Phi Tau Sigma website as a sponsor of an Endowed Program.

Some corporations will match individual contributions of their employees, so check with your company about matching funds.

For more information contact the Treasurer, Kantha Shelke, Ph.D.

(kantha@corvusblue.net), or the Executive Director, Kathryn L. Kotula, Ph.D.

(klkotula@msn.com). Please write "Donation" or "Sponsorship" in the subject line.

2018-2019 Donors and Sponsors:

Dr. Mary K. Schmidl is the President of the International Union of Food Science and Technology (IUFoST), a Lifetime Member and a past President of Phi Tau Sigma, a Past President of the Institute of Food Technologists (IFT) and Adjunct Professor, University of Minnesota.

Dr. Theodore P. Labuza is a Lifetime Member of Phi Tau Sigma, a Past President of the Institute of Food Technologists (IFT) and the Morse Alumni Distinguished Teaching Professor of Food Science and Engineering, University of Minnesota.

Dr. Fergus Clydesdale, a Lifetime Member of Phi Tau Sigma, is the Distinguished Professor and Director of the UMass Food Science Policy Alliance, University of Massachusetts Amherst and a member of Phi Tau Sigma since the 1960's.

Dr. Rakesh K. Singh is the President of Phi Tau Sigma, a Lifetime Member; and is Professor and Head of Department of Food Science & Technology at the University of Georgia. He is also a Fellow of IFT and Editor-in-Chief of LWT – Food Science and Technology. (Sponsorship of a Phi Tau Sigma Student Achievement Scholarship.)

David K. Park, M.S., Phi Tau Sigma Lifetime Member, is Principal, Food-Defense, LLC, providing expert food safety / food defense, USFDA and USDA-FSIS Process Authority consultation for thermal and non-thermally processed low acid canned foods (LACF), acidified foods (AF), and refrigerated extended shelf life foods (ESL) and their packaging systems. (Donation towards a Phi Tau Sigma Scholarship.)

Nina Teicholz, M.Phil. is an investigative science journalist and author. Her international bestseller, *The Big Fat Surprise* has upended the conventional wisdom on dietary fat—especially saturated fat. The executive editor of "The Lancet" wrote, "this is a disquieting book about...ruthless silencing of dissent that has shaped our lives for decades ... researchers, clinicians, and health policy advisors should read this provocative book." *The Big Fat Surprise* was named a 2014 *Best Book* by *The Economist*, *the Wall Street Journal*, *Forbes*, *Mother Jones*, and *Library Journal*. Teicholz is also the Executive Director of The Nutrition Coalition, a non-profit group that promotes evidence-based nutrition policy. She is a graduate of Stanford and Oxford Universities and previously served as associate director of the Center for Globalization and Sustainable Development at Columbia University. Teicholz is the only journalist to date to be elected to Phi Tau Sigma. (Donation towards a Phi Tau Sigma Scholarship, and Phi Tau Sigma programs.)

Dr. Daryl and Mrs. Dawn Lund. Dr. Lund is past President of Phi Tau Sigma, Lifetime Member, past Treasurer, current Assistant Treasurer, and an Emeritus Professor, University of Wisconsin-Madison. (Sponsorship of the Dr. Daryl B. Lund Student International Travel Scholarship.)

Hawkins, Inc. is a progressive concern that manufactures and distributes specialty chemicals and provides functional solutions for a wide variety of industries. The Food Ingredients Group is a leading manufacturer of innovative pathogen control technologies and ingredients for the food industry. The formation of Ingredient Works, an entity conceived to capitalize on expertise in functional ingredient applications, food industry knowledge, technical service, and an extensive product portfolio, is focused on the comprehensive science of shelf-life, providing customized solutions to both the common and the highly complex issues faced every day by food manufacturers. The ultimate goal for the Hawkins Food Ingredient Group is to re-define the concept of shelf life and become a complete solution provider to the food industry. (Contribution to support the Phi Tau Sigma Founders' Scholarship, and the Phi Tau Sigma general fund.) **Hawkins, Inc. is a Bronze level Contributing Partner.**



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GROUP

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Elsevier books have an established reputation for providing ground-breaking and expansive content; written by world renowned, award-winning authors and reviewed by an expert team of editors. Our wide variety of books and eBooks has been empowering research development, initiating innovation, and encouraging confidence and career growth in the scientific field. (Donation towards a Phi Tau Sigma Scholarship.)



International Food Network, Inc. is a consultancy based in Ithaca, New York that serves the food, beverage and nutrition industry, providing services in the areas of value optimization, corporate development, mergers & acquisitions and divestitures. Peter Salmon is IFN's founder and principal. (Contribution for the General Fund.)

A donation was made towards a Phi Tau Sigma Scholarship by a Phi Tau Sigma Lifetime Member who wishes to remain anonymous.

Another donation was made towards a Phi Tau Sigma Scholarship by a Phi Tau Sigma Lifetime Member who wishes to remain anonymous.