A long time ago, Benjamin Franklin said, “Tell me and I forget. Teach me and I remember. Involve me and I learn”. Once you became a member of Phi Tau Sigma, you became involved in the prestigious Honor Society of Food Science and Technology. Phi Tau Sigma offers all members opportunities for leadership, recognition, mentoring and fostering rising talent, networking, and pursuing excellence with others having similar values. Keep moving forward on your path of professional achievements by being an active member in Phi Tau Sigma. By paying your membership dues, you retain your status as a member in good standing and keep the door open to the exciting opportunities available through Phi Tau Sigma.

To do this, all you need to do is submit your annual membership dues. This can be easily and quickly accomplished online at http://www.phitausigma.org/membership-dues/. If you prefer to send a check, mailing instructions are provided at the same link. As you get ready to pay your annual dues, consider the Lifetime Membership option. Did you know that a one-time $400 membership fee eliminates the need for annual payment of dues? In 2001 I became a Lifetime Member after paying annual dues for many years and wish other organizations offered the same option.

This is a great time to become more involved in Phi Tau Sigma and to continue your involvement in an organization dedicated to “honoring and elevating the achievements of students and professionals in food science and technology”.

IFT20 to be a Virtual Meeting:
NOTE: IFT has decided to change to a ‘Virtual’ meeting. See details at https://www.iftevent.org/register/ift20updates
Future Phi Tau Sigma Newsletters will provide more details once they come in.
**Membership Nomination Reminder:**

Please use the most up-to-date nomination form when sending in membership nominations. The form comes in two formats: Word and writable pdf. Either format can be used.

The proper form will have '2020' in the title, and a revision date of July 23, 2019 as the footer of the second page.

The most up-to-date forms can always be found on the Phi Tau Sigma website: [www.phitausigma.org](http://www.phitausigma.org).

**Students about to graduate:**

Please remember to:
1) Order your Honor Cord and lapel pin in plenty of time for them to be mailed to you before graduation. Store web address: [http://www.phitausigma.org/store/](http://www.phitausigma.org/store/)
2) Forward your new contact information (especially your new email address) to the Executive Director (klkotula@msn.com).

Not having an in-person graduation? Consider getting the Honor Cord and lapel pin anyway. Honor cords look great displayed, and you can use the lapel pin for many years to come.

*Thank you, and Congratulations on your graduation!*

**Back in the Phi Tau Sigma Store: Banners**

Phi Tau Sigma banners are back in the Phi Tau Sigma Store. There are three types: Podium (18”x24”, $25 each) (photo on left), Outdoor Wall/Table (has wind slits, 30”x48”, $45 each), and Indoor Wall/Table (30”x48”, $45 each) (photo on right).

Great for Chapter events! And anywhere you want to promote Phi Tau Sigma. Order through the Phi Tau Sigma Store ([http://www.phitausigma.org/store/](http://www.phitausigma.org/store/)).
Where Science and Inspiration Meet
(contributed by: Deidrea Mabry, M.S. and Morgan Pfeiffer, Ph.D., American Meat Science Association)

The American Meat Science Association (AMSA) will be welcoming the world’s meat science community to the 66th International Congress of Meat Science and Technology and 73rd Reciprocal Meat Conference (ICoMST/RMC) August 2-7, 2020 in Orlando, Florida, USA. This is just the fourth time the International Congress will be held in the USA and the first time since 2005. This meeting is a landmark opportunity to network and learn from the 1,200 plus attendees representing over 60 countries who will all meet at the most magical place on earth, Walt Disney World (Orlando, Florida, USA). During this conference attendees will have the chance to discuss numerous topics important to the meat industry including current research and development, food safety, quality assurance and other aspects of meat production from industry, academia and allied organizations.

The 2020 ICoMST and RMC will include six days of intensive technical and educational sessions from leading industry experts, both nationally and internationally, on a variety of topics. The program will include headliner presentations, keynote sessions, concurrent sessions, and reciprocation sessions, offering the opportunity to dialogue on important world meat industry topics. The synergy of a joint ICoMST and RMC meeting will be exciting and will create a venue that fosters innovation, enthusiasm, and progress for meat science, meat scientists, and the meat industry. The event will begin each morning with a headliner presentation. Kicking off the meeting on August 3, will be Pierre Ferrari, CEO of Heifer International with a focus on Global Nutrition Security. On Tuesday, August 4, Jack Uldrich, Global Futurist and Best-Selling Author, will explore with attendees what the future of science and innovation looks like for the meat industry.

This is a once-in-a-generation opportunity to attend and even showcase your organization to over 1,200 of the top meat scientists working in research and development, food safety, quality assurance, and other aspects of meat production from industry, academia, and allied organizations. For more information about the programming, lodging and registration please visit: [http://www.icomst2020.com/](http://www.icomst2020.com/). (The “early bird registration” ends July 21, 2020.)

For opportunities for your company to have exposure to the international meat science community via sponsorships, please contact Deidrea Mabry, dmbry@meatscience.org or 773-913-2021.

We hope to see everyone at Walt Disney World in 2020, Where Science and Inspiration Meet!
Calendar:

**Phi Tau Sigma Scholarship and 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 Ravi Chermala, M.S., Chair, (ravichermala@gmail.com) and Executive Director Kathryn L. Kotula, Ph.D. (klkotula@msn.com). (More information: http://www.phitasigma.org/awards/)

**December 9:** Deadline to submit Nominations for the Dr. Carl R. Fellers Award, and other IFT Achievement Awards. (More information: https://www.ift.org/community/awards-and-recognition/achievement-awards)

**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, Claire Koelsch Sand, Ph.D., Chair, (clairekoelschsand@gmail.com) with a copy to Dr. Kathryn L. Kotula (klkotula@msn.com).

**Election schedule:**

December 15: Nominations due to Nomination and Election Committee (Tom Aurand, Ph.D., Chair, tom.aurand@gmail.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 12: Phi Tau Sigma President will present the newly elected individuals to the Membership at the Annual Business Meeting of Phi Tau Sigma
July 12-15, 2020, Institute of Food Technologists Annual Meeting, Chicago, IL:
NOTE: IFT has decided to change to a ‘Virtual’ meeting. See details at
https://www.iftevent.org/register/ift20updates

July 12 (Sunday): (times tentative)
11:00am-12:15pm Phi Tau Sigma Executive Committee Meeting
12:15pm-1:30pm Lunch Break
1:30pm-2:30pm 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
6:00pm-7:00pm IFT Awards Celebration, includes the presentation of the Dr. Carl R. Fellers, Ph.D. Award sponsored by Phi Tau Sigma (Meet the Award winners at the IFT Networking Reception immediately following.)

July 13 (Monday):
12 noon-1:30pm Phi Tau Sigma and IFT Division Competition Awards Ceremony

Student Research Synopsis: Comparison of Legume and Dairy Proteins for the Impact of Maillard Conjugation on Nanoemulsion Formation, Stability, and Antioxidant Activity
(Contributed by Sarah Caballero, M.S. student under the direction of Dr. Gabriel Davidov-Pardo, Nutrition and Food Science Department, California State Polytechnic University, Pomona)

Introduction: Oil in water (O/W) nanoemulsions have found a wide range of uses in the food and beverage industry, especially as delivery systems for lipophilic bioactive compounds. To form nanoemulsions with sufficient shelf stability, stabilizers such as emulsifiers are required (1). The use of proteins as emulsifiers has gained considerable attention, due to their versatility and natural origin. While proteins are considered good emulsifiers, they achieve their least solubility near the isoelectric point, typically pH=4.6, and destabilize at high temperatures or in high electrolyte concentrations, causing flocculation and creaming. To stabilize proteins, conjugation with long-chain polysaccharides through the Maillard reaction (MR), a non-enzymatic browning reaction, has been successfully employed (2). The MR has been primarily studied with dairy proteins, the most industrially used emulsifiers. However, there is a growing consumer interest in plant-based proteins (3). As follows, pea protein has received considerable attention for food and beverage applications due to its nutritive value, low-cost, and excellent amino acid profile (4). In contrast to casein’s inherent value as an emulsifier, insufficient knowledge of the emulsification properties of pea protein generates a roadblock to its widespread industrial use (5). Additionally, improvement of pea protein functionality and stability is needed.

Purpose: The objectives of this research were to compare the physical and chemical stability of emulsions using either pea protein or casein Maillard conjugates as emulsifiers. We hypothesized that, although casein is a superior emulsifier, Maillard conjugation of pea protein with a long-chain polysaccharide will improve its functionality as an emulsifier.
Methods: Maillard conjugates (MC) were composed of either pea protein (P) or caseinate (C) and dextran. Sodium caseinate conjugates with dextran (40kDa) were used as a control due to their demonstrated improvement of emulsification properties and stability when compared to non-conjugated sodium caseinate (6). Physical mixtures (P0 & C0) were prepared by combining and freeze-drying protein and dextran solutions in a 1:1 (w/w) ratio. Maillard conjugation was promoted by storing C0 or P0 at 60°C, 76.5% RH in a climacteric chamber for 24h or 48h, respectively (C24 & P48). Emulsions were prepared with 5% MCT oil and 1% (w/w) C24, P48, C0, or P0, as the surfactants, in buffer (pH=7). Nanoemulsions were fabricated using high pressure homogenization at 30,000 psi for 5 passes.

Emulsions were compared for: 1. physical (size and creaming) stability at various ionic strengths, pH=4.6, and challenge temperatures during storage, and 2. chemical stability (lutein retention) during storage (Fig. 1).

- **pH Stability:** Nanoemulsions were adjusted to pH=4.6. Droplet sizes and zeta potential, used as measures of emulsion physical stability, were determined.
- **Storage stability:** Nanoemulsions at both pH=7 and pH=4.6 were stored at 4°C, 25°C, 37°C or 55°C for 1 month. Droplet size and creaming were measured as indicators of physical stability on days 0 (initial), 7, 15, and 30.
- **Ionic strength stability:** Emulsions (pH=7) were diluted to final Ca²⁺ concentrations of 0-100mM. Samples were stored in ambient conditions, and particle size and zeta potential were measured after 1 week.
- **Lutein color retention:** Emulsions with either C0, P0, C24, or P48 as emulsifiers were prepared with 0.1% lutein oil in MCT as the lipid phase. L* a* b* color indices were taken every 1-3 days for 2 weeks of storage (25°C). Rate of color degradation was determined by dividing the total change in ΔE by total time (14 days).

![Figure 1. Schematic representation of Maillard conjugate formation and analysis (not discussed), emulsion formation, and antioxidant activity.](image)

Results: Both protein conjugates formed stable nanoemulsions with diameters of 125±12nm and 269±36nm at pH=7 for C24 and P48, respectively. Notably, P48 exhibited improved emulsification relative to P0, which formed larger droplets of 377±99nm (pH=7). Conjugation stabilized the nanoemulsions at pH=4.6, with droplet diameters of 123±12nm and 396±15nm for C24 and P48 at pH=4.6, respectively, compared to C0 and P0 which visibly destabilized and creamed (Fig. 2). After 1 month, P48 at pH=4.6 stabilized at 4-25°C, and at pH=7 had prolonged physical stability above 37°C. Also, conjugation improved the physical stability of both emulsions upon addition of calcium, although the stabilization was more apparent (no visible flocculation) for C24. There was no significant difference in the color degradation of lutein between conjugated and physical mixture emulsifiers. Casein
Nanoemulsions exhibited the highest rate of color fading at 1.52-1.57 ΔE/day, whereas pea protein nanoemulsions exhibited 0.98-1.36 ΔE/day, likely due to the larger droplet size.

**Figure 2.** Droplet size distributions of C and P physical mixtures and conjugates at a. pH=7 and b. pH=4.6. Insert shows creaming of C0 and P0 at the Ip, due to lack of droplet surface charge, and stabilization of C24 and P48 at the Ip due to steric hindrance.

**Significance:** Pea protein MC are a promising avenue to increase stability of emulsions in functional foods and beverages, demonstrating similar increases in functionality compared to caseinate MC. Furthermore, if high antioxidant capacity is desired, P48 emulsions may provide a compromise between droplet size/stability and retention of bioactive compounds. In future studies, P48 emulsions could be tested in operations such as pasteurization and sterilization to further validate industrial significance.

**References:**
Lifetime Member Tribute: Akinbode (Bode) Adedeji, Ph.D.
Assistant Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky

Why did you become a Lifetime Member? I decided to join Phi Tau Sigma because of the opportunity to network with colleagues whom I have admired from a distance, and to contribute to the growth of our profession. I have been a member of IFT since 2008 and attended my first annual meeting in Anaheim California in 2009 as a Ph.D. Candidate. I did not know such an organization as Phi Tau Sigma existed until about two years, and I immediately decided to become a Lifetime Member because of the mutual benefits I saw in my membership. I look forward to every opportunity to serve, learn and give back through my membership.

Education:
2010 Doctor of Philosophy in Bioresource (Food Process) Engineering, Bioresource Engineering Department, McGill University, Montreal, Canada.
2000 Master of Science in Food Technology, Food Technology Department, University of Ibadan, Oyo State, Nigeria.
1996 Bachelor of Technology, Food Engineering, Food Science and Engineering Department, Ladoke Akintola University of Technology, Ogbomoso, Nigeria.

Experience/Accomplishments: I hold a bachelor’s of technology in Food Engineering, the first of such a program in Africa established in 1990. I am the first food engineer to register with the council that regulates the engineering profession in Nigeria, COREN. I started my career as a lecturer in the same department I completed my bachelor’s degree in 1998. I have since worked in four countries and three continents, practicing food engineering in different capacities as a professor, research engineer, and instructor. I enjoyed the privilege of working and going to school at the same time, so I completed a master's degree in Food Technology from Nigeria’s premier university, the University of Ibadan in 2000 and went on to complete a Ph.D. from the prestigious McGill University, Montreal Canada in 2010. I returned to my home country, Nigeria to continue my job as a faculty after the completion of my Ph.D. I then had the opportunity to work as a post-doctoral researcher in two countries thereafter, ONIRIS Nantes France in 2011 and at Kansas State University Grain Science Department from 2011 – 2013. I returned to Canada to work as a research associate in the same department I completed my Ph.D. in, and in July 2014, I joined the Department of Biosystems and Agricultural Engineering, University of Kentucky as a tenure track faculty.

Areas of Expertise: Food Process Engineering – extrusion processing, underutilized grain value addition, food microstructures, non-destructive methods with machine learning application to predict food quality and safety.

Awards and Honors (selected list):
• Outstanding Reviewer, Transactions of ASABE Journal - 2018
• Outstanding Associate Editor, Transaction of ASABE Journal - 2016
• Evangelina Villegas Excellence in Research Award for a Post-Doctoral Research Associate, Grain Science & Industry Dept. Kansas State University - April 2013
• Hugh Bailey Award, for Best Graduating Student in my faculty - McGill University 2009/2010
• Runner up, Food Engineering Division paper competition - IFT 2009

Personal: Family, Interests, Hobbies: I am married to my wife of 15 years, and we are blessed with two children, a girl, and a boy. I love current affairs and I blog regularly. I love to sing, so I have been a part of a church choir everywhere I have lived since 1985. I love to travel – hopefully, I will travel the world one day.

Advice to university students and career food scientists and technologists: It is imperative that we continue to be open to new ideas. Learning has no age limit, especially that we live in a very dynamic world where things are changing so fast. We should not be afraid to take on new challenges so that we can be a part of the future. Continuous improvement and a mindset that is open to learning new ideas are very important for the survival and relevance of our profession.

Chapter News: University of Minnesota Chapter

In September, the Phi Tau Sigma – University of Minnesota chapter co-hosted a cross-industry panel discussion which was titled “Here comes cannabis: Opportunities, challenges and regulations”. This panel discussion featured distinguished speakers across business, policy, regulation and academia to offer a broad overview of the current cannabis industry (both hemp and medical marijuana) in Minnesota and shed light on opportunities and challenges facing companies entering the cannabis industry.

The meeting had nearly 100 attendees, including students, faculty members and professionals from the food industry. Given the rapid growth of the cannabis industry and its significant implications for the field of Food Science and Technology, the attendees found the discussion to be very timely, insightful and engaging.

Panelists: From right to left: Joellen Feirtag (Associate Professor, University of Minnesota Food Science Department), Senator Karla Bigham (Minnesota State Senate), Bill Parker (CEO of LeafLine Labs), Ryan Mihm (Head Brewer at FINNEGANS Brew Co.), Yara Benavides (President of University of Minnesota Chapter of Phi Tau Sigma), and Chris Tholkes (Acting Director of the Office of Medical Cannabis at the Minnesota Department of Health).
Member News:

Phi Tau Sigma Scholarship and Award Recipients

Phi Tau Sigma Achievement Scholarships (3 recipients):

Vaidhyanathan Anantharamkrishnan (Vaidhy) is currently a Ph.D. candidate under Dr. Gary Reineccius at University of Minnesota in the Department of Food Science and Nutrition. He has his Bachelor's of Technology in Chemical Engineering from India. Before joining for his graduate studies, he worked for Lux flavors, India for a year as a flavor research scientist. Continuing down the flavor pipeline, his graduate research focuses on plant and dairy proteins and their interaction with flavors. His graduate studies have provided him with expertise in flavor analysis, encapsulation by spray drying, proteomics, and mass spectrometry. He is also actively involved with the undergraduate research projects in his lab with the ultimate goal of making significant contributions to research and giving back to the community of future scientists for a better world and future for everyone.

Three years into his graduate studies, he already has four peer reviewed research articles in the area (1 published, 3 under review). He has presented his research in American Chemical Society (Fall 2019), Society of Flavor Chemists (2018), and Plant Protein Innovation Center Conference (2019). The Society of Flavor Chemists awarded him Jogue scholarship for excellence in flavor research (2018), and Minnesota Section of the Institute of Food Technologists (MN-IFT) awarded him the Elwood Caldwell award for excellence in volunteering. He has been awarded fellowships from the Department of Food Science and Nutrition at the University of Minnesota (FScN), MN-IFT, and the Wartheson fellowship in 2019. He has also been awarded John Scire travel award twice (2017, 2019) by Department of FScN for excellence in good chemistry, flavor research, and professional development in the area. He will present his research for an invited talk at Gustavus Adolphus College and share his experience with high school students in order to introduce them to food science. Lastly, his team, where he served as captain, won first place in the product development competition organized by Ocean Spray®.

Vaidhy was the President of Phi Tau Sigma - University of Minnesota chapter for two years (2017-2019) and presently serving as a secretary for the section (2019-2020). He is running for a Phi Tau Sigma Director Position at the National level for serving Phi Tau Sigma for three years from September 2020. Under his leadership, the chapter won the prestigious honor as “Chapter of Excellence” from National Phi Tau Sigma. He had an active member drive program at the department and nearby universities that resulted in more than 15 members being nominated and accepted into Phi Tau Sigma. He introduced Phi Tau Sigma, nominated the first member and further members from South Dakota State University to be inducted as a part of the UMN chapter. During his tenure as the President, he pushed forward the flagship program of the chapter – “Building a Science Bridge to Africa®” by making two shipments of books and journals to University of Ghana. The program aims at improving the access of students and researchers in higher education on the African
continent to peer reviewed research articles and books. The program was later briefed to the leadership of National Phi Tau Sigma to expand it as a national program.

**Yunbing Tan, Ph.D. Candidate**, is an extremely intelligent, creative, dedicated, and enthusiastic student. She has an extremely strong academic background in food science with impressively high GPAs in both her Bachelor’s (3.82/4.00) and Master’s (3.67/4.00) degrees in highly competitive programs. Her GPA for the graduate classes at UMASS is extremely commendable (3.975/4.00).

Previously, Yunbing has done research in several distinctive areas and has had a broad span of knowledge and research experience, including protein hydrolysis and its application in dairy products and functional foods, preparation and application of a new electrode component, evaluation of walnut protein-stabilized emulsions. She received a grant from a national research program for her creative ideas. To date, she has published 14 scientific articles in well-respected journals and has 2 patents. Her excellent performance has been so well recognized that she has been honored with many scholarships and awards during her undergraduate and graduate study period. Yunbing won the most competitive Chinese Scholarship Council scholarship two years ago, which is supporting her Ph.D. graduate studies in the USA.

Yunbing is currently working on a project regarding the application of an *in vitro* digestion system to examine the impact of food matrix effects on the gastrointestinal fate of encapsulated nutraceuticals and vitamins, which is of great value in food as well as pharmaceutical areas. Additionally, she is actively involved in lab duties such that she is now responsible for the training of the *in vitro* digestion simulation models and high-performance liquid chromatography. Furthermore, she was invited to be a reviewer for Food Research International. She has shown such strong collaboration skills with other lab members that she was listed as coauthors of 9 published papers.

Yunbing is an active member in many scientific organizations, and she is the Vice President of the UMass Chapter of Phi Tau Sigma and the Vice President of the student common interest group of the American Oil Chemists’ Society, demonstrating her commitment to both leadership and promoting food science. To this end, Yunbing has co-hosted various experience-sharing seminars for graduate students so they can learn the skills required to gain academic recognition and to promote the impact of UMass chapter in the field of food science.
Hualu Zhou, M.S., is a third year Ph.D. student (GPA 4.0/4.0) in the Food Science Department at University of Massachusetts Amherst, under the direction of Dr. David Julian McClements. She is working on the potential benefits and drawbacks of using both organic and inorganic nanoparticles in foods. Her approach is to utilize structural design principles to create healthier processed foods, by reducing their calorie density or digestibility using food-grade dietary nanofibers (such as cellulose and chitin). Currently, she has investigated the fate of various kinds of food-grade nanoparticles within the human gastrointestinal tract (GIT). She has authored and co-authored 17 research articles in peer-reviewed journals with the citation of 126, including Journal of Agriculture and Food Chemistry, Food & Function, Food Hydrocolloids.

Due to Huala’s excellent performance in scholastic achievement, she has been granted the 2020 AOCS Lipid Chemistry and Nutrition Award and 2020 Predissertation research grant in University of Massachusetts Amherst. Additionally, she has given one talk and four poster presentations at multiple international conferences and won the 1st place in the Institute of Food Technologists (IFT) Poster Competition in Division of Food Toxicology & Safety Evaluation in 2019. Her research was also featured in a Student Research Synopsis article in the 2019 December issue of the Phi Tau Sigma Newsletter.

Additionally, Hualu is dedicated to serve our communities. She, as the Treasurer, contributed the UMass Phi Tau Sigma Chapter and ACS/AGFD student Chapter from 2018-2019. She is the chair of the UMass Life Sciences Graduate Research Council and hosted a symposium to enhance the research communication and cooperation for 300 graduate students and faculties from 14 different departments. She has worked as a teaching fellow in College of Natural Science from 2019, as an instructor sharing the latest food technology with her students and encouraging them to develop the independent thinking.

Dr. Gideon “Guy” Livingston Scholarship:

Anna Marie Rose Hayes, Ph.D. Candidate, was admitted directly into the Ph.D. Food Science program at Purdue based on receiving an Andrews Fellowship from the Purdue University Graduate School in 2014. Her research focuses on investigating the slow digesting and satiety-promoting properties of pearl millet grown in sub-Saharan Africa through human clinical research and the use of in vitro gastrointestinal digestion models, as well as exploring the implications of starch fine structural features on digestibility and texture applications through collaborative projects. Ultimately, her work will help identify characteristics of glycemic carbohydrates that impart a slow digesting property and elucidate how they can be leveraged to design foods with targeted physiological outcomes that help control food intake. Anna has authored four peer-reviewed publications, including
two as the first author, and one conference proceeding. She is also the first author of a book chapter in the Second Edition of the *Encyclopedia of Food Grains*. She has contributed to fourteen professional presentations at academic conferences since beginning her Ph.D. studies, including the annual meetings for IFT, AACC International/the Cereals & Grains Association, and the American Society for Nutrition, among others. Anna has gained valuable experience through internships at Minnesota Valley Testing Laboratories in New Ulm, MN as well as Michael Foods, Inc. in Gaylord, MN, through which she was able to apply and build upon her food science knowledge.

Anna has made significant contributions to the Phi Tau Sigma Hoosier Chapter. She took on the role of Chapter Treasurer/Vice President in 2016-2017, served as the Chapter President in 2017-2018, and assisted as Secondary Treasurer for the Chapter in 2018-2019. She is continuing to assist as Secondary Treasurer for the current 2019-2020 academic year. During this time, she has continually demonstrated strong dedication to the organization and has been instrumental in planning sixteen different events. Notably, among these events are the Chapter’s annual luncheons, mentorship events for undergraduate students interested in graduate school, and special seminars with industry and academic professionals. During her time as a leader in the Hoosier Chapter, Anna has assisted with the successful nomination and induction of 21 students into Phi Tau Sigma. Under Anna’s leadership, the Hoosier Chapter was recognized as the Phi Tau Sigma Chapter of the Year in 2018.

With her passion for food science, Anna has been active as a leader in many organizations. Notably, she is a current Student Representative for the IFT Carbohydrate Division, current Chair of the Cereals & Grains (formerly AACC International) Student Association, past Co-Chair for the IFT Student Association Midwest Area Meeting, past Student Representative on the Board of Directors of AACC International/the Cereals & Grains Association, and past President of the Purdue Food Science Graduate Student Association, among other roles. These involvements have enabled Anna to create lasting connections with her colleagues, industry professionals, and academic experts, while taking responsibility for the organizational efforts for a variety of diverse groups. Given her exceptional scholastic achievements, dedication to Phi Tau Sigma, and passion for food science, Anna is a most worthy recipient of the Dr. Gideon “Guy” Livingston Scholarship of Phi Tau Sigma.

**Phi Tau Sigma Founders’ Scholarship:**

**Kathryn Williamson, M.S.,** is the 2020 recipient of the Phi Tau Sigma Founders’ Scholarship, which is granted to a student (or recently graduated student) member whose graduate research has had, or is expected to have, a significant Impact - a practical and meaningful application.

Today, the Food and Agricultural Organization (FAO) estimates that nearly 1/3 of all food produced in the world is lost or wasted. This contributes to an extremely large environmental cost and wastes valuable resources. Kathryn’s main research goal as a Ph.D. student at The Ohio State University is to develop novel opportunities of food waste through the creation of value-added products. Applications include bioplastics from spent coffee grounds (SCG) and prebiotics from apple pomace.
Kathryn received her B.S. and M.S. degrees from The Ohio State University. During her M.S., she published a protocol that made the rapid evaluation of fish oil supplements using Nuclear Magnetic Resonance (NMR) spectroscopy accessible to non-NMR spectroscopists. She then applied this method for the analysis of coffee lipids, where she published a novel hybrid targeted-untargeted metabolomics approach that allows for identification and quantification of components that drive differences between roasted and green coffee lipids. For that work she has received a "People's Choice" award for her poster at the 14th Annual Ohio Mass Spectrometry Symposium and won the poster contest at 14th International Conference on the Applications of Magnetic Resonance in Food in France.

Kathryn learned about the abundance of SCG that are wasted throughout the world while studying coffee in her M.S. Using the oil from SCG, she conducted and published the first SCG oil epoxidation reaction, which is the first step in turning oil into bioplastics. She is currently exploring the polymerization of SCG oil epoxides for the production of a polyurethane polymer that may have applications in food packaging. Additionally, she is exploring the potential of apple pomace, a waste product of the apple industry, as a potential low-cost source of prebiotics. Since most commercially available prebiotics are either expensive or only available in limited quantities, the discovery of new prebiotics from alternative low-cost sources will help address the increasing need for these functional foods. She had the opportunity to present her Ph.D. work and its potential impact on the global food system at the Association for International Agriculture and Rural Development (AIARD) Future Leaders Forum in 2019.

Phi Tau Sigma Special Recognition Award:

Dr. Claire E. Zoellner is an excellent example of the intent 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.”

Dr. Zoellner has been and continues to be very active and exceptionally devoted to the national/international level of Phi Tau Sigma as a student (inducted June 2013), post-doc (2016), and as a new professional in our industry. Claire has shown great dedication, and has made significant contributions to Phi Tau Sigma. She has expanded her activities from membership in one committee, to membership in multiple committees, and Chair of one. Claire has advanced from being a Newsletter Committee member to becoming Assistant Editor, then Associate Editor of the Newsletter. Claire is in charge of bringing in the Features of the Newsletter, careful proof-reading, and whatever other tasks that arise. Claire conceived and initiated the Student Research Synopsis section. Claire has expanded her activities by instructing and managing Newsletter Committee members to bring in articles.

Claire joined the Phi Tau Sigma Leadership Team by holding the elected position of At-Large Councilor (3 year term: 2015-18) and immediately again as Director (3 year term: 2018-
21). She joined the ad hoc Student Relations Committee (2017-20), and is currently Chair (2019-20). She is also a member of the ad hoc Recruitment Campaign Committee (2017-present).

Claire was the Phi Tau Sigma Team Leader for the 2019 IFT Fun Run. And Claire is the recipient of the 2015 Dr. Daryl B. Lund Student International Travel Scholarship, and the 2019 Phi Tau Sigma Founders’ Scholarship.

In each of her positions, Claire has worked diligently and contributed to the forward movement of Phi Tau Sigma. She is an exceptionally qualified recipient of the Phi Tau Sigma Special Recognition Award.

**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/](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.) Do **not** write the check to Kantha. 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, the Program Fund, or the General 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, Claire Koelsch Sand, Ph.D. at: clairekoelschands@gmail.com, 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](http://www.phitausigma.org/store).

**Editorial:**

As we start the annual dues drive, please pay your annual dues. Or consider paying the one-time Lifetime Member dues, to show your dedication to Phi Tau Sigma and our programs (and never have to pay dues again).
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 (cez33@cornell.edu), Anthony W. Kotula, Ph.D., Hossein Daryaei, Ph.D., Tianxi Yang, Ph.D., Yiren Yue, Ph.D., Laura Stawn, Ph.D., Diane Schmitt, Ph.D., Gabriela John Swamy, Ph.D., and Jennifer Fideler, 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 to Editor Kathryn L. Kotula, Ph.D. at klkotula@msn.com or Associate Newsletter Editor Claire Zoellner, Ph.D. at cez33@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.phitasigma.org.

Phi Tau Sigma Membership Nominations
http://www.phitasigma.org/membership-nomination-2020-doc/

Phi Tau Sigma Scholarships and Awards Forms
http://www.phitasigma.org/awards/

Phi Tau Sigma Constitution and By-Laws
http://www.phitasigma.org/constitution/
http://www.phitasigma.org/bylaws/

Phi Tau Sigma Mentorship Program
http://www.phitasigma.org/mentorship/

Every Member Get A Member Campaign
http://www.phitasigma.org/growing/

Why I Contribute to Phi Tau Sigma:

Phi Tau Sigma is the only honor society dedicated to the field of Food Science and as such plays a critically important role in providing leadership in the research, teaching and overall quality of this vastly important profession. A profession which is essential to the future of humanity by creating healthy foods in a sustainable manner to feed the billions of the future and maintain the health of the planet. To accomplish this it provides incentives for research and leadership in the field and as such plays a key mentoring role for younger food scientists. How could one not contribute! Fergus Clydesdale, Ph.D.
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 ($5,000)**
- 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. (kkkotula@msn.com). Please write "Donation" or "Sponsorship" in the subject line.

**2019-2020 Contributing Partners:**

**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.**

**2019-2020 Sponsors and Donors:**

**Dr. Mary K. Schmidt** 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 Past 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.)

**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.)

**Peter M Salmon, M.S., MBA,** a Lifetime Member of Phi Tau Sigma, is the Founder and President of International Food Network, Inc., currently retired. (Sponsorship towards a Phi Tau Sigma Student Achievement Scholarship.)

**Elsevier Publishing Company.** 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. Elsevier Food Science content covers aspects of food from chemical composition, to growth and production to distribution and consumption – from farm to fork. Our extensive collection includes eBooks, print books, series, handbooks, and major reference works, all complementing our expansive collection of food science journals and designed to help food science professionals continue to be innovative and make evidence-based contributions to the communities, translating knowledge into applications for the world. Our wide variety of books and eBooks reflects our passion for empowering early career researcher development, initiating innovation, and sharing established expertise in the Food Science field. (Donation towards a Phi Tau Sigma Student Achievement Scholarship.)

**William Benjy Mikel, Ph.D.,** a Phi Tau Sigma past President and a Lifetime Member who appreciates the field of food science and technology. (Donation towards a Phi Tau Sigma Student Achievement Scholarship.)

**Nina Teicholz, M.Phil.** is an adjunct professor at New York University, 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. (Sponsorship of the Phi Tau Sigma Special Recognition Award, and Phi Tau Sigma programs.)
David K. Park, B.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 Student Achievement Scholarship.)

Dr. Catherine Adams Hutt and Peter Barton Hutt, Phi Tau Sigma Lifetime Members. Catherine is food safety and regulatory consultant and expert witness with RdR Solutions, and Peter is an attorney with Covington and Burling. Both are IFT Fellows. (Donation for the Dr. Gideon "Guy" Livingston Scholarship)

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

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

Dr. Yaguang (Sunny) Luo, a Lifetime Member of Phi Tau Sigma, is a Food Scientist with the US Department of Agriculture, Agricultural Research Service. Her work focuses on food quality and safety of fresh and fresh-cut produce. Dr. Luo is the Past Chair of the IFT’s Fruit and Vegetable Product Division, and is also the Past President of Chinese American Food Society. (Donation towards the Phi Tau Sigma Outstanding Chapter of the Year Award.)

The Southern California Institute of Food Technologists Section (SCIFTS) is one of the largest sections of the international society of professional food personnel involved or interested in any of the various aspects of the field of food. Whether you are a food technologist, researcher, scientist, engineer, executive, administrator, educator, author, marketer, consultant, student, or salesperson, there is a place for you in this multi-faceted organization. "To fulfill human needs for a quality food supply through science, technology and education." This is the mission of the SCIFTS and of its members. In keeping with this mission, SCIFTS is proud to bring you the latest advances in OUR journey toward its fulfillment. (Donation towards the Phi Tau Sigma Outstanding Chapter of the Year Award.)

The American Meat Science Association is a broad-reaching organization of individuals that discovers, develops, and disseminates its collective meat science knowledge to provide leadership, education, and professional development. Our passion is to help meat science professionals achieve previously unimaginable levels of performance and reach even higher goals. We accomplish this by fostering a learning community of meat scientists, industry partners, outside thought leaders and other stakeholders who embrace this vision. AMSA is an individual membership organization of more than 1000 meat scientists representing major university research and teaching institutions and meat processing
companies in the United States and internationally. Its members conduct basic and applied research and education programs in muscle growth and development, meat quality, food safety, processing technology and consumer and marketing issues relevant to the international meat industry. 
AMSA is the premier provider of learning and knowledge for the meat science discipline. The association delivers innovative learning experiences, opportunities for peer-to-peer collaboration and leadership development programs designed to advance the meat science discipline. (Donation towards the refreshments at the Phi Tau Sigma and IFT Division Competition Awards Ceremony.)