**Phi Tau Sigma Newsletter  June 2021**

**News:**

**Phi Tau Sigma Annual Business Meeting and Awards Ceremony:**
The Phi Tau Sigma Annual Meeting and Awards Ceremony will be presented virtually on Monday July 19, 2021 at 11:30am eastern, 10:30am central, 9:30am mountain, 8:30am pacific, 5:30am Hawaii times.

Log-in/Call-in information will be in an attachment distributed in the same email as the July Newsletter. Please join us, and bring your colleagues, friends, and family.

**Students about to Graduate:**
Please remember to forward your new contact information (new affiliation, home address, phone numbers, and especially your new and an alternate email address) to the Executive Director (klkotula@msn.com).

*Thank you, and Congratulations on your graduation!*

**Phi Tau Sigma sponsored and co-sponsored Scientific Sessions within IFT 2021**
(Note: All of the sessions are “On Demand”. Details of each session are in the April 2021 Phi Tau Sigma Newsletter)

151.1: Packaging Strategies of Carbon Dioxide Control to Improve Food Preservation under Cultural Dynamics of Globalization
Dong Sun Lee, Ph.D. (Presenter), Ziynet Boz, Ph.D. (Moderator)

151.2: Food Product Development in the 21st Century – Turning Art into Science – Bernard E. Proctor IFT Food Engineering Division Lecture
Steve Lombardo, Ph.D. (Presenter)

151.3: Advances in Nonthermal Food Processing Technologies that can Help Address the Present and Future Challenges of the Food Sector
Carmen Moraru, Ph.D. (Presenter), Hosahalli Ramaswamy, Ph.D. (Moderator)
184: Regulatory Awareness for Food Scientists: A Career Choice Consideration From Global Perspectives
Bhakti Harp, Ph.D., Douglas Williams, Ph.D., Neal Fortin, J.D. (Presenters), Poulson Joseph, Ph.D. (Moderator)

207: What is the Role of Meat in a Healthy Diet and for a Healthy World?
Robin White, Ph.D., David Klurfeld, Ph.D. (Presenters), Gary Sullivan, Ph.D., Jerrad Lageko, Ph.D. (Moderators)

233: Efficacy of Nonthermal Processing Technologies for Inactivation of Viruses: Gaps and Opportunities
Brendan Niemira, Ph.D. (Presenter), Kathiravan Krishnamurthy, Ph.D. (Presenter, Moderator), Tatiana Koutchma, Ph.D. (Moderator)

234: Seeking Meaningful Significance: Insights into Academic and Industry Statistical Practices and How to Prepare for Both
Christopher Simons, Ph.D., Frank Rossi, M.A., Jason Parcon, Ph.D. (Presenters), Rodrigo Tarté, Ph.D., Anna Hayes, Ph.D. (Moderators)

319: The Pandemic, Processed Food, Nutrition, and Immunity
Julie Miller Jones, Ph.D., Kantha Shelke, Ph.D., Susana Socolovsky, Ph.D. (Presenters), Roger Clemens, DrPH (Moderator)

IFT 2021 to be a “Digital Experience”:
The IFT Board has decided to change the annual meeting to a digital experience, which will occur July 19-21, 2021. See details at https://www.iftevent.org/ift/home/press/press-releases/2021/march/3/iftransitions-2021-annual-event-to-digital-experience
Future Phi Tau Sigma Newsletters will provide more details once they come in.

AMSA’s Reciprocal Meat Conference August 15-18, 2021 in Reno, Nevada
AMSA looks forward to seeing you at the Grand Sierra Resort and Casino in Reno, Nevada, on August 15-18, 2021 in person if possible, but if you can’t make it in person, we hope to see you virtually since we are building the meeting as a hybrid.
Registration is open so register today! For more details please visit the website.

Book Your Hotel Today
AMSA is happy to announce the room block for the AMSA 74th RMC is OPEN! The Grand Sierra Resort and Casino has been selected as the 2021 RMC host hotel. For more information and to make your reservations, click here!
Calendar:

--- Phi Tau Sigma Chapter Schedule:
- October 25: 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
- 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, Terri Boylston, Ph.D., (tboylsto@iastate.edu), with a copy to Dr. Kathryn L. Kotula (klkotula@msn.com).

--- Phi Tau Sigma Annual Meetings and Events:
- July 15: Phi Tau Sigma Executive Committee Meeting – Conference call
- July 19: Phi Tau Sigma Annual Business Meeting and Awards Ceremony (11:30am eastern, 10:30am central, 9:30am mountain, 8:30am pacific times)

Dates and times to be determined:
- IFT Awards Celebration, includes the presentation of the Dr. Carl R. Fellers, Ph.D. Award sponsored by Phi Tau Sigma
- Sessions in conjunction with the IFT meeting.

--- July 19-21, 2021, Institute of Food Technologists Annual Meeting:

--- August 15-18, 2021, Reciprocal Meat Conference of the AMSA:
- August 17, 7:30pm PDT Awards Banquet

--- Phi Tau Sigma Scholarship and Awards Schedule:
- November 30: Deadline to submit nominations to the Awards Committee for the Dr. Daryl B. and Mrs. Dawn L. Lund Student 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 Charlwit Kulchaiyawat, Ph.D. (charlwit.kulchaiyawat@fosterfarms.com) and Executive Director Kathryn L. Kotula, Ph.D. (klkotula@msn.com). (More information: http://www.phitausigma.org/awards/)
Student Research Synopsis: An Innovative Filtration-Based Raman Mapping Technique for the Size Characterization of Food-Grade Titanium Dioxide Nanoparticles from Foods
(Contributed by Janam K. Pandya, Ph.D., Recent graduate from Dr. Lili He’s lab, University of Massachusetts Amherst)


Introduction: Anatase form of Titanium dioxide (TiO₂) is widely used as a food-grade (E171) white colorant in many food and beverage applications. However, the food-grade TiO₂ is reported to contain up to 36% nano-sized particles (NPs)¹, and recent studies demonstrate potential adverse toxicological effects of TiO₂-NPs including carcinogenicity and genotoxicity². Therefore, the characterization of TiO₂-NPs is of significant importance in the production quality control, applications, and further study of their toxicological effects.

Objectives and Methods: Currently used electron microscopy methods for the size characterization are extremely expensive, time-consuming, requires specific training, and therefore not utilized for manufacturing and quality control application. Hence, in this study, we developed
a filtration-based Raman mapping technique as a rapid approach to determine the average particle size and the amount of TiO$_2$-NPs from food samples. We initially developed the method using various TiO$_2$ standards with specific particle size and then validated in two commercial food product samples: donuts and chewing gum. In simple sample preparation, the particles were then dispersed using a probe sonicator in the presence of sodium pyrophosphate as a dispersing agent and then filtered through 0.1 µM filter membrane to obtain a uniform distribution. The collected particles were air-dried for 5-10 minutes and scanned under a Raman microscope using a mapping feature.

![Laser](image)

Figure 1. Raman map and corresponding Raman spectra of negative control and are 93 nm, TiO$_2$-NPs. The blue map represents the absence and the red map represent the presence of the signature TiO$_2$ peak at 137 cm$^{-1}$.

Results: Based on the Raman intensity of the TiO$_2$ peak at 137 cm$^{-1}$, the instrument generates a colorimetric representation of the sample indicating the highest intensity or presence of TiO$_2$ by red color and lowest intensity or absence of TiO$_2$ by blue color (Fig. 1). The data analysis software also allows adjusting the red and blue color threshold to observe a particular trend. At a higher concentration of TiO$_2$, we discovered a linear correlation between the particle size and the red area on the map. We found that as the average particle size increases, the surface area occupied by the sample increases therefore, the map area covered in red increases. This map area model can be utilized to predict the average particle size of the sample. We also noticed that the smaller size particles produced lower signal intensity and the peak intensity linearly increased with an increase in the particle size. Therefore, the red color cut-off on the map can be set at the intensity of 100 nm particles to easily screen NPs. To validate the methods in commercial food products, we extracted the TiO$_2$ particles from food samples by acid digestion, determined the average particle size and the amount of NPs using electron microscopy as a reference, and then applied the Raman mapping approach. Using the map area and Raman intensity models, we were able to predict the mean particle size in donuts, and chewing gum as 187 nm and 87 nm, and the amount of NPs as 10% and 71% respectively (Table 1). When comparing these results with reference results from SEM, we found no statistical difference (p>0.05).
Table 1. Estimation of average particle size (nm) and the amount of NPs from TiO₂ particles from foods. Similar alphabets in a row indicate no significant difference (P>0.05)

<table>
<thead>
<tr>
<th>Food Samples</th>
<th>Average Particle Size (nm)</th>
<th>Amount of NPs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raman Mapping</td>
<td>SEM</td>
</tr>
<tr>
<td>Donuts</td>
<td>206.7±1.0</td>
<td>195±12</td>
</tr>
<tr>
<td>Chewing gum</td>
<td>98.4±3.4</td>
<td>97±4</td>
</tr>
</tbody>
</table>

Significance: Our study revealed the presence of a concerning amount of TiO₂-NPs in food products and demonstrated a promising application of the Raman mapping technique in the rapid characterization of the size of TiO₂-NPs as small as 8 nm and the concentration as low as 0.4 ppm. Utilizing this technique, stricter particle size regulation can be implemented which may eliminate TiO₂-NPs from foods, making them safer for human consumption.

References:

Lifetime Member Tribute: Sonia Su, B.S.
Senior Research Associate in Technical Services, Novozymes

Why did you become a Lifetime Member?
I became a Lifetime Member because I saw the value in having a professional organization with such strong passions in food science. Phi Tau Sigma is a great place to network and learn more about the food industry and academia. As an organization that really honors and highlights its members, Phi Tau Sigma encourages us all to keep learning and that just felt like the right environment for me to be a part of. I believe in an organization that gives recognition to all of those who play a role in the food/related industries and academia.

Education:
2018 - B.S. Food Science with a concentration in Science, North Carolina State University
- B.S. Bioprocessing Science, North Carolina State University

Experience/Accomplishments:
2020-present Senior Research Associate in Technical Services, Novozymes
2019-present Treasurer, Dogwood Section IFT
2018-2020 Research Associate in Technical Services, Novozymes
2016 Undergraduate Researcher, Heat Treatment of Camel Milk: Consequences for Functionality, University of Copenhagen
2014-2018 Laboratory Technician, Howling Cow Creamery at NCSU
2014-2018 Research Technician, Entrepreneurial Initiative for Food at NCSU
Areas of Expertise:
Food enzymes (focuses in dairy, plant proteins, and fruit and vegetable processing), HPLC analysis, and method validation.

Awards and Honors (selected list):
2014 – Park Scholarship at North Carolina State University

Personal: Family, Interests, Hobbies:
When possible, I enjoy traveling and trying global cuisines. While at home I’ve been baking and cooking up a storm re-creating some fun dishes I’ve tried abroad and giving myself a challenge in finding fun new recipes. I also enjoy running and hiking to balance out all the cooking I do!

Advice to university students and career food scientists and technologists:
Learn to fail. The faster you learn to fail, the faster you can learn to succeed. Every “failure” should be taken as a learning experience and when you see what doesn’t work it will help you see what can work! We are still in a society that tells you that you need to succeed and as a high achiever you may not have failed before. The initial shock of not succeeding is important as well, but that should not hold you back from working through why you “failed” and using your support system to keep trying to succeed. Failure is an integral part of growing, so do your best, you’ve got this!

Careers: Food scientist and business development manager
Contributed by Sofia Feng, Ph.D., Micreos Food Safety

Introduction/Background:
I obtained my Ph.D. in Food Science and M.S. from NC State University in Raleigh, NC. During my studies, I was interested in the chemistry and processing interactions between ingredients and health outcomes. As an incipient food scientist, I realized the importance of food safety and early in my career I got involved in food safety trainings and worked concurrently at the benchtop. For the past two years, I have been working as a business developer for Micreos, a Dutch biotech company. My objective is to help others understand and accomplish compliance and to ensure product safety. During my free time, I enjoy hiking and learning about different cultures and languages. For the past year, I have been involved in supporting scientific collaboration and training others from my home country of Costa Rica. I am really passionate about mentoring and helping others succeed.

Qualifications:
Ph.D. Food Science
M.S. Nutrition, co-major Food Science

Positions:
Project management
Sales, Business Development
**Duties:**
- I create and manage new projects that have resulted in the implementation of successful sales.
- I work on the design of value proposition and business development plans. I also create testing protocols and I am in charge of coordinating its implementation at plant trials.
- I continue to provide technical support to business partners and serve as an account manager.
- I provide input for the innovation pipeline and I am involved in discussions with the R&D team.
- I work on lab analyses including microbiological and chemistry work and present the results obtained through data analyses.
- I have assisted the coordination of third-party research projects in collaboration with universities and other research institutions.

**Salary:** Base salary has a broad range from $70,000 to $110,000

**Benefits:** 401K, health care, dental and vision insurance, relocation package. Commission or bonus.

**Conclusion:** It is possible for food scientists to branch out and have a commercial role. However, it is important to remain informed by reading research articles, participating in annual meetings and attending symposiums and conferences. These activities will allow you to maintain your subject level expertise. Networking and soft skills are also extremely valuable in your career.

**Chapter News:**

**Phi Tau Sigma Outstanding Chapter of the Year Award**

The University of Minnesota Chapter of Phi Tau Sigma was founded in 1981 and has a long history of scholarly research in Food Science and Technology, high-level leadership and outreach in the local community. The Chapter is especially recognized for its collaborative efforts between faculty, staff, students, local industry and the Minnesota Section of the Institute of Food Technologists. It is also known for the program ‘Building a Science Bridge to Africa and Beyond™’, which was conceived by Professors Mary Schmidl and George Annor of the University of Minnesota. Through this program, the UMN Chapter has been aiming to improve the access of students and researchers on the African continent to peer reviewed research articles and books over the past few years.

The UMN Chapter started a webinar series this year to provide a platform for learning and networking to both students and professionals in the field of Food Science. Through the first webinar on ‘Graduation packet: Tips on Dissertation, defense and publications’, students received great advice on the process of writing and defending their graduate research from Dr. Heiko Schoenfuss.
2020-21: Phi Tau Sigma members new and existing members have been collaged as a result of COVID we were able to meet only virtually
The University of Minnesota Chapter is the first Chapter to organize student competition “Speedy Science™ 2021” for UMN, South Dakota State University (SDSU) and North Dakota State University (NDSU) together. This competition was organized in order to provide a platform for students to showcase their talent to wider range of audience ranging from students, professional members from academia and industries. The Speedy Science™ program event was the first to have ever been organized by our Chapter and looking forward for more expansions at the National level.

The Chapter is very unique with our outreach activities with three universities namely SDSU, NDSU and University of Wisconsin - Madison and helping them to participate in programs and nominating members as part of our Chapter. The Chapter continues to ensure that the students who have demonstrated excellence in their academic achievements, leadership and service are honored and recognized for their commitment to Food Science and Technology. Students recognize the benefits of being part of our organization, which include opportunities for awards, scholarships, leadership, networking along with the exclusive induction ceremonies where the local officers bestow the Phi Tau Sigma pin, certificate and Honor Cord on the new members. The maroon and gold Honor Cord distinguishes the students from all other graduates giving them the recognition and honor they deserve for their excellence in Food Science and Technology! The focus remains on the students.

**Cal Poly Pomona Chapter Develops Creative Approach to Boosting Chapter Membership**  (Contributed by Sarah Caballero, M.S. and Haley Lam, B.S.)

A group of undergraduate students at Cal Poly Pomona, who were interested in becoming members of Phi Tau Sigma but had not yet completed the necessary coursework, formed the first Honorary Phi Tau Sigma cohort. The Honorary Phi Tau Sigma members hosted biweekly meetings and met regularly, sharing leadership, academic excellence, and research or product development experiences. Most importantly, the Honorary Phi Tau Sigma group encouraged junior members of the department to look forward to applying to Phi Tau Sigma. The group provided guidance and mentorship throughout the nomination process and even held workshops to assist applicants.

The Honorary Phi Tau Sigma student organization has been a success. This April, 6 new undergraduate members were initiated into Phi Tau Sigma, a 100% success rate. The now-official Phi Tau Sigma members are working to recruit the new cohort of Honorary Phi Tau Sigma members to continue the program.
Member News:

Derico Setyabrata, Ph.D. Candidate, is the 2021 honoree of the Phi Tau Sigma – American Meat Science Association ‘Research with Impact’ Scholarship.

Derico is originally from Indonesia. He received his bachelor’s degree in Food Science from Purdue University in 2016. Currently, he is pursuing his Ph.D. in Animal Science at Purdue University, focusing on meat science and muscle biology under the guidance of Dr. Brad Kim.

Derico’s research projects focus mainly on improving meat quality attributes through various innovative post-harvest processing coupled with novel molecular approaches. They have practical use, and solve vexing problems.

Derico’s main research focuses on developing novel dry-aging techniques to improve quality and value of under-utilized cull cow beef, which has been supported through the competitive USDA-NIFA AFRI grant. Cull cow beef has been a major part of the US beef market, contributing up to 18% of the total cattle slaughter in 2018. However, this beef often has inferior quality due to the intense off flavor and low tenderness, causing limitations for its application and reducing its economic value.

Given this knowledge, developing natural value adding processes to improve mature beef quality would be beneficial to both industry and consumers. Dry-aging is a traditional value adding process, which is known to significantly improve meat palatability, especially the flavor by generating unique beefy and umami flavor. While dry-aging has a great potential to enhance mature beef economic value, there is little information on dry-aging impact on mature beef quality. Furthermore, the specific compounds that are associated with dry-aged flavor have not been fully identified and understood. Thus, in his doctoral research, Derico has been working on 1) evaluating the impact of different dry-aging methods on meat quality and palatability, as well as microbiological properties of dry-aged cull cow beef loins; and 2) utilizing a novel metabolomics technique to identify flavor-related compounds that can be naturally liberated through different aging methods.

Derico determined that some well-known negative quality attributes of cull cow beef, such as sour and oxidized flavor, have been considerably decreased by dry aging, showing its potential to improve mature beef loins. These improvements, along with improved tenderness and good color stability suggested the potential of dry-aging as a natural value adding process for cull cow beef. It was found that dry aging causes greater accumulation of sugars; as well as glutamine short peptides which are potentially responsible for the greater umami flavor in the dry-aged product. Interestingly, dry-aging also reduced the steroid hormones and terpene compounds that are commonly associated with animal and grassy flavor. This indicates that dry-aging potentially improves meat flavor through removal of negative flavor. Derico is currently also examining the microbial community development during the aging process by using novel microbiome (16S RNA sequencing) approaches, identifying the relation of the microorganisms and flavor pre-cursor release. He is expecting that the identification of this relationship will help determine essential microorganism community to help industry generate a consistent dry-aged product for the consumer.
Derico is also leading a research project in utilizing meat exudate to rapidly identify meat oxidative quality. During the aging process, meat exudate is inevitably generated as a byproduct of the process, and is discarded. The exudate, however, was identified to carry useful information that can be related to the meat oxidative quality. Using metabolomics, Derico is profiling the changes in the meat exudate and correlating them to the meat oxidative status. Furthermore, he is determining potential biomarkers within the exudate that could potentially be utilized as a rapid predictor of the oxidative stability. Several metabolites such as glucoside, carnitine, quinone and fructose were identified as important metabolites, potentially due to their relation to antioxidant and mitochondrial degeneration. Further confirmation, however, is still on going. It is expected that with this technology, meat quality testing will be more accessible for producers and retailers, and thus reduction of meat waste due to oxidative defect in retail settings could be anticipated.

Additionally, Derico has also been involved in research pertinent to meat freezing practices. Freezing is a widely applied technique in the meat industry to extend the shelf-life of meat products. This process, however, has been known to cause quality defects such as excessive moisture loss and reduced oxidative stability. His objective for the research was to identify the benefits of aging treatment application prior to or after freezing to negate the negative effect of the process. From his studies, he determined the application of postmortem aging for 2 weeks prior to freezing greatly reduced the negative impact of freezing, making several qualities such as purge loss, cooking loss and instrumental tenderness to be comparable or even better when compared to non-frozen meat. Through this research it was shown that improvement in frozen meat could be achieved without excessive capital investment.

Derico’s research results have been disseminated to the public through 11 publications in peer-reviewed journals, both as first author and co-author, as well as presentations in various local/national scientific meetings. Derico is also serving as a teaching assistant for a meat science class. Derico previously served as the coach for the Purdue meat science quiz bowl team and the Student Representative for the Muscle Foods Division of the Institute of Food Technologists, in which he was awarded the Member of The Year award (2019). Derico is expecting to complete his degree this coming Fall and is planning to continue his impactful research to further improve meat quality.

More Member News:

2021 AMSA International Lectureship Award Winner

Dr. Keith Belk, Phi Tau Sigma Lifetime Member, has been selected as the 2021 AMSA International Lectureship Award winner. The International Lectureship Award is sponsored by PIC and was established to honor an individual for internationally recognized contributions to the field of meat science and technology. Dr. Belk will be honored at the 74th AMSA Reciprocal Meat Conference (RMC) hybrid meeting during the international keynote symposium entitled “How Meat Science Academic Programming Can Facilitate Undergraduate and Graduate Student International Exposure.” This session will take place on Tuesday, August 17, 2021, at Grand Sierra Resort and Casino in Reno, Nevada, USA. The AMSA 2021 RMC is hosted by the University of Nevada-Reno.
During his presentation Dr. Belk will elaborate on several academic research and educational efforts designed to promote student involvement in international trade and capacity building/foreign assistance. As the world becomes more globalized in trade, and as the number of multinational agricultural companies continue to expand, exposure of students to the international arena is imperative. Likewise, a growing impetus to take a systems approach—the idea of One Health—towards addressing complex food security, safety, sustainability, and nutrient quality issues will impact food availability. The need for technical input on these issues will continue to grow, and exposure of students to these international Grand Challenges must be reflected in academic programs. During this talk Dr. Belk will promote conversation around a need for greater student exposure to the international markets.

Dr. Keith Belk serves as Professor and Head of the Department of Animal Science as well as an Adjunct Professor in the Colorado School of Public Health. Previously, he served as a Professor and Holder of the Ken & Myra Monfort Endowed Chair in Meat Science with the Center for Meat Safety & Quality, Department of Animal Sciences, Colorado State University (CSU). He also served as Director of the Center for Meat Safety & Quality at CSU. He earned B.S. and M.S. degrees from CSU, and a Ph.D. from Texas A&M University. He has been employed in the private sector as a buyer by Safeway, Inc., and by the USDA Agricultural Marketing Service in Washington, D.C., as an International Marketing Specialist.

[Modified From: AMSA press release May 10, 2021]

Even More Member News: 2021 IFT Fellows

Congratulations to these ΦΤΣ Members on their selection to the 2021 Class of IFT Fellows!

Christina A. Mireles DeWitt, Ph.D., ΦΤΣ Lifetime Member
Director, Seafood Research and Education Center
Professor, Department of Food Science & Technology
Interim Director, Coastal Oregon Marine Experiment Station
Oregon State University

In advancing food science and technology, Christina A. Mireles DeWitt has conducted innovative research, contributed to new academic and career programs, cooperated in a key role with nine team partnerships among academia/industry/agency, provided leadership and outreach to 10 countries, and is co-editor in chief of a peer-reviewed aquatic food journal. DeWitt has obtained $6.87 million in competitive grants and contracts of which $3.1 million has directly supported her research program. She has provided education to 1,098 undergraduate and graduate students in food science and technology curricula that included the following courses: Introduction to Food Science, Food Analysis, Food Chemistry I and II, Processing Dairy Foods, and Seafood Technology. In addition, she has provided leadership for over 40 workshops/trainings engaging 1,600+ industry and agency stakeholders for improved seafood processing practices. Internationally, she has helped develop over 250 seafood safety trainers in seven different countries.
**Ellen Bradley, CFS, ΦΤΣ Lifetime Member**  
*Founder and Principal Food Scientist*  
*River City Food Group*

Ellen Bradley has been an active and consistently engaged member of IFT since 1984 and a professional member since 1992. After graduating from Oregon State University, she served IFT in leadership positions locally, regionally, nationally, and globally. Her leadership and volunteerism have had numerous influences on the IFT and the science-of-food community. She has distinguished herself in the science of food arena with outstanding and extraordinary contributions in three main categories: promoting the profession of food science, improving the IFT member experience, and educating food scientists. As an advocate and voice for the profession, she has inspired many to see food science in new ways and inspired many more to pursue careers in food science.

**Elvira Gonzalez de Mejia, Ph.D., ΦΤΣ Member**  
*Professor of Food Science and Human Nutrition*  
*Director of the Division of Nutritional Sciences*  
*Presidential Fellow*  
*University of Illinois at Urbana-Champaign*

Elvira Gonzalez de Mejia is a highly devoted professional in food science and nutrition education. She has made a remarkable impact on the profession and the IFT membership, particularly her work with the International Division and her active engagement in international research collaborations for over 30 years. Her research in the interphase of food science and nutrition has included a career of inspired academic leadership. She has made significant contributions to research publishing and mentoring and has directed the work of numerous national and international undergraduate and graduate students who now hold influential positions in academia, industry, and government around the world. As a scientist, she has a global reputation in structure-function properties of protein-derived bioactive peptides and phenolic compounds and prevention of chronic diseases. Her lasting impact on the profession and future generations is to ensure a safe, nutritious, and sustainable global food supply with a vision of disease prevention and well-being.
Kevin Keener, Ph.D., PE, ΦΤΣ Lifetime Member  
*Professor and Barrett Family Chair in Sustainable Food Engineering*  
*University of Guelph*

As an expert in food engineering, food safety, food technology, and food regulations, Kevin Keener has had a significant impact on food science and food technology. In addition to providing technical assistance to hundreds of companies and many state and federal government agencies, he has invented several new technologies, including high voltage atmospheric cold plasma, controlled dynamic radiant frying, and cryogenic cooling of shell eggs, with 12 patents issued. Keener has also mentored 15 post-doctoral students, 20 graduate students, and over 100 undergraduate student researchers. He has produced 85 refereed publications, 13 book chapters, 40 technical bulletins, 40 non-refereed publications, and over 100 popular press articles. In over 100 workshops, Keener has provided technical training to thousands of students, industry personnel, and government regulators; workshop examples include Starting a Food Business, FDA Better Process Control School, USDA HACCP, FDA HACCP, food plant sanitation, food regulations, novel food technology, and others.

Kumar Venkitanarayanan, Ph.D., ΦΤΣ Member  
*Associate Dean for Research and Graduate Studies, College of Agriculture, Health and Natural Resources*  
*University of Connecticut*

Kumar Venkitanarayanan is a professor of food microbiology serving as the associate dean for research and graduate studies at the College of Agriculture, Health and Natural Resources, University of Connecticut. Venkitanarayanan is one of the foremost researchers who investigated the potential of several classes of natural plant-derived compounds for improving food safety, especially the safety of eggs and poultry meat, at pre- and post-harvest levels. His research contributed to the development and emergence of several phytochemicals as feed ingredients for poultry. Having been successful in securing over $17 million as competitive funding for his research, Venkitanarayanan published 125 peer-reviewed journal manuscripts and 27 book chapters, and characterized five new bacterial genes. He is active in IFT by serving as the secretary of the Food Microbiology Division and as a reviewer of technical research papers and judge in graduate student competitions. He is the recipient of several accolades, including the Evonik Degussa award from the Poultry Science Association, the University of Connecticut Research Excellence and Creativity award, and the Research Excellence award from the College of Agriculture, Health and Natural Resources, University of Connecticut.
Lisbeth Goddik, Ph.D., ΦΣ Member
Professor and Department Head
Oregon State University

Lisbeth Goddik started her academic career in 1999 as the Oregon State University (OSU) dairy food processing extension specialist, serving the dairy industry. Over the last two decades, her career has evolved with an ever-greater emphasis on sustainable food systems, moving from regional to national impact. Her initial role as extension specialist included a growing focus on byproduct utilization and economic sustainability; subsequently, she became department head of the OSU Food Science & Technology (FST) Program, overseeing transformative changes. The new curriculum contains courses focused on sustainable food manufacturing along with other aspects of sustainable food systems. FST research and outreach programs are undergoing similar impactful changes. FST is also taking an active role in communicating the science of food to the public, including a monthly seminar series on sustainable food systems for an audience of consumers of food. Goddik holds two endowed professorships sponsored by stakeholders.

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.) 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.
Send an email to Kantha to let her know to expect your check (kantha@corvusblue.net).

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 Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship Fund, the Program Fund, or the General Fund. http://www.phitausigma.org/donate/

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, Terri Boylston, Ph.D. at: tboylsto@iastate.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.

Support Phi Tau Sigma through AmazonSmile:
If you shop at Amazon, please register Phi Tau Sigma as your charity through AmazonSmile (https://smile.amazon.com/). There is also a mobile app that one can access. Instructions for the mobile app can be found at: https://www.amazon.com/b?ie=UTF8&node=15576745011.

The AmazonSmile Foundation will then donate 0.5% of the purchase price of eligible products to Phi Tau Sigma. This may not sound like a lot, but it adds up. Be sure to enter Amazon through AmazonSmile every time you shop (https://smile.amazon.com/). Thank you!

Editorial: Why?
Why be a member of Phi Tau Sigma? There are the reasons that we all know: To be part of the one and only Honor Society of Food Science and Technology. To have networking opportunities with the best of the best in our industry. To have leadership opportunities, learning opportunities, and scholarship and award opportunities. BUT it is more than that. I have had the honor to get to know and to work with many, many members of Phi Tau Sigma. This is truly and extraordinary group of people. They have a level of interest and dedication that is far above the norm.

So, if you are not a member, contact someone who is, or me (klkotula@msn.com), to be nominated for membership.

If you are already a member, continue your membership by paying your dues, consider being active on a committee or leadership, and nominate deserving colleagues and students for membership.

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., Hossein Daryaei, Ph.D., Tianxi Yang, Ph.D., Laura Strawn, Ph.D., Diane Schmitt, Ph.D., Gabriela John Swamy, Ph.D., Jennifer Fideler M.S. (Ph.D. Candidate), Tiantian Lin, Ph.D.
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 kikotula@msn.com or Associate Newsletter Editor Claire Zoellner, Ph.D. 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/phi-tau-sigma-nomination-2021-doc/
http://www.phitausigma.org/phi-tau-sigma-nomination-2021-pdf/

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/

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

Sponsors, Donors, and Contributing Partners:

Phi Tau Sigma accepts contributions and has a variety of available sponsorship opportunities, as well as the General fund and Program fund.

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.

Contributions 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/donate) or by going directly to PayPal https://www.paypal.com/donate?hosted_button_id=QTA7NUHUEPP2). Contributions by check (written from a US bank) can be made by sending to our Treasurer: Kantha Shelke, Ph.D., 33 West Ontario, Suite 57F, Chicago, IL 60654. Please write “Sponsorship”, “Donation”, “Contributing Partner”, etc. in the subject line. [A Sponsorship covers the cost of the honorarium and the administrative costs (PayPal, plaque, postage). A Donation covers only the cost of the honorarium. The Contributing Partners program is described below.]
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 monthly Phi Tau Sigma Newsletter. Endowments are also accepted.

Contribution opportunities are available for the 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 (on a ‘first come’ basis), as well as the Program fund (which includes the Phi Tau Sigma Awards Ceremony) and the General fund.

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. (http://www.phitausigma.org/sponsor/)

**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. (klkotula@msn.com). Please write “Contribution” in the subject line.
2020-2021 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 sponsor the Phi Tau Sigma Founders’ Scholarship, and to sponsor the new Phi Tau Sigma – AMSA Research with Impact Scholarship and its endowment.) **Hawkins, Inc. is a Silver level Contributing Partner.**

**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. (Contribution to support and endow the Dr. Daryl B. Lund Student International Travel Scholarship.) **The Lunds are a Silver level Contributing Partner.**

2020-2021 Sponsors and Donors:

**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)

**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 technical and regulatory 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. 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.

**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.)

**Dr. Rakesh K. Singh** is a Past President of Phi Tau Sigma, a Lifetime Member; and is a Professor in the Department of Food Science & Technology at the University of Georgia, where he was department head from 2001 to 2020. He is also a Fellow of IFT, Fellow of IAFoST, Fellow of National Academy of Agricultural Sciences of India, and Editor-in-Chief of LWT – Food Science and Technology. (Sponsorship of a Phi Tau Sigma Student Achievement Scholarship.)
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.

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. (Donation towards a Phi Tau Sigma Student Achievement Scholarship.)

Corvus Blue LLC is a Chicago-based contract food science and research firm retained by food, dietary supplement, and allied enterprises to expedite new product development and commercialization and pave the path for rapid market realization with competitive intelligence and food science communication. The firm works with startups and established entities at the intersection of science and business to maximize opportunity and minimize risk.

Anonymous donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship.

Dr. Claire Zoellner, Food Safety Scientist at iFoodDecisionSciences, Phi Tau Sigma Director, Associate Newsletter Editor, and Chair of ad hoc Student Relations Committee.

Phi Tau Sigma Development Committee 2020 - 2021
Each and every member of Phi Tau Sigma Development Committee has generously donated to Phi Tau Sigma. The Development Committee is responsible to develop and implement strategies and mechanisms to raise long range funding to allow Phi Tau Sigma to be funded in perpetuity. The Committee has made its generous contributions to demonstrate its unwavering support and to role model the action of making a financial contribution to the Society. (Sponsorship for the Phi Tau Sigma Special Recognition Award)

Phi Tau Sigma Leadership 2020 -2021
Each and every member of Phi Tau Sigma Leadership has generously donated to Phi Tau Sigma. The Phi Tau Sigma Leadership is composed of its Board of Directors and Chairs of its appointed Committees. Its mission is to honor and build excellence in the profession of food science and technology. Besides sharing generously of their time and talent, the Leadership has made a generous financial contribution to set, through example, what our discipline may achieve through its contributions. (Sponsorship for the Phi Tau Sigma Chapter of the Year Award)

Dr. Rodrigo Tarté, a Lifetime Member of Phi Tau Sigma, is an Assistant Professor of Animal Science and of Food Science & Human Nutrition at Iowa State University, and President and President-Elect of Phi Tau Sigma. (Donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship.)

Dr. Liz Boyle, a Lifetime Member of Phi Tau Sigma, is a Professor and Meat Extension Specialist at Kansas State University, and Past-President of Phi Tau Sigma. (Donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship.)
Robert Cassens, Ph.D., Professor Emeritus, University of Wisconsin, and long-time member of AMSA; and Martha Cassens, M.S., a long-time member of AMSA, a Lifetime Member and Director of Phi Tau Sigma, and Vice President of Product Innovation, Development & Quality at ACH Food Co. Inc. (Donation in honor of Dr. Anthony Kotula towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship.)

Another Anonymous donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship.

Dr. Ogechukwu Tasie, Member, Phi Tau Sigma Membership and Qualifications (M&Q) Committee. (Donation to the General Fund.)

Dr. Lili He, a Lifetime Member of Phi Tau Sigma, is an Associate Professor in the Department of Food Science at University of Massachusetts Amherst. (Donation to the General Fund.)

Lauren Jackson, Ph.D., a Lifetime Member of Phi Tau Sigma, is a Supervisory Food Technologist at U.S. Food and Drug Administration, and Chair of the Membership & Qualifications Committee of Phi Tau Sigma. (Donation towards the endowment for the Dr. Gideon “Guy” Livingston Scholarship.)

Shantrell R. Willis, Ph.D., currently serves as a Research Scientist and Adjunct Faculty at Alabama A&M University, and is a member of the Phi Tau Sigma Membership & Qualifications Committee. (Donation for the General Operating Fund.)

An anonymous donation “In loving memory of Ana Lee (Biyan Chen). May you live on in those you’ve left behind.” (Donation towards the General Fund)

David Anderson, Ph.D., a Lifetime Member of Phi Tau Sigma, retired from Elanco Animal Health R&D. (Donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship) Tony Kotula has had a tremendous impact on my life and career.

Dr. Russell Cross, a Lifetime Member of Phi Tau Sigma is a Professor at Texas A&M University, and Past-President of Phi Tau Sigma. (Donation towards the endowment for the Phi Tau Sigma-AMSA ‘Research with Impact’ Scholarship) Tony Kotula has had a tremendous impact on my life and career.

William Benjie Mikel, Ph.D., a Phi Tau Sigma past President and a longtime Lifetime Member. (Recurring donation towards the endowment for the Phi Tau Sigma-AMSA ‘Research with Impact’ Scholarship)

Anthony W. Kotula, Ph.D., a Lifetime Member of Phi Tau Sigma, retired in 1992 as a Supervisory Food Technologist after 38 years of service at the Agricultural Research Service, USDA; 25 years of which were as the Leader of the Meat Science Research Laboratory. (Donation towards the endowment for the Phi Tau Sigma-AMSA ‘Research with Impact’ Scholarship)

Dr. Tommy L. Wheeler, Research Leader of the Meat Safety and Quality Research Unit of the U.S. Meat Animal Research Center of USDA-Agricultural Research Service. A long-time member of AMSA and renewed member of Phi Tau Sigma. (Donation towards the endowment for the Phi Tau Sigma – AMSA ‘Research with Impact’ Scholarship)
**R. Bruce Tompkin, Ph.D.**, Food Industry Microbiologist and long-time member of AMSA. (Donation towards the endowment for the Phi Tau Sigma - AMSA ‘Research with Impact’ Scholarship.)

**Dr. Don Beermann**, retired Chair of the Iowa State University Department of Animal Science, is a long time member of AMSA. Don also served on the faculty at Cornell University and as a Department Head, Director, and interim Dean at the University of Nebraska–Lincoln. (Donation towards the endowment for the Phi Tau Sigma - AMSA ‘Research with Impact’ Scholarship.)