

SOCIETY NEWS

THE SOCIETY OF FLAVOR CHEMISTS, INC



Board of Directors
2018-2019

President's Message

Sam Tharpe 2018

Dear SFC members,

Greetings to all. I trust everyone has had a safe summer! It is an honor and privilege to serve as President of the Society of Flavor Chemists for the Fall/Spring Term of 2018-2019.

We are going to have an exceptional year! For our September meeting we return to Chicago. Mark your calendars for Thursday, September 20th. It will be held in the Chicago suburb of Oak Lawn, four miles from the Midway Airport at the Hilton Chicago/Oak Lawn. In October we return to Newark, New Jersey. We are still negotiating the date, but we will be keeping to our tradition of a lunch buffet and afternoon program. January will be your opportunity to enjoy the warm weather in California with meeting plans in the Los Angeles area well underway.



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President's Message - continued

Sam Tharpe 2018—2019

In February we are planning to return to the Monell Chemical Senses Center in Philadelphia. This will be the first opportunity for many of our newer members to experience this informative and unique meeting. In March there will not be a formal program, but our Membership Committee will be busy testing our candidates for apprentice and certified membership at the NAFFS meeting in California.

The strong leadership in this organization has guided me on my journey to the position of president. It is inspiring to see the passion, drive and dedication of my peers through my tenure of serving as a committee chair and working my way through the chairs of the Board. Members do not get involved for personal gain but for the greater good of our Society. Even more inspiring, it is voluntary, and we have fun along the way!

Thanking the companies for whom we work and who support the mission of the Society of Flavor Chemists cannot be overlooked. McCormick & Company, Inc. has been a generous supporter of the SFC and I am fortunate to be a benefactor. Our employers' support allows us to pursue our passions to make the Society of Flavor Chemists an organization that maintains membership integrity of the highest standards. These standards ensure our members are not only certified to do their job as a Flavorist but that our programs continue to educate, entertain, and support our industry and those who work in it.

This is our organization and it is we, the membership that develop our membership standards, educational lectures and programs. You as a member can help our Board and Committee members with your suggestions. Remember your participation is critical for our continued growth and success.

Our meetings give a unique opportunity to come together, in a non-competitive atmosphere to discuss topics that all of us manage on a day to day basis. Flavorist training, vanilla, citrus, regulatory, and global business, are always relevant topics.

This term, in addition to the SFC Syllabus, you will hear discussions on strengthening our membership through providing additional guidelines for Flavorist training. Your support and involvement will be greatly appreciated. Our 2019 Flavor Symposium to be held October 16th – 17th promises to be our best. This program is one of our corner stones and is developed by our members for our members. I again attribute the success of this tradition to excellent leadership.

Our scholarships continue to give us a direct link to academia providing support to students researching topics pertinent to our industry. The Science History Institute (formally the Chemical Heritage Society) relationship will continue to strengthen, making this a resource accessible to all the membership. The Board is also working on improving the look and function of the SFC website. It is an expensive endeavor and we are taking measured steps for this goal.

In many ways the SFC is a family, and like any family we have some bumps along the way. We are here to support one another. It is always sobering at the end of the year when we reflect on those members who are no longer with us. This year will prove to be no exception. It is also a joy to celebrate the membership milestones and accomplishments!

I look forward to seeing you this term at your Society of Flavor Chemists meetings! Enjoy these last days of summer and see you September 20th in Chicago!

To a great year!

Sam





Meet the New

2018—2019 Society of Flavor Chemists Board of Directors!

(left to right) Chris Williams (Secretary), Lisa Vaughn (Chairperson), Sam Tharpe (President), Elsa Howerth (Vice-President) and Paul Ricciardi (Treasurer)



Society of Flavor Chemists Flavor Symposium

October 15—16, 2019

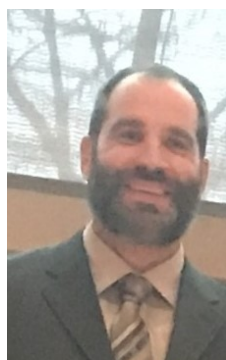
Princeton NJ

Welcome, New Members! February Meeting in Philadelphia



New Members (l to r) Scott Michaluk, Ilya Flaks, Melissa Barbercheck, Shelley Wilson, and Christine Conley

Not pictured Rebecca Genovise



Scott Michaluk—Upgrade to Certified

Scott has a B.S. degree from Montclair State University in food Science & Nutrition in 2005. He started working at Kerry Ingredients in Flavors in 2005. There, he mostly worked in the area of essential oils and oleoresins, where he was able to work with a great many Flavorists that had a great positive impact on his training. He has had the opportunity to work on Beverage, Dairy, Sweet and Savory formulations. When Scott started working at Coca Cola Company, he was fortunate to work for Bob Peterson, who was a great mentor. He currently works for Coca Cola in Beverage Flavors. His passion for flavors extends outside of his work where he is an avid coffee roaster and has dabbled in beer brewing and one unfortunately unsuccessful batch of whiskey.

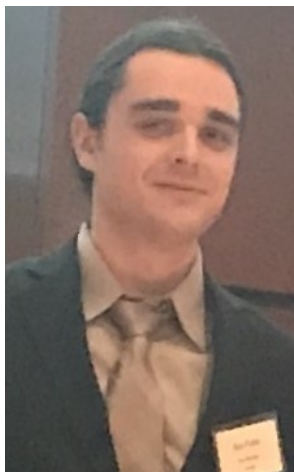
Christine Conley— Upgrade to Certified

Christine obtained a Bachelor of Science degree from the University of Cincinnati in Chemistry in 2005. Her career in the flavor industry began at Mane, Inc. where she is currently a Junior Flavorist. Christine's main focus has been creating flavors for sweet goods, confections, dairy, oral care, and cosmetics. In her spare time, Christine is busy raising her three children and cheering for them at all of their sporting events. She also enjoys running, cooking, and volunteering at her local animal shelter and school events.



Welcome, New Members!

From the February Meeting in Philadelphia



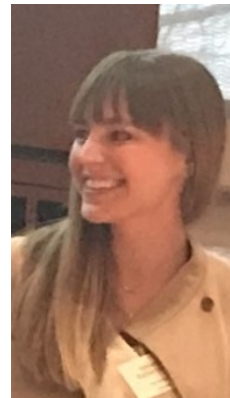
Ilya Flaks—Apprentice

Ilya was born in Leningrad, USSR (now St. Petersburg, Russia) and relocated to the United States in 2002. He is a graduate of the University of Illinois at Chicago with a Bachelors of Science in Biology. After a brief tenure at PepsiCo, he has joined the Imbibe team where he discovered a passion for flavor chemistry. In his free time, Ilya enjoys baking and

playing drums and guitar.

Melissa Barbercheck - Apprentice

Melissa graduated from Indiana University in 2008 with a Biology degree, and began her career working with exotic animals. Melisa was a caretaker for large cats at an exotic feline rescue, worked as a technician in veterinary medicine, and taught evening and overnight programs at the Cincinnati Zoo. She eventually decided to get back into a lab environment, and discovered a new passion in the flavor industry. In her free time, Melissa enjoys running, yoga, and exploring. She currently resides in Wichita, Kansas with her husband and two fur kids, a husky and a cat.



Shelley Wilson— Apprentice

Shelley currently resides in North New Jersey. She began working at Symrise in June 2008. This was her first job in the industry. After working as a Scientist in a research lab for two years, Shelley was in absolute awe at the career she stumbled upon. She remembers instantly knowing that she wanted to become a Flavorist. To date, Shelley is still fascinated with the Flavor Industry and hopes to have a long and successful career. She is also very grateful to say “I love my job”. Outside of work, Shelley is a proud mother to two children: Chelsea and Chase.

Rebecca Genovise — Apprentice

Rebecca was born and raised in the Chicago area and studied Nutrition and Chemistry at the University of Illinois. The world of Flavor Chemistry has allowed her to fully embrace her passion for food and flavors. Rebecca’s work does not stop at FONAs as she loves being in the kitchen and confronting the challenges of creating new and unique meals to fit her dietary preferences. She also takes full advantage of the new and innovative foodie restaurants the Chicago area has to offer. When not creating flavors, Rebecca loves traveling, hiking, yoga and photography



Welcome, New Members!

From the April Meeting in Cincinnati



Rachel Jones—Apprentice

Rachel Jones grew up in South Carolina on a tiny horse farm. Every weekend you could find her competing in rodeos! Rachel attended Trevecca Nazarene University in Nashville, TN and earned a BS in Chemistry, but wasn't sure what she wanted to do with it. Rachel found herself invited to a company she had never heard of —Givaudan Flavors. She walked in and fell in love! Working for Dr. Pepper Snapple has only increased my passion for flavor creation. Rachel finally found what she was always meant to do.

Megan Scholle— Apprentice

Megan Scholle currently works as a flavorist trainee at Givaudan Flavors in Cincinnati, with a focus on sweet and beverage flavors. Her background includes a Culinary Arts degree from the Midwest Culinary Institute, as well as a Bachelor of Science Degree in Culinary Science from the University of Cincinnati. Though her experience in the flavor industry started with an applications role, she quickly found her passion when she began working as a flavor technician under David Madrid.



Yohung Chen—Apprentice

Yohung has been working in the flavor industry for more than ten years total, and started at Mother Murphy's in 2013. She loves to create new flavors, especially fruit flavors and prototypes of liquor. Yohung enjoys working in the lab with Mother Murphy's team.

Welcome, New Members from the April Meeting in Cincinnati



Patricio Lozano— Upgrade to Certified

Patricio Lonzo is a senior scientist at Coca-Cola flavor R&D group and the global lead for the area of flavor modulation for the company.

He was born in Ecuador and came to the US to study Food Science following his Agricultural Engineering degree in Honduras. After completing graduate school in Food Science with an emphasis in flavors from the University of Illinois, he got fascinated with the creative side of flavors. Patricio found a job at a flavor house in Wisconsin and trained under Elsa Howerth. He then moved to Coca-Cola to work in flavor modulation and continued his training under Dr. Bob Peterson and David Madrid. He considers himself extremely blessed to have learned from three well-seasoned and respected flavorists, which complemented his own approach to flavor creation.

Patricio is a passionate soccer player and marathon runner. His wife Lynette, son Sebastian and dog Tango are his best sources of inspiration for running and flavor creation. He loves travelling, eating ice cream and collecting soccer jerseys from around the world.

Winnie Xu—Upgrade to Certified

Yinyin (Winnie) Xu graduated from McGill University with a Bachelor's degree in Food Science. She is a junior flavorist at Essences Bonnie & Don Flavours Inc., where she has been working since 2010. Winnie is passionate about evaluating new raw materials and working on different projects creatively. In her spare time, she enjoys travelling, trying different cuisines with friends and plays sports like tennis, squash and badminton. She is sponsored by Sandra Wilson and Marion Hulbert of her company.

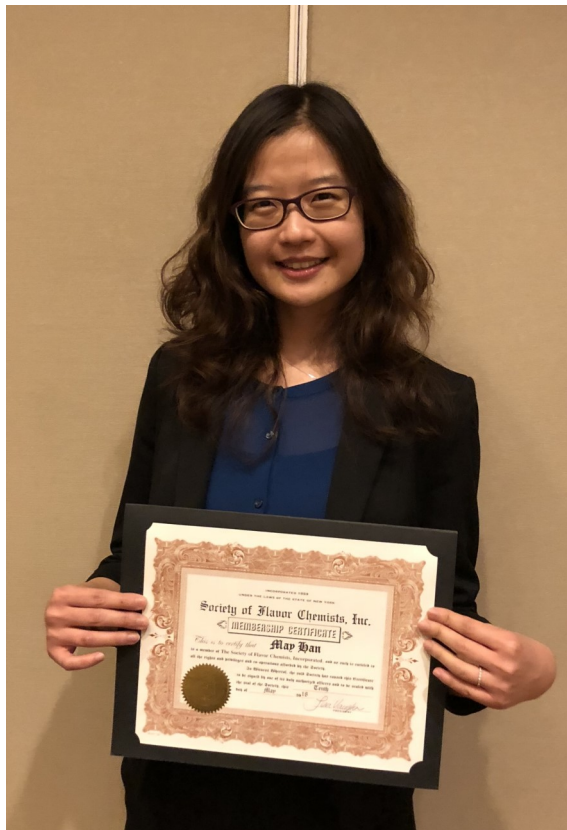


Joe Reynolds— Upgrade to Certified

Joe was born, raised, and currently resides in the suburbs of Chicago. He has a Bachelor's Degree in Biology from Roosevelt University and Master's of Science in Food Science from the University of Illinois. Growing up, Joe spent the majority of his time as a drummer in various bands or playing any sport that was in season. He is still an avid listener of many styles of music and plays softball every summer. Joe is married to his beautiful wife Heather and has a wonderful daughter Theresa.



Welcome, New Members from the Annual Meeting in Newark NJ



May Han—Direct to Certified

May Han graduated from Rutgers University in 2009 with a Bachelor's Degree in Chemistry. Her first job out of college was with Mondelez International. This was where her interest in flavors developed. May's enthusiasm for tasting and exploring different flavors was noticed, and fellow flavorists inspired her to explore this as a career. She then accepted a Food Technician position at Spicetec compounding flavors and seasonings. After one year, May was selected to join the Flavor Creation Lab as a trainee. Being a foodie with a passion for creativity and constant learning, this is a dream job come true for her.

Jagdeep Grewal—Upgrade to Certified

Jagdeep Grewal has been employed at Comax Flavors since 2008. He obtained his Bachelor's Degree in Food Science in 2002 from SLIET College in India. Jagdeep initially worked at the Application Department at Comax for three years, after which he began his flavorist training. He now helps create a wide variety of successful flavors for his organization and works closely with the company's technical and sales teams as well as with their many customers.

Jagdeep is married with one son. He enjoys sightseeing, listening to music playing basketball and socializing with people.



Welcome, New Members from the Annual Meeting in Newark NJ



Zareena Valappil—Direct to Certified

Zareen Valappil has a Master's Degree in Biochemistry and a PhD in Food Science. She was introduced into the world of flavor chemistry with her first job back in India. She was working on the analytical side and continued the same kind of work when she started working for Takasago in New Jersey. With her background in the study of citrus, she was offered a position as flavorist trainee focusing on the area of citrus flavors. She trained in all categories of flavors in beverage, confection, savory and pharmaceuticals. Zareena recently moved to Symrise, USA as a Citrus Flavorist where she continues to advance her training in flavor creation.

Patty Valente—Upgrade to Certified

Patty Valente recently upgraded to Certified- "FINALLY!" She has been a flavorist for a few decades working for several global companies- "time goes fast in this industry!" She continues to be fascinated how these special chemicals can be orchestrated into a flavor, then have such an emotional and sensorial effect on people (It's not really a job- it's a privilege!). Continuing as a consultant, Patty is still looking for more ways to enjoy this art & science. She feels blessed with wonderful family, loves indulging her granddaughter June, and continues to raise and train English Springer Spaniels for competition agility and obedience trials. Living in a small Delaware River town in NJ, there is always plenty of hiking, biking and fly fishing. A bonus comes in early spring when the farmers mow their first hay and scent the rolling pastures with coumarin.....Patty is so glad to not be allergic!



February Meeting in Philadelphia

“Digitizing Olfaction”

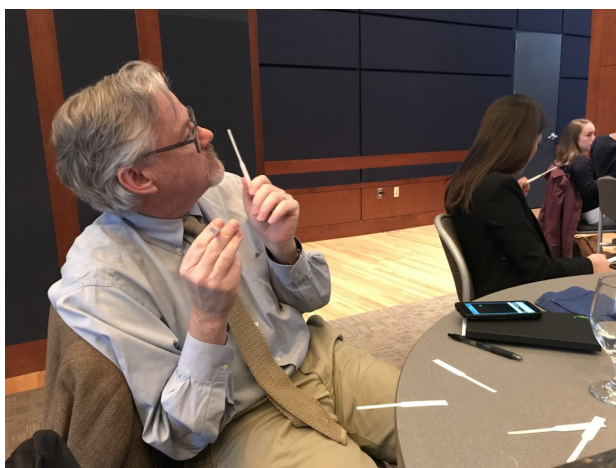
Joel Mainland, Monell Chemical Senses Center

Similar to how colors can be digitized and projected onto a screen, odors, in theory, can be digitized too. How can you take a smell and assign a number to it? Can we mix a number of things together and predict what it will smell like?

Research has been done to address this in 2013. First thing the researchers did was balance the strength of all odors since a strong odor overpowers a weaker one. Ten flavor chemicals were taken at random from a pool of 144 and put into a vial, then a different set of ten was taken at random. The pairs were smelled and rated on how perceptually similar they were. This was done over and over again so that a lot of data was collected and machine learning was used to develop a model to predict what some mixture smells like. The model represents chemicals as vectors and plots them on a chart based on 21 olfactory descriptors. On this chart, a small angle distance means that two odors are very similar to each other and a large distance means they are different.

In 2014 a research was performed that used the same pool of 144 standardized chemicals but did a different experiment. In this experiment each mixture still had 10 chemicals but there was no overlap in composition. Then people were asked to compare two in a triangle test which turned out to be challenging because intensity was no longer a distinguishing factor. This technique allowed a rapid comparison between a large number of mixtures.

(The audience was given four blotters with different mixtures of ten compounds without overlap and asked to evaluate it on odor similarity. The results were reported on a website through a phone and displayed in real time. One pair of blotters was identical, one was designed to be similar and one was designed to be different)



Angle distance model has digitized mixtures that are all assimilated on intensity levels. In the future we want to be able to extend this to incorporate stimuli that have different intensities. If the parameter of intensity could be included in this model in theory we can take GC/MS values and feed it to the model and get the identity and intensity of all stimuli and figure out to reproduce it.



February Meeting in Philadelphia by Ilya Flaks

“Tasteless: The Technological Making of Gustatory Ignorance”

Christy Spackman, PhD of Harvey Mudd College

Every time we drink a glass of water we consciously or unconsciously evaluate its sensory characteristics. What we don't know is that there are other mouths and noses that are evaluating this water before it gets to our homes. Instead of addition of flavor these people work on deletion of it.

In October of 1979 the metropolitan district of Southern California was flooded with complaints over the worst tasting water since the 1940s. The metropolitan district had no answer for what was causing the off tastes and the investigation did not find anything. It got cold and the flavor went away. In 1980 the smell returned but the metropolitan district was better prepared. They sent scuba divers to lake Mathews, CA briefed by marine biologists to know what to look for. What they came back with was a green gooey blooming algae on the bottom of the reservoir.

This instance raised the question: How do we isolate and find the source of a particular off flavor?

The municipal tap water looks natural but it is what's called “cooked”, deeply transformed by human intervention. One of the biggest problems of water producers is that water carries the tastes of the places it has traveled from and microorganisms from those places.

In 1899 George C Whipple, cofounder of Harvard school of public health pointed out that each region has unique challenges, every water is different, has different geographical histories and different people working with it. Whipple proposed a numerical scale with 1 being what a consumer wouldn't detect but an expert in the lab would and 5 being so disgusting it would be absolutely unfit for human consumption.

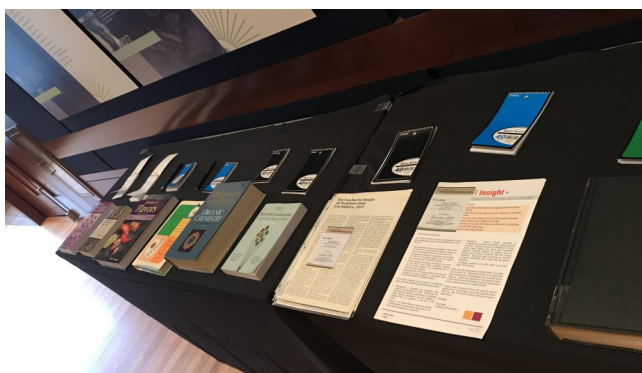
On December 29th 1927 the smell of tap water in Chicago was so bad that the city sold out of all of the bottled water. The water workers of Chicago found out that the winds have shifted and the ice formation pushed waste that were considered to be safely at the bottom of Lake Michigan to the water supply areas. The water workers took a position that industrial waste needs to be disposed of in some matter and it is impossible to terminate industrial pollution altogether. They called for cooperation between the industry and the inhabitants and acknowledging that this is what kept the city going. They came up with the threshold odor number which is the number of times you have to dilute something to reach the threshold of perception. By 1936 this method replaced Whipple's method for treating municipal water and was the only sensory method in use until 1979.

In 1979 when Southern California was having an off odor problem, the water workers realized that their instruments are not as sensitive as the consumer's taste and smell. They had a choice of using connoisseurship or the threshold odor number. The problem with connoisseurship is that it doesn't distinguish one person's judgment for something from another person's. The threshold number also didn't work because the number was too unique to each individual. The metropolitan water district hired Arthur D Little company to teach them the flavor profile technique used in the food industry. Flavor profile analysis brings in consensus instead of a single person's evaluation, allows detail and reproducibility to exist.



Lastly, in 2014 many residents of Flint Michigan complained that the water looked and smelled wrong. The officials failed to take these complaints seriously, they said it was iron and iron is safe. This disaster eroded the trust between the public and the water workers.

The presentations were followed by a guided tour of the library, a silent auction of duplicate volumes and after meeting social.



April Meeting in Cincinnati

by Terry Miesle

The location was the beautiful Art-Deco Hilton (Omni Netherlands) in Downtown Cincinnati.

Lunch was Asian themed, and very good. It's a new menu for the Hilton, I spoke with the manager briefly. He's been there forever and was very excited about these new offerings.

CSA:

Richard Pisano Jr. was the only presenter, and he is concerned about the anti-science forces we find ourselves combating. He wants to take the industry to a more public stance, and wants to start with the students since they can hopefully influence their peers.

Consumers are bombarded by anti-science advocacy which is only concerned with increasing mistrust. This is part of the broader "death of expertise" phenomenon we see in all areas of health and science. Millennials are highly influenced by this, as part of a shift in demand. Relying on Sound Science isn't enough, we're losing the public trust by merely playing defense.

His approach is an educational presentation showing the history of food laws and FEMA's foundation and activity. He also focuses on what GRAS means – dose and application is the key to safety. At the proper dose and application none of these items are unsafe, and FEMA has a constant review procedure to continuously examine ingredients for safety based on newest information.

Overall, I think it's a good approach with a few issues. First, Food Science students will already be familiar with the history of food laws and GRAS determination. This can be condensed quite a bit. If this can be accomplished, I think presenting to science students generally has merit. Ideally a presentation targeting science-literate audiences can help give them information and understanding.

The meeting concluded with a presentation by the 2018 Jaggard Award winner Madeleine Bee, who presented: "Automated and spatially resolved high-throughput volatile analysis by direct analysis in real time mass spectrometry"

The gold-standard approach for trace-level volatile analyses is gas chromatography-mass spectrometry (GC-MS), often used in combination with a sample preparation technique like headspace solid phase microextraction (HS-SPME). HS-SPME GC-MS is limited by its low-throughput, requiring 30-60 minutes per sample, not including sample preparation or instrument stabilization. Direct Analysis in Real Time (DART), an ambient ionization method similar to APCI, is well suited to analysis of low molecular weight, non-polar compounds like most volatiles. Volatiles can be pre-concentrated prior to DART-MS analysis using sorbent meshes, an approach referred to as solid-phase mesh-enhanced sorption from headspace (SPMESH). In recent work, we show that thin laser-etched polydimethylsiloxane (PDMS) SPMESH sheets can be positioned in the headspace of a 24 well plate for parallel extraction and pre-concentration of volatiles from multiple samples, i.e. to generate a volatile image of the 24-well plate. Using an automated positioning stage, spots containing absorbed volatiles on the SPMESH sheet can be desorbed on DART-MS at a rate of 5 samples in less than 1 min with a compatible automatic positioning stage. SPMESH-DART-MS was able to achieve ng/L-level limits of detection in proof-of-concept work using 3-isobutyl- 2-methoxypyrazine (IBMP) as a test odorant.



May Annual Meeting in New Jersey

by Peter Rowell

The main event for most people was the CSA Roundtables. Attending any of the roundtable events is valuable for current flavorists and those aspiring to be flavorists. The published turnout at this meeting was 157 registered members and 25 exhibitors. The day began with a check-in where name tags, raffle tickets, reusable tote bags and pens were distributed.

The roundtable events are formatted in block timed sessions where exhibitors introduce attendees to some of their products. In between sessions attendees freely rotate to different exhibitor tables. Products are introduced on blotters, in tasting solutions and in finished food products. This time there were many new and innovative products such as organic certified essential oils, newly developed natural materials, molecules with high FEMA numbers and materials trending in the culinary and bar scenes. Elderflower was widespread throughout the room it seemed. The socializing in between sessions was so intense it even kept many people from checking their raffle tickets during the prize drawings.

There was a buffet style lunch in between the session blocks, during lunch many exhibitors were available for discussion. This type of personal interaction was far more favorable than just reading through exhibitor-provided literature. An entrepreneur interested in the extraction and manufacturing of cannabis terpenes for the emerging legal industry introduced himself to some of us.

Michael Monterosa of Bell Flavors & Fragrances, was acknowledged for his time as President of the CSA and Bill Aslanides of Synergy Flavors, was welcomed in as the new 2018-2019 President.



May Annual Meeting in New Jersey (cont'd)

After the last roundtable the SFC Business Meeting was held where four new certified members and a new slate of officers were voted on.

The meeting was followed by cocktails and dinner. The main presenter was Vaidhyanathan Anantharamkrishnan, doctoral candidate in Food Science and Technology at the University of Minnesota and Jogue Scholarship recipient. Vaidhyanathan presented on "Protein and its Interaction with Flavor". He started with identifying the sources of proteins in products and describing the off notes from each protein source which led to addition of flavors as solution. He showed individual chemical compounds and the myriad of potential reactions that can occur. His present study approach was to take pure proteins with different amino acid composition and add different singular chemical compounds at very low amounts and monitor the extent and rate of reactions. His study showed preliminary data on the deterioration of benzaldehyde in pure peptide isolates as well as dairy and plant based protein systems. His continued research plans are to further investigate the interactions of different flavor molecules under different conditions and food compositions. The presentation was well received by the audience and later in the evening individuals approached Vaidhyanathan for discussion.

The evening presentations ended with 25 and 50-year SFC membership recognition. Three recipients were in attendance, Joni Diedrich, for 25 years and David Straus and Michael Mandel, for 50 years. Each recipient said a few eloquent words upon recognition. All spoke of their expression of gratitude and the fulfillment of being an active participant in life and the community.



May Annual Meeting in New Jersey (cont'd)



2018 Jogue Scholarship Winner
Vaidhyanathan Anantharamkrishnan



Vaidhyanathan is currently pursuing his doctorate in Food Science and Technology under Dr. Gary Reineccius at the University of Minnesota. His research topic is "Protein and its interaction with flavors". His another project is on encapsulation of orange oil by spray drying in different carrier systems to find the optimum conditions at which the flavor will be maximum preserved.

Madeleine Bee - 2018 William F. Jaggard Award winner!

Madeleine is a graduate student in Food Science at Cornell University. At the Cincinnati meeting, she presented on a high-throughput analytical technique for flavor volatiles termed DART "Direct Analysis in Real time".



A Place for Flavor Research and Connections: The Division of Agricultural and Food Chemistry of the American Chemical Society

Kathryn Deibler, Ph.D.; Pfizer Consumer Healthcare

There are many opportunities for Flavorists through the Division of Agricultural and Food Chemistry (AGFD) of the American Chemical Society (ACS). The organization brings together persons – those particularly interested in the chemistry of agricultural and food products to foster programs of general papers and symposia on special topics dealing with this field of chemistry and to promote other activities that stimulate activity and emphasize the importance of research in agricultural and food chemistry. AGFD has been, and continues to be, an indispensable association for flavor science with its impactful flavor subdivision founded in 1965. There are approximately 3000 members of AGFD while much of its programming reaches out to the broader ACS membership of 157,000 and to the community. Numerous Flavorists are active members.

AGFD has had a major impact in shaping and advancing my career. As a graduate student, I gave a scientific paper about flavor release from beverages in a symposium organized by Dr. Deborah Roberts and Dr. Andrew Taylor which resulted in the proceedings book entitled Flavor Release. 35 papers were contributed by scientists from around the world on topics ranging from predictive modeling to empirical studies. I benefited from the opportunity to deliver a scientific paper and answer questions about it early in my career. Also in graduate school, I received financial support from the Division with the Roy Teranishi graduate fellowship awarded by AGFD. The competition is always fierce for the graduate and undergraduate paper competitions that I now chair, as well as for the culinary communicating chemistry competition for which I judged.

Flavorists could benefit from the twice a year Division symposia held during the national meetings in the Spring and Fall. Flavor symposia have included:

Taste and Aroma Modulators: Chemistry, Biology and Sensory

– August 2018

110th UMAMI Memorial Symposium

Browned Flavors: Analysis, Formation and Physiology

Challenges in Applied Flavor Sciences

Discovery of Key Impact Compounds for Foods and Ingredients

New Approaches to Analyzing Flavor Compounds

Formation, Stability, and Degradation of Flavor Compounds

Interaction of Flavors with Packaging

Safety of Flavor Compounds

World renowned scientists from around the globe, including flavorists, participate providing an opportunity to share often unpublished and cutting edge research. The speakers are approachable; available after the technical sessions, during the Division reception or banquet, and other activities. A poster session in conjunction with a happy hour offers a chance to interact with the poster authors. AGFD programs are popular across ACS as exemplified by attendance of over 215 in a room that seated 100 during the last conference. AGFD also contributes to international conferences like Pacifichem. An intimate conference focused on flavor science is held about every three years, formerly always in Greece. This conference, The International Flavors and Fragrance Conference, was initiated in Columbia, and held in Wuxi, China in 2018.



ACS Cont'd

Periodically the Division hosts a Flavor Workshop taught by leading scientists from different disciplines such as Terry Acree, Biochemist from Cornell University; Stuart Firestein, Neurobiologist from Columbia University, and Bill Cain Psychophysicist from UC San Diego. The two day workshop is a fun and engaging opportunity to learn about what's new in flavor science with extensive instructor interaction.

Networking is a valuable asset from involvement in AGFD. In addition to the structured Chair's reception or banquet and following the technical sessions, there are many informal occasions to meet flavor scientists at the meetings. It was at one national meeting around 2005 that Terry Acree, Andrew Taylor and I initiated discussions for the formation of the journal Chemosensory Perception that was launched in 2008. The Division's journal, Journal of Agricultural and Food Chemistry has an impact factor of 3.154 and features many discoveries in flavor chemistry. With around 20,000 people in attendance at the ACS national meetings, you are sure to find stimulating discussions around every corner. Active and distinguished members are regularly recognized with several awards and recognitions. The most prestigious award is the Award for the Advancement of Agricultural and Food Chemistry. Flavorists such as Willi Grab, Wilhelm Pickenhagen, and Matthias Güntert have participated in the Division.

Several flavor related webinars have been hosted by ACS. These high quality presentations are broadcasted live with Q&A or may also be viewed at a later time. A recent webinar was given by Gavin Sacks of Cornell University on [The Chemistry of How Wine Flavor Changes During Aging](#). The fascinating production drew in a live audience of 672 sites.

AGFD has transformed my career through forming valuable relationships, providing leadership development, and offering scientific knowledge. These benefits and more may be reaped by flavorists and flavor researchers alike through the Division of AGFD of ACS. Membership in AGFD is just \$10 (ACS membership is \$171) www.acs.org. Find out more about AGFD at <http://agfd.sites.acs.org/>



The Front Page of the Internet: What are “Natural Flavors”?

Shane T McDonald

When I was a kid, if I needed an answer to something, I would have to go to the library or find an expert in the field of inquiry. Now, I just “Google” it. So, out of curiosity, I Googled “natural flavors”. https://www.google.com/search?source=hp&ei=E-6WuKTOoLVjwSm4J-wBw&q=natural+flavors&oq=natural+flavors&gs_l=psy-ab.3..0l10.1825.3896.0.5183.16.15.0.0.0.186.1573.7j7.14.0....0...1.1.64.psy-ab..2.14.1570.0..46j0i131k1j0i46k1.0.oXtGBD9vcKc

Ignoring the ads, Google retrieved ten articles on the first page. Let’s take a look at what people would find.

1 “The gross truth about natural flavors” by Angel Flinn on the website “www.care2.com. Ms. Flinn starts with the opinion that natural flavors is an umbrella term for a lot of pretty horrible stuff, including certain ingredients that come from extreme animal abuse. She quoted the CFR definition of “natural flavors”, suggests you call the manufacturer as to what is in the flavor, but said it could come from “the sex glands of beavers”!

2 “The truth about ‘natural flavors” by Noah Lehava in www.coveteur.com. He is convinced that the way to good health is to avoid sugars, saturated fats, and any ingredients you can’t pronounce. As far as “natural flavors”, he went to the experts, who in this case was “celebrity nutritionist” Keri Glassmann. She paraphrased the CFR definition, and said that just because a flavor is natural doesn't mean it is better for you. Natural and artificial flavors are used to enhance processed foods that you should be avoiding. She does admit that there are no distinct health risks to natural flavors, but bemoans the lack of transparency. She feels that natural flavors are so processed that they are no longer “products of the earth”.



3 “What are natural flavors, really?” by Amanda Woerner in www.dailyburn.com. This article has a photo of a guy in a white lab jacket injecting a green liquid into an orange. Fortunately, the rest of the article is not that sensational. The article points out how many times “natural flavors” appears on the label (the most common item after salt, water, and sugar). The article asks if “natural flavor” is any different or better than artificial flavor. The paper quotes a scientist “David Andrews, PhD from the Environmental Working Group”, who says that often they are very similar and differ only from the origin of the ingredients. He points out that flavors are added to ensure uniformity, replace flavor lost during processing, or to make it more appealing. Both natural and artificial flavors can contain 50 – 100 ingredients, including additives, carriers and processing aids that can make the bulk of the flavor but minor part of the finished product. Even though it is minor, it is still artificial. The article struggled to find a reason why natural flavors would be bad for you. Another source felt that natural flavors could make food more appealing, and somehow made a comparison between that and purported studies on artificial sweeteners causing weight gain and unhealthy dietary habits. The good doctor pointed out that there is no reason to swear off artificial or natural flavors, it would be better to eat whole foods so you know the flavor didn’t come out of a bottle.

4 Article four was exactly the same article as number three, only from www.cnn.com and with a photo of strawberries and cream instead of the guy injecting the orange.

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5 *Food Q&A: Just what is natural flavoring?* Phil Lempert in www.today.com. This starts with a somewhat unhinged question from a consumer asking what natural flavor is, and why is it in almost everything. She “understood” that natural flavor is made of beef sludge and is loaded with free glutamates (a cousin to MSG) and adds a bit of flavor and perhaps mad cow to foods. She wondered how it can appear on organic food. The respondent, Phil Lampert of USA Today defines “natural flavors” per the FDA, saying that it may or may not contain beef, and that MSG always has to be labelled as such. He then quotes organic regulations and the understanding that if it is not 100% organic than it could contain natural flavor. He said that “flavorists” blend “natural” chemicals or “synthetic” chemicals to produce natural or artificial flavors (lots of quotes). The article quotes Gary Reineccius as saying that natural flavors can be essential the same as artificial flavors except for source of the chemicals, and that artificial flavors may potentially safer as they simpler and make from tested ingredients. Natural flavors are often more expensive. So, natural flavors may be no safer but more expensive than the artificial flavors. The article concludes that organic foods can contain flavors and other non-synthetic ingredients, that you should read the labels carefully and demand that the government enforces labelling regulations.

6 “Attention allergy sufferers: beware of natural flavors”. Sydney Ross Singer in www.foodsafetynews.com called This article purports natural flavors could be a health risk to allergy sufferers. They note the “Big 8” allergens that have to be labelled, but point out that there are people suffering allergies that are not on this list such as citrus or sesame? They then quote the CFR definition of “Natural Flavor” and point out that natural flavor is any flavoring that is not artificial, but that mostly pertains to the source and the products are “highly processed”. Since natural flavors can come from any unnamed source, then an allergy sufferer would not know if they product contains a substance they are allergic to. She suggests that you opt for “whole foods” that don’t have any additives. She conclude that “natural flavors” are a legal loophole and potentially hazardous to sensitive people.

7 “What does the term ‘natural flavors’ really mean?” by Emily Laurence. <https://www.wellandgood.com>. This starts with an interesting statement that “any” nutritionist will tell you to read labels and avoid foods with words you cannot pronounce. I am not sure how pronounceability affects safety. The rest of the article is essentially the same as article three above.

8 “What does ‘natural flavors’ really mean?” by Casey Seidenberg. <https://www.washingtonpost.com>. This a mother answering questions from her boys. She knew that the term “natural “ is unregulated, but that there is a FDA definition of “natural flavors” which does not take into account vegetarians or allergens. She knew many of the reasons for adding natural flavors, such as reducing variability and increasing flavors impact. She quoted some figures from the Environmental Impact Group. For instance, there are 3000 chemicals approved for flavor use, but most are not approved by the FDA but are GRAS. She concluded that many have not been studied thoroughly and the effect of consuming them are not known.



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9 “Is ‘natural flavor’ healthier than ‘artificial flavor’?” Natalie Jacewicz of www.npr.org. She asked nutritionists and flavorists “yes, that is a profession”. Someone from the New York Food Policy Center quoted the FDA definition. A chef from the RCA explained that natural flavors was like cooking on an industrial scale, but the flavor doesn’t have to come from the named source. Gary Reineccius said that using flavors was for cost, availability and flexibility. An example of availability was that at one time using grapes to flavor all of the grape soda made would use ten times the supply. He also explained that flavors can be used to tailor make a flavor profile and not be limited to available grape flavor profiles. All three experts agreed that natural flavors can be almost the same as artificial flavors, and the preference for natural flavors was for the health halo. However, artificial flavors are just as safe and may environmentally friendlier. The chef felt that consumers should lobby Congress for more transparent labelling they know what natural and artificial flavors are so you won’t get “hoodwinked” into buying one product over another due to natural flavors. Reineccius said if you like the flavor, buy it and don’t worry about natural vs artificial.

10 “The Truth About Natural Flavors” by Kate Dwyer <https://www.bonappetit.com> This person went to the Museum of Food and Drink in NYC and was amazed by the aroma of toasted almond by pressing buttons for MCP, benzaldehyde, diacetyl and methyl methoxy pyrazine. She then speculated whether “natural flavor” was essential oil or “a witches brew of toxic chemicals”. So Dave Arnold of the museum pointed out that “natural flavors” and “artificial flavors” can be almost the same thing. Deborah Kotz of the FDZ gave the FDA definition of natural flavor. They quoted a Harvard professor who said than natural and artificial flavors can be made from the same molecules and nutritionally there is no difference. The author made a comment about flavors being “addictive”. This linked to an article that referenced a particularly bad 60 Minutes report where Morley Shafer got a couple of flavors to say that flavors can make food addictive. They then quote Dana Gasiorowski, senior flavorist at IFF saying how they look at the chemical identity of flavors of food to recreate them. For instance, passionfruit is hot right now , but the amount to flavor passionfruit vodka would consume one quarter of the world’s supply. She gives a pretty good description of the flavor creation process. After that, the flavor is made in a plant that is “essentially a giant kitchen”.

The author points out that the FDA doesn’t require disclosure of the ingredients in natural flavor unless is it one of the big 8 allergens, so people with less common allergens need to contact the manufacturer. The author concludes that if you really want to know everything that is in your food, you have to make it yourself from scratch ingredients.

Conclusions:

First, I was surprised that there not more “flavor haters” in this list, but no real flavor chemistry love either. The second point I noticed is that why most people seem to agree that flavors are not a major health problem, it “could be” because the exact list of ingredients is not known, and people are fearful of what they know they do not know. Much of their guiding philosophy on food lacks any scientific basis, such as not eating foods with ingredients you can’t pronounce, or artificial is unhealthy, or processed foods are unhealthy. Finally, they are looking to the government to require more transparent labels.

