



SOCIETY NEWS

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President's Message

Hello and Happy New Year!

I hope everyone along with your families are staying safe and healthy in these ever-evolving times. It's always a very special time of year and please be sure to take time to ensure that you are taking care of yourself, too.



Our fall programs began with a return to in-person meetings which coincided with the Chemical Sources Roundtable on September 9th.

This was our first in-person meeting since February 20th, 2020, and it was great to see once again everyone in person. This was followed by another in-person meeting and return to a well-attended, informative, and interactive Chicago meeting. We wrapped up 2021 with our inaugural joint virtual meeting with the 🇬🇧 British Society of Flavourists in November.

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President's Message *continued . . .*

The speakers and topics were fascinating for this event, and it was the first of many future meetings with our colleagues across the pond. Behind the scenes, the Membership Committee continued with their testing of applicants and ushering in new flavorists into our society, the Website Committee continues to update and refresh the website, the other committees remained active, our Vice-President is evolving the meeting dates for late 2022-2023, our Treasurer has been updating our books and record keeping with a much more modern approach (more details to follow at our meetings), and our Secretary is investigating equipment that can potentially be used as a cost savings for our Zoom business meetings. These are only just some of the highlights, and I would like to thank all the committee chairs and committee members for their continued professionalism and contributions.

For 2022, we have slated some great in-person and virtual meetings, and a save the date notice is attached to this newsletter. So, please mark your calendar and join us at an upcoming meeting. I am pleased to announce that Megan Nolan has accepted the Scholarship Committee Chair position and is already making improvements in the application process. She will be reaching out to some universities and will be reviewing applicants over the next couple of months. I would also like to send a huge thank you to our Membership Committee Chair, Dana Chen, for her continued dedication and relentless hard work during these difficult times. She has been unwavering in her enthusiasm while engaging with our future flavorists and continuing with virtual/in-person testing. She has decided to step down effective January 1st, 2022, but I am delighted to announce and welcome our new Membership Committee Co-Chairs, Aparna Oak and Jonas Chapman. Dana has been training and bringing them quickly up to speed, and I am looking forward to working with them in the New Year!

If anyone has questions, concerns, or would like to become more involved with the SFC, then please reach out directly to me or any of our board of directors. I want to wish everyone a happy and healthy Holiday Season, and I am looking forward to seeing all of you in 2022.

Chris Williams

SFC President 2021-2022

DUES

January 1, 2022

Dear Society of Flavor Chemists Member,

Thank you for being a part of our thriving SFC community. To ensure continued membership, please note annual dues for 2022 are now payable and will come due by **January 31, 2022**.

All dues for Certified, Apprentice, and Affiliate members are to be paid online by logging in to the SFC Website www.flavorchemists.com and proceeding through the payment process whether you wish to pay by credit card or by check.

The preferred method of payment is by credit card as the process is fully automated. Dues paid by credit card are \$75 USD for both domestic and international members.

If you prefer to pay by check, you still must log in to the SFC website and register your payment. Dues paid by check are \$100 USD in the US and \$115 USD for payment in foreign currency. The added fees reflect the additional effort needed to process this payment to cover the bank fees.

While on the SFC website, please take time to review and update your personal information where appropriate. If your SFC Website login information is needed, please e-mail the [Website Committee](#).

If you are a retired Certified member in good standing and wish to become an Emeritus member (exempt from dues payments), then you must apply to the Membership Committee and be approved by the Board of Directors. The Emeritus application can be found in the Members Area of the SFC website. Emeritus members who wish to retain membership should also register to indicate continued interest. No fee will be charged to Emeritus members.

Should you wish to be removed from our membership please e-mail the Membership Committee Chairperson and request removal from the database. Please note that once removed, one will be required to meet membership qualifications for reinstatement.

Please let me know if additional information is needed.

Justin Kozlowski
SFC Treasurer 2021-2023



The Flavorist's Notebook

Challenges and Strategies in Plant-Based Milk Alternatives

By Gregory Griffin

Plant based dairy beverages have been around longer than most people realize. In fact, Soy milk was first commercially available in the United States in 1917. Aseptically packaged soy milk started gaining traction in the United States in the mid-1980s as its nutritional benefits were acknowledged by general consumers.

and the high-water consumption required to produce the product. Both soy and almond based products also share the undesirable attribute of being allergens. Currently, consumers are looking for clean label, allergen free and sustainable sources for plant based dairy alternatives. The desired product attributes tend to complicate flavor development. Utilization of pea protein



Plant-based dairy products are still a hotbed for innovation due to consumer demand for healthy alternatives to animal derived products. Soy milk shares the most similar nutritional profile to dairy milk but has been subject to questions regarding how healthy it is for consumers, particularly with respect to phytoestrogen. Almond milk is another plant-based dairy alternative which suffers from dualism in its attributes. For instance, a benefit to almond milk is its clean flavor profile. Disadvantages to almond milk include its the lack of nutritional substance without fortification

and oat-based products to create alternatives to milk have been on the rise. What is fascinating about tackling projects around pea and oat is that the bases vary heavily from application to application. The tactic of pulling the greatest flavor hits from our library does not always equate to commercial success. Working within these applications requires product specific insight with respect to the active ingredients to make strong flavor suggestions. Unfortunately, our customers are not always able to provide base material or processing parameters.

Challenges and Strategies in Plant-Based Milk Alternatives *continued ...*

So, how do we succeed? I intend to cover some of the common ingredients found in this product category, the challenges these ingredients present, and general strategies I have utilized for navigating these projects resulting in successful flavor creation.

Of the two trending sources described above, I prefer working with oat-based products over pea protein as its flavor profile is easier to mask. Oat milk's biggest hurdle is the saponin content, responsible for causing a bitter taste and the grainy flavor profile. Pea protein comes with an unappealing off flavor that is as notorious as stevia's licorice aftertaste at this point. The off flavor from pea protein presents as "green" and "earthy". As with

products, not all pea proteins are created equal. The intensity and variance of those off notes greatly depends on the ingredient supplier. In addition to the source materials, plant based dairy products can be fortified with vitamins, which imparts bitter taste. Refined oils can be added to boost the fat content of the product. The use of fat drives the need for emulsifiers and stabilizes (gum Arabic, xanthan gum, Lecithin, carrageenan, etc.). While these fat components are not always label friendly, they serve as excellent enhancers of mouthfeel and can be used in flavor delivery solutions. Gums and starches are great for product stability, but also may inadvertently encapsulate flavors used. Replicating the profile of milk also requires the use of sugar or high intensity sweeteners.

In today's market, added sugar is not desirable on

product labeling as consumers are concerned about calories per serving. High intensity sweeteners are great for masking and sweetness but have their own usage thresholds before causing problematic aftertastes or lingering sweetness.

Modulators are a powerful class of ingredients, but sometimes they fix one flavor problem while creating another.

What I would consider the greatest hurdle, however, is the UHT/aseptic processing that plant-based beverages undergo. The UHT process itself is harsh on flavors causing volatilization or oxidation. Benchtop trials require costly Microthermic units which are not at the disposal of every flavor house. Without application creation resources, flavorists may be tempted to try and assess

their flavors by adding them directly into commercialized products from the store; I have seen flavors rapidly disappear overnight by interacting with emulsifiers. Flavors added directly to a finished product also do not undergo UHT processing, so it leaves the actual performance of the flavor undetermined.

When assessing plant-based dairy, there are several variables that make it trickier to develop flavors, over other applications. The first hurdle, especially with respect to oat and pea protein products, is that of the aforementioned "off notes". The base products do not inherently taste good. I have found the highest probability of success occurs when the customer is willing to collaborate with a flavorist during product development. When we see our flavors work in the specific

Challenges and Strategies in Plant-Based Milk Alternatives *continued ...*

Utilizing dual flavor systems—both oil soluble and water soluble can give a full flavor profile . . .

application, any adjustments required are made based upon organoleptic assessments. Unfortunately, I have found that is not an opportunity we are often afforded. Instead, we are often asked to provide flavors based on general project parameters. This is where building ideal flavors for an application must include understanding the

characterizing application components. Engaging with our customer's vendors is an extremely helpful exercise. Working with producers of pea protein and oat derivatives gives us access to experts and their insight into the problematic materials themselves. Applying one sole pea protein masking flavor is likely not going to work on all products. Vendor collaboration allows for proactive masking flavors to be developed. This also applies to flavor modulators. Modulators are a powerful class of ingredients, but sometimes they fix one flavor problem while creating another. I have seen modulators accentuate wrong aspect of the base product making it taste worst. Building specific modulators and masking flavors isn't the only way to bolster your flavor library. We have found that thermally stress testing existing flavors alone under different pasteurization temperatures gives some indication of how a flavor will perform under UHT processing. Another trick is to try attacking these applications in more than one solubility phase. Utilizing dual flavor systems - both oil soluble

and water soluble - can give a full flavor profile while combating encapsulation issues. A dual phase system also allows the flavorist to be more direct in masking specific off notes (E.G., using an oil soluble cream type flavor to address back-end bitterness; while using a water-soluble vanilla flavor to boost sweetness perception.) I have even had some success working small amounts of powder flavors in plant-based beverage applications. The final technique we have had great success with is offering flavors in a modular fashion. Giving your customer pieces of a whole flavor and letting them assemble their perfect solution is especially helpful when you don't have access to their application base. A supplemental benefit in doing this is that it can help foster a common language with your customer, making it easier to provide future services.

At the end of the day, I have a special fondness for this application. One of my favorite aspects of creating flavors is this type of problem solving. Crafting the perfect flavor can be challenging enough; when you can engineer a flavor system that overcomes the number of variables presented above, it is a particularly fulfilling experience. ❖❖



Greg Griffin is a new member having been elected direct to certified membership in October 2020. He currently works for Brookside Flavors & Ingredients in Illinois.



The Flavorist's Notebook

Maillard Reaction Flavor Development

By Jonas Chapman

This article is dedicated to my mentor, Sajid Ahmedi. Without his guidance and support I would not have had the opportunity to enjoy a great career in flavor chemistry. I was a frog in a well until I began my training with Saj.

The Maillard reaction, named for the early twentieth century French chemist, Louis Camile Maillard,



who discovered the reaction while studying kidney disease is the most practiced chemical reaction known to humans. Every day across the world we cook our food which makes it smell and

taste delicious and makes the food safe by killing microorganisms that could harm humans. In 1953, American chemist, John E. Hodge, identified the mechanism for the Maillard reaction while working at the US Department of Agriculture. Hodge's work established the reaction pathways we study today.



Some suggest the name of the Maillard reaction should be changed to Maillard-Hodge reaction to reflect Hodge's contribution.

What is the Maillard reaction? The Maillard reaction is one of two non-enzymatic browning reactions. The second being caramelization. The Maillard reaction is a chemical reaction between amino acids and reducing sugars which produce flavor in the form of

volatile compounds and color (melanoidins). John Hodge's model suggests there are three stages in the Maillard reaction. In the first stage, the sugar (carbonyl group) reacts with a protein, peptide, or amino acid (amino group) to form an unstable glucosamine. Secondly, the glucosamine undergoes Amadori rearrangement where amino-ketose compounds are produced. In the third stage hundreds of compounds are created via many pathways to create diverse functional groups such as pyrazines, pyrroles, pyridines, furanones, furans, oxazoles, and thiophenes. These compounds, in turn, contribute distinctive cooked, roasted, toasted, burnt, meaty, caramel, and nutty flavor notes to the final food product or flavor being created.

How do we as flavorists control the Maillard reaction so it can be reproduced? From a practical flavorist perspective there are several levers we control that contribute to flavor development via the Maillard reaction. The levers are moisture content, pH, concentration of amino acids and reducing sugars, cook temperature and time. While

Maillard Reaction Flavor Development *continued*

deciding on these parameters, I follow the good manufacturing practices established by the International Organization of the Flavor Industry, or IOFI. The IOFI guidelines state the minimum temperature/time for thermally treated flavors is 100 degrees Celsius for fifteen minutes. The maximum temperature/time is 180 degrees Celsius for fifteen minutes. "The processing time shall not exceed ¼ hour at 180°C, with correspondingly longer times at lower temperatures, i.e., a doubling of the heating time for each decrease of temperature by 10°C." (International Organization of the Flavor Industry, n.d.) The maximum pH is 8.0. As a flavorist you manipulate these variables to replicate the authentic flavor associated with the specific desired food product and cooking process. For instance, your customer desires a brothy chicken flavor, and you would like to achieve this by offering a Maillard reaction flavor. How do we do this? First, I consider the food, cooked chicken. I know the composition of raw chicken is approximately 70% water 20% protein and 10% fat and has a pH of 5.3-6.5. I would base my reaction on this data. Next, I would research the amino acid composition of chicken muscle and select individual amino acids for use in the reaction. I would then select a reducing sugar such as, dextrose, xylose, ribose, etc. In my experience, it is the amino acids that drive the flavor compound development more so than the selected sugar with may-

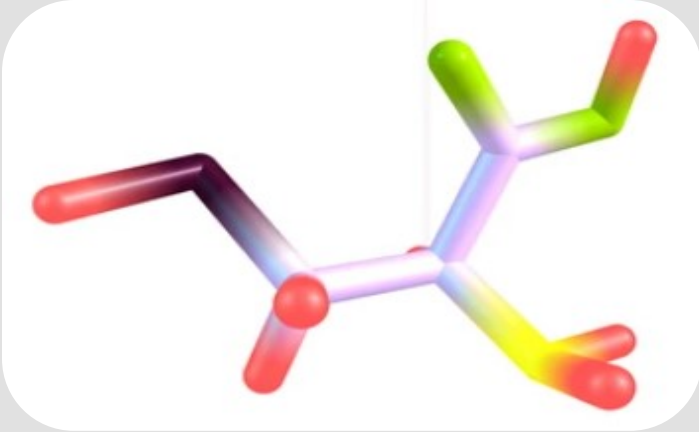


be one exception. That being arabinose. From an organoleptic point-of-view, arabinose use in Maillard reactions tends to generate more furans such as the furan-aldehyde, furfural.

Chicken Broth Flavor Type	
Water	68.16
Tryptophan	0.04
Threonine	1.40
Isoleucine	1.50
Leucine	2.50
Lysine	2.90
Methionine	0.80
Cystine	0.30
Phenylalanine	1.20
Tyrosine	1.10
Valine	1.60
Arginine	2.10
Hisidine	1.10
Alanine	1.80
Aspartic Acid	2.90
Glutamic Acid	4.50
Glycine	1.40
Prolline	1.00
Serine	1.20
Dextrose	2.50

Once you've selected your amino acids and sugars, you need to consider process notes such as roasted, dark roasted, baked, boiled, brothy, grilled, fried, etc. If you'd like to create a brothy chicken flavor you would consider the cooking conditions required to make a broth/stock. The process temperature of making broth is equal to or less than 100 degrees Celsius. Moisture content is high, and pH of the bird is 5.3-6.5. As I formulate, my ratios of ingredients would reflect this.

Maillard Reaction Flavor Development *continued*



The above picture is not a strange balloon animal. It's one representation of the molecular structure of cysteine which is a sulfur containing amino acid that is critical to the development of Maillard reaction meat flavors. Many of these amino acids have a hydrochloric acid moiety, which means this raw mixture of amino acids and sugars will likely have a pH somewhere below 4.0. We use bases such as sodium hydroxide to adjust the pH into the given range of raw chicken meat. Once the pH is adjusted, we must determine the temperature and time parameters. For a brothy or boiled chicken type flavor a temperature of 100C is a good start with the (soak) time being from 15 minutes to 60 minutes. The time can be extended for varying final flavor results, but always consider the time it will take to manufacture in the plant.

Let's say you submit your newly created brothy chicken flavor, and your customer loves it and puts in an order for a whopping 10,000 lbs. a month! Your customer then asks for a flavor like the brothy flavor developed, but a roasted or

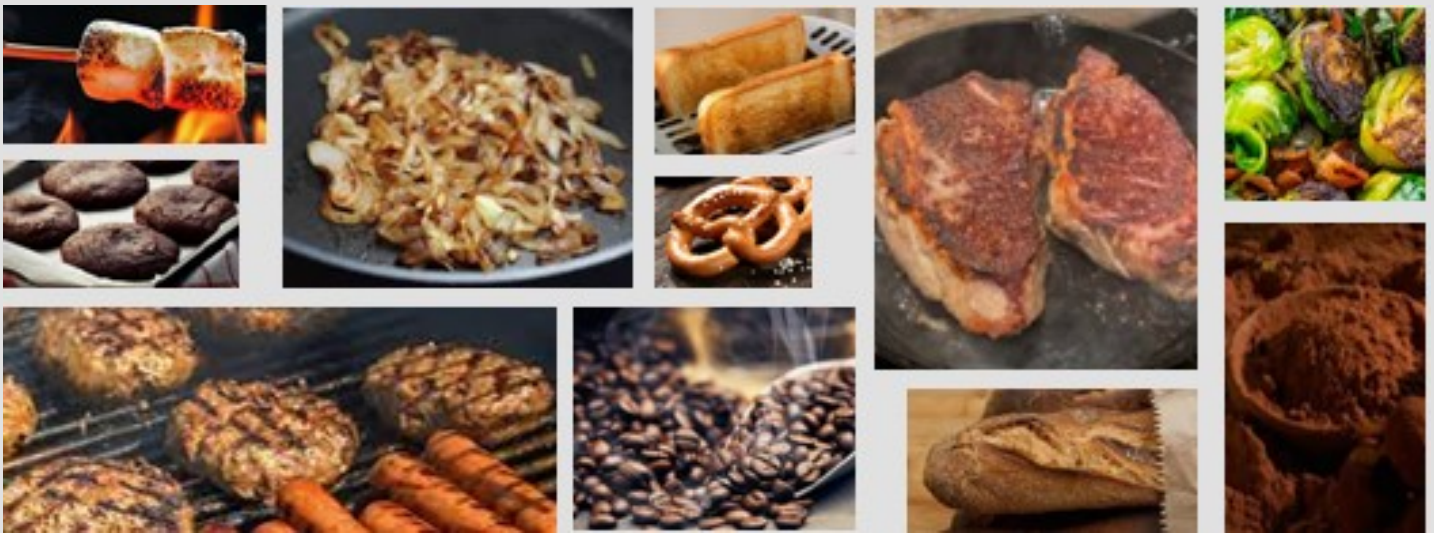
baked version. Based on the considerations for the brothy flavor you made, how would you make it more roasted without introducing new ingredients or processes?

My first step would be to increase the temperature and time if possible (pressure system vs. atmospheric). This will accelerate the reaction and generate roast notes. Secondly, you can increase your solids to reduce moisture content. Think about the differences in broth making and baking the bird. In one process you have boiling water and the other you have an oven at 180 degrees Celsius. The boiling chicken never exceeds 100C degrees Celsius where the baked bird gets roasted and darker as the moisture is driven off in the high heat of the oven. You could also manipulate the pH. Consider Dutched cocoa, or even pretzel making. By increasing alkalinity (maximum pH 8.0), you will create dark roast compounds.



Maillard Reaction Flavor Development *continued*

In summary, I hope this short article will offer a more culinary way to think about the development of Maillard reaction flavors without diving too deep into this very complex reaction and reflect my passion for creating savory flavors. I hope it will inspire a flavorist who has never developed a Maillard reaction flavor to get in the lab and try their hand at this. No batteries required, and special equipment is not necessary. An atmospheric heated kettle or an autoclave will suffice, or you can even use your family pressure cooker. May the Maillard merriment commence! ❖❖❖



Jonas Chapman has been a certified member since 2011. He currently works for Edlong Corporation in Illinois. He is also the new Membership Committee Co-Chairperson.

MEETING NEWS

Educational Meeting of The Society of Flavor Chemists, Inc.
Thursday, September 30, 2021
Virtual Meeting via Zoom

This meeting was recorded. Presentations can be viewed [here](#).




Gary Reineccius Ph.D. - Emeritus Professor in the Department of Food Science and Nutrition at the University of Minnesota - Presenting Flavor Encapsulation

He has been actively involved in flavor research for more than 51 years. During this time he has published over 250 research articles. Dr. Reineccius has spent sabbatical leaves with Fritzsche Dodge and Olcott (New York, flavor creation and encapsulation), Nestle (Switzerland, process flavors) and Robertet S.A. (France, taste modifiers and encapsulation). Dr. Reineccius has taught courses in Food Processing, Food Chemistry, Food Analysis, and Flavor Chemistry and Technology. He has written a college textbook on food flavors: the second edition of this book became available in 2006 and is the only textbook in the flavor area which combines both flavor chemistry and technology (currently being revised). He also has authored the Source Book of Flavors. Dr. Reineccius' achievements have been recognized by numerous local and international organizations and industry. His current research focus is on flavor encapsulation and flavor interactions with proteins. Gary will provide a quick review and an update on flavor encapsulation research. ❖❖❖

Topics

- A brief introduction to the spray drying process (Major process used in industry)
- Quick overview of past learnings
- Update on current knowledge/future exploration

Sept 30th meeting continued ...



VCF online
Volatile Compounds in Food

- Volatile Compounds in Foods -> fragrances that determine flavour and odour
- deduced from scientific literature
- used by professional flavorists
- access by subscription
- long history

VCF-online.nl

VCF Online (www.vcf-online.nl) – The most extensive scientific database of odours and flavours in foods

The VCF Volatile Compounds in Food database lists more than 870 food products. Products are clustered in product groups, such as Seafood, Vegetables or Fruits. Moreover, product categories are given, i.e. combinations of two or more products which can be products belonging to the same family of plant products or materials (for instance all citrus product and Caraway root, seed and herb), products which have undergone different processing steps (like raw, cooked and fried potatoes) or from different raw materials (like cow milk and goat milk). All the information mentioned above is deduced from scientific literature. The VCF database contains in total almost 6400 literature references. These citations are given per product or product category. For each product its identified volatile compounds are given. The concept of product category offers the possibility to aggregate the data for all products within a product category. For instance, to aggregate all volatile compounds in all citrus products. Also, the data for the occurrence of a specific compound in all products within the database can be



William van Dongen is holding a PhD in organic and analytical chemistry. He has more than 30 years of experience in the food and pharma industry as an analytical chemist. During this time, he gained a broad experience in characterization and identification of unknown compounds in complex mixtures. He worked for almost 15 years at TNO in Zeist, The Netherlands where the VCF database was initiated by the late dr. Weurman in 1963. At TNO, he was several years responsible for the analytical flavour and fragrance group and was involved in the development of an analytical platform to unravel complex carbohydrate mixtures in baby food, mother's milk and others. The carbohydrate platform was successfully applied to the infant nutrition constituent galacto-oligosaccharide (GOS) to obtain the FDA status: Generally Recognized As Safe (GRAS). He was also leading a large project on the identification of critical odour and flavour compounds in cognac and beer. In December 2019, William purchased the VCF-online database together with Bert Wiggers. ❖❖❖

Sept 30th meeting continued ...

shown in a more convenient survey. In excess of 9,900 volatile compounds, listed by product, are grouped in 18 chemical classes, such as hydrocarbons, aldehydes, esters, acids, etc. We require that every compound in our database must have been identified by at least two methods, for instance by retention time and mass spectrum. Quantitative data are provided if they are. If necessary, these data were recalculated to the same units. More than 140,000 occurrences are found and registered in the VCF database.

For each individual compound additional information is given, such as CAS registry number, molecular weight and formula, FLno (EU-Flavis number) and FEMA (GRAS) number and a list of synonyms. Also, molecular structures are shown when available. Over 26,000 synonyms are known. All Fema/GRAS numbers (2,916) and their synonyms and the EU-Flavis (Flavouring Information System) data (2,646) are included.

In this presentation, William van Dongen, director content of the VCF-online database will explain what kind of information is present in the database, how VCF-online can be used and how to find the required information effectively. He will demonstrate the capabilities of VCF-online using specific examples. ❖❖❖

MEETING NEWS

452nd Meeting of The Society of Flavor Chemists, Inc.
Thursday, October 21, 2021
Chicago Marriott Downers Grove
1500 Opus Place Downers Grove, Illinois 60515

This meeting was recorded. Presentations can be viewed [here](#).



Danielle Berrigan, Thomas Lauzurica, Luke Roddy from Berje presented

Bittersweet: How Turbulent Industry Changes Have Altered A Growing Candy Market



Oct 21st meeting continued...



Bill Pulia, President of FCI Flavors spoke on **Functional Delivery System and Flavor Challenges in Confectionery**



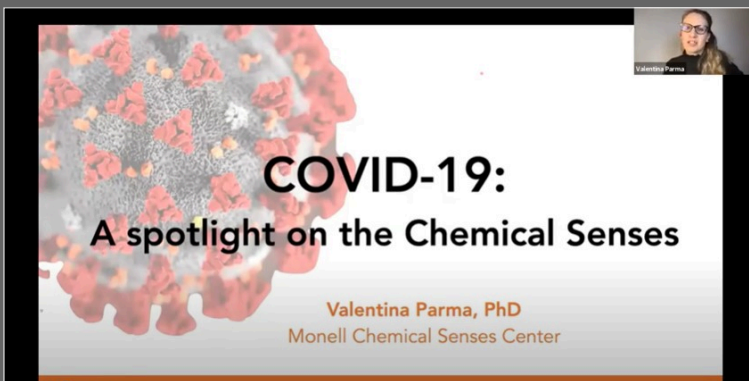
Oct 21st meeting continued...

This meeting was recorded. Presentations can be viewed [here](#).



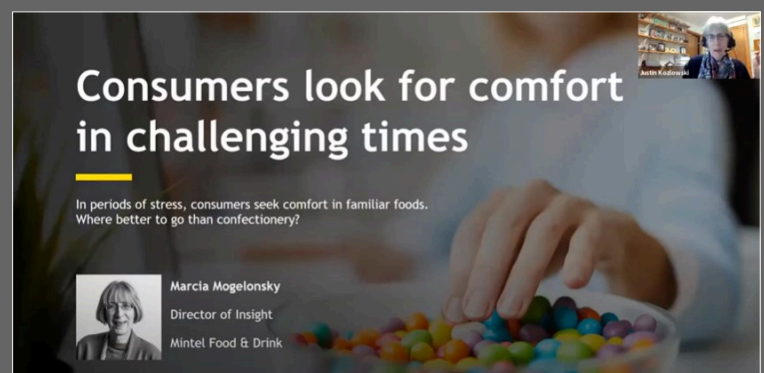
Valentina Parma, PhD, Assistant Director, Monell Chemical Senses Center gave a presentation on

COVID-19: A spotlight on the Chemical Senses



Marcia Mogelonsky, Ph.D. Director of Insight, Mintel Food and Drink gave a presentation on

Consumer Demographics and Trends in Confectionery



Oct 21st meeting continued...



Sponsors speaking on behalf of their candidates for membership

Oct 21st meeting continued...



Newly elected members

Congratulations!

Oct 21st meeting continued...



MEETING NEWS

1st Joint Meeting of the British Society of Flavourists (BSF) and The Society Of Flavor Chemists (SFC)

Thursday, Nov 18, 2021, 7:00 PM UK time / 2:00 PM EST

Virtual Meeting via Zoom

BRITISH SOCIETY OF FLAVOURISTS and THE SOCIETY OF FLAVOR CHEMISTS PRESENT...

BSF x SFC Joint Virtual Meeting

Date: Thursday, November 18th

Time: 7:00pm UK Time / 2:00pm EST

Location: Online Event



Speakers



Joel Mainland
Associate Member,
Monell Chemical
Senses Center

Topic: Digitizing
Olfaction: Predicting
Odor Character from
Molecular Structure



Dr. Peter Schieberle
Food Chemistry Professor
Emeritus, Technical University of
Munich

Topic: The Sensomics Approach:
Elucidating the Importance of
Single Chemical Constituents in
Food Aroma Profiles and Beyond

The first-ever joint meeting of The Society of Flavor Chemists and the British Society of Flavourists was a success. Great attendance of members from both organizations. Aine Walsh, a certified member of the SFC and fellow member of the BSF initiated the idea. Many thanks to Aine and the two boards/program planners for the great collaboration. A new tradition was born.

The Sensomics Approach: Elucidating the Importance of Single Chemical Constituents in Food Aroma Profiles and Beyond

By Univ. Prof. (em.) Dr. Peter Schieberle Faculty of Chemistry, Technical University Munich

Numerous consumer surveys confirm that the main drivers of food acceptance are aroma and taste, thus being the main attributes in any given food determining differences in the flavor signatures. Let's focus on aroma: What makes a food smell good? It is well established today that during food consumption, a certain set of volatile constituents induces a pattern of neural activity in the olfactory bulb located in the nasal cavity. The complex neural patterns generated at the odorant receptor sites are finally "translated" by our brain into a simple perception telling us, for example, the aroma quality of fruit juices. However, since the overall aroma profile of juices is significantly influenced by (i) the fruit variety, (ii) the processing conditions or (iii) the storage, there is a clear need to first understand the aroma signature of the respective fresh product (the gold standard) on the molecular level. Therefore, only analytical methods based on bioactivity guided approaches will finally be able to suggest key aroma molecules for a reliable assessment of food quality, and more important to improve the overall aroma profile of a given product e.g., by optimizing industrial processes. In the past four decades, the Sensomics approach, formerly called molecular sensory science, was developed by our group aimed at decoding the aroma signa-

ture of foods, i.e., the exact quantitative ratio of the set of key aroma compounds causing the aroma perception at the odorant receptor level. As part of the approach, the analytical data are finally confirmed by re-engineering the respective food aroma on the basis of the quantitative data exactly displaying the natural concentrations in the food itself. Using pineapple juice as an example, in the first part of the talk the approach how to characterize complex aromas by breaking down the overall aroma sensation into single "molecular" odor responses will be presented. Clarification of a thermally induced off flavor formation in pineapple juice and molecular reasons for aroma losses during storage of NFC orange juice will be shown. In the second part of the talk, data on systematic structural modifications in selected key food odorants aimed at characterizing important odotopes, and results on the fate of aroma compounds in the human body beyond perception in the nasal cavity will be discussed. In the last part of the lecture, briefly a new Sensomics based method, assigned as "machine smelling", will be presented on red wine aroma compounds without the need of GC/olfactometry. This method will make it possible in the future to detect, quantitate and select key food odorants with a single analytical platform.

❖❖❖

Digitizing Olfaction: Predicting Odor Character from Molecular Structure

*Joel D. Mainland, Adjunct Assistant Professor
Department of Neuroscience, University of Pennsylvania*

If you have a modern phone you can capture a visual scene as a photograph, alter it, send it to a relative in another country in an instant, and store it so you can look at it for years to come. None of this is currently possible in olfaction. In vision and audition we know how to map physical properties to perception: wavelength translates into color and frequency translates into pitch. By contrast, the mapping from chemical structure to olfactory percept is poorly understood, limiting our ability to describe and control odors. This, in turn, limits our ability to understand how the olfactory system encodes perception. Olfaction has a higher dimensionality than the other senses, but recent models have shown that with enough data, machine learning techniques can predict human perception from molecular structure. We hypothesized that the rate-limiting step for building a model that predicts human perception from molecular structure is the collection of high-quality psychophysical data. Here I will discuss our work towards predicting the intensity and character of both single molecules and complex mixtures. This will allow us to predict the odor of novel molecules and mixtures and paves the way toward digitizing odors. ❖❖❖

***Dr. Joel Mainland** earned a Ph.D. in neuroscience from UC Berkeley, where he studied the effects of sniffing on olfactory perception. He then worked at Duke University where he studied the molecular biology of human olfactory receptors. He is now an Associate Member at the Monell Chemical Senses Center, where his laboratory examines the relationship between molecular structure and olfactory perception. ❖❖❖*

MEMBER NEWS

Candidates elected on October 21, 2021

Congratulations!



Mary Gromlowicz

Tastepoint by IFF

Upgrade to Certified

My name is Mary Gromlowicz. I am a savory chemist with Tastepoint by IFF. I became an apprentice member of the society in February 2019 and I am looking forward to becoming a certified member. I love the way flavor chemistry is a unique blend of art and science. I have a passion for learning and sampling new foods. I enjoy the element of discovery flavor chemistry has where there is always something new and exciting to try.



Melanie Cendana

IFF

Apprentice

My goal was always about food. I started college as a journalism major because I wanted to be a food critic. I later found out about food science and with that degree I hoped to work on ice cream, astronaut food or flavors. I read Fast Food Nation in college and set out to work for IFF, luckily landed a summer internship with them and they took me on full-time as a Beverage Technologist. Four years later I was given the opportunity to participate in one of the greatest flavor training programs in the industry. And every day since then, I am so thankful to be immersed in a career that I love, surrounded by scientists and artists, and together we make the world a better tasting place.

MEMBER NEWS

Candidates elected on October 21, 2021

Congratulations!



Anishka Grover

Flavor Dynamics

Apprentice

I first discovered my passion for flavors in a Food Product & Development lab taught by Professor Paula Figoni at Johnson & Wales University. I was granted with the amazing opportunity to intern at Flavor Dynamics, Inc. where the employees and the lab's passion for flavors was contagious. The teaching environment that Dolf always fostered helped me cultivate a strong foundation as a Flavorist. I continued to take this passion to Firmenich where I was able to learn from many talented Flavorists and Master Flavorists. I like to continue to have creative outlets outside of flavor creation by woodworking, sewing and learning hand embroidery.



Hunter Pickett

Flavor Insights

Apprentice

My name is Hunter Pickett and I am currently an aspiring Flavor Chemist at Flavor Insights. I live with my wife and newborn son in the San Francisco Bay Area. Living in the Bay Area, I am very fortunate to live out my favorite hobbies of mountain biking and hiking. I have a passion for food and cooking which got me interested into the Food and Flavor Industry and how I found my passion for flavor creation.

MEMBER NEWS

Candidates elected on October 21, 2021

Congratulations!



Amy Zembrodt

ZoomEssence

Apprentice

I have a BS in Biology from the University of Indianapolis. I began my career in the flavor industry at Givaudan Flavors as a QC Tech in 2008. In 2011 I transferred into Flavor Creations for savory flavors where I began to learn about the world of flavors. In 2016 I accepted a position in Flavor Creation at ZoomEssence. I am now working in a role I have always dreamed about - developing flavors for ZoomEssence's patented drying systems. When not making delicious flavors, I enjoy spending time with my husband and two step sons. I have two spoiled rescue pups, and enjoy floating around on our boat in the summertime.



Emily Ferraro

HB Taylor Co.

Apprentice

I stumbled upon the flavor industry after being recruited from a compounding pharmacy. I started my career in 2013 at FONA International where I formed a solid foundation of information and skills before transitioning to HB Taylor in 2017. At HB Taylor, I developed and honed my skills and talents working on flavors of many profiles for many applications. I am so glad I found this career and people to nurture my development.

MEMBER NEWS

Candidates elected on October 21, 2021

Congratulations!



Eric Oros

Brookside Flavors & Ingredients

Direct to Certified

I currently reside in the western suburbs of Chicago with my wife, son and daughter who constantly keep me on my toes. I was introduced to the flavor industry when I started as a Quality technician 10 years ago. A position soon opened up in Research and Development and I haven't looked back since. I currently focus on creative projects, matching projects and some flavor application work under our certified Flavorists. Outside of work, I enjoy playing basketball and watching almost any sporting event while enjoying as much time with my family as I can.



Jeffrey Budlove

HB Taylor Co.

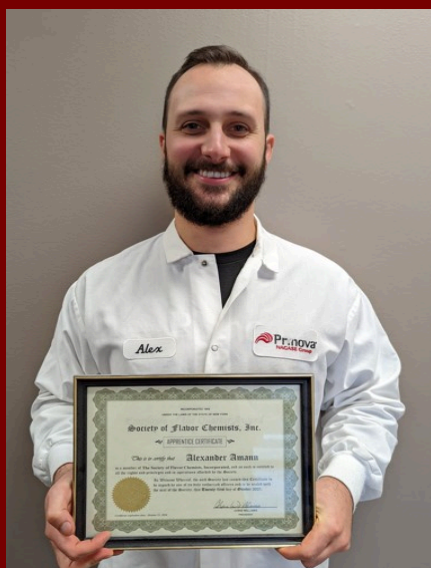
Apprentice

My name is Jeffrey Budlove. I grew up in the south suburbs of Chicago and have since moved into the city proper. I was unaware of the flavor industry until I was applying for my first job at a flavor house and have loved the industry ever since. In my free time, I enjoy taking my dog, Bear, for walks along the lakefront and cooking new and exciting types of cuisine.

MEMBER NEWS

Candidates elected on October 21, 2021

Congratulations!



Alexander Amann

Prinova

Apprentice

I am a Flavorist in Training at Prinova Group, and have been with the company for 5 years. I hold an M.S. in Food Science with a focus in flavor chemistry from the University of Minnesota. Upon completion of an undergraduate degree in Food Science, I joined Dr. Devin Peterson and Dr. Gary Reineccius' Flavor Research and Education Center (FREC), a partnership between academic researchers and industry leaders focused on the creation, exchange, and application of knowledge to drive innovation in the food flavor market space. I spent a majority of my graduate research focused on off-flavor discovery and mitigation, eventually defending my thesis on understanding the chemical pathways involved in storage-related flavor degradation and off-flavor formation of apple and orange juice products. I have always had an interest in the creative aspect of flavor chemistry, which resulted in the decision to join a flavor house to pursue certification with the Society of Flavor Chemists. Over the last five years, I have focused on learning everything I can about flavor creation, while contributing to the growth of Prinova Flavors. I have a passion for learning, a drive for collaboration, and a deep respect for the flavor industry. My career aspiration is to utilize his analytical background in combination with my creative learnings to push the flavor industry forward. In my free time, I enjoy cooking, travelling abroad, producing music, playing video games, comedy, and enjoying all of what life has to offer. I currently reside in Chicago, IL with my fiancé, Emily.

MEMBER NEWS

Candidates elected on September 9, 2021

Congratulations!



Marlene Baranzika

Foodarom

Apprentice

I was born in the Congo, moved to South Africa and now call Canada home. I graduated with a BTech in Food technology from the Tshwane University of Technology in South Africa. Upon graduating I worked in seasoning manufacturing where I discovered my passion for flavors. Later I joined Foodarom as a junior flavorist. I enjoy basketball, reading about history and love vanilla ice cream. I live in Chateauguay, QC with my husband Papy and our 1-year old son Sifa.



Rosalie Domingo

Sensient

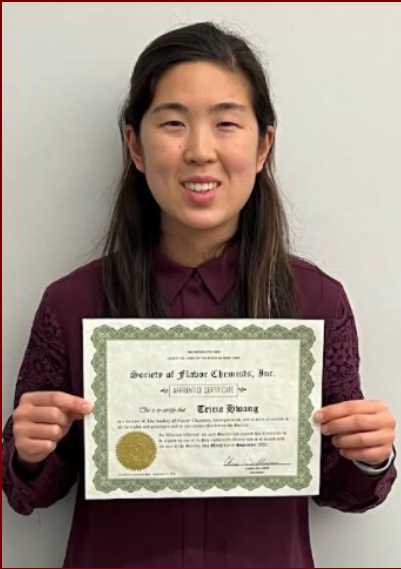
Direct to Certified

I was born and raised in the Philippines. My first job was in a flavor house after I moved here in the United States. This paved the way for me to discover the flavor chemistry profession. I found it fascinating and fun when I started compounding flavors by mixing different aroma chemicals that turned into a delicious flavor. I am very passionate in creating flavor. For me, it is a combined manifestation of art, science and creativity of a Flavorist and immensely rewarding.

MEMBER NEWS

Candidates elected on September 9, 2021

Congratulations!



Tricia Hwang

T. Hasegawa USA

Apprentice

I have been fortunate to spend all my childhood, college, and adult years in sunny Southern California. After graduating from Cal Poly Pomona with a BS in Food Science, I spent three years working in San Diego, CA but returned back to Los Angeles/Orange County where I have been a part of the T. Hasegawa USA team in Cerritos, CA since 2018. When not creating delicious flavors, I enjoy spending time outside running, snowboarding, hiking, triathlons, cooking, and hanging out with friends and my dog.



Lindsay Kirchner

Kalsec

Apprentice

I received a Bachelor's of Science in Biomedical Sciences and a Bachelor's of Arts in Criminal Justice from Western Michigan University. I began my career at Kalsec, Inc in the sensory department in 2010 and soon after added flavor development to my responsibilities. I officially joined the Spice & Herb Flavor Extracts team in 2016. Recently, I joined the Hops and Brewing Innovation team, bringing my expertise in sensory and flavor creation to beer and other beverage applications.

MEMBER NEWS

Candidates elected on September 9, 2021

Congratulations!



Alexandra Nicoletti

Robertet Flavors

Upgrade to Certified

I have always been intrigued by food and the sciences! I remember at a young age entering my first F&F house staring in awe at all the “magic” being created in the lab. It is that memorable experience that has stuck with me throughout the years. In my spare time, I love to cook different cuisines and bake intricate, delicious desserts. I like to travel globally to experience new cultures and indulge in the native cuisines. I apply what I have learned in my travels, kitchen and even my knowledge from the applications lab; to becoming a better flavorist. Every flavorist is unique and I believe it is the experiences one endures in life that helps shape their career and adds to their creativity which is essential to being a successful flavorist.



Anastasia Tabachnikov

Sensient

Upgrade to Certified

My name is Anastasia Tabachnikov. I have been a part of the flavor industry for over eight years, starting out as a Savory Lab Technician at Bell Flavors and Fragrances. I was a double Major in Chemistry and Psychology for my Baccalaureate. Originally, I wanted to have a career in Pharmaceuticals, however after starting out in the flavor industry I decided that becoming a Flavor Chemist was more suited for me. In between work and raising my son, I enjoy spending time with family and friends, reading and traveling when possible.

MEMBER NEWS

Candidates elected on September 9, 2021

Congratulations!



Amelita Vinas

FlavorSum

Upgrade to Certified

I am a graduate of Adamson University, Manila Philippines, where I received Bachelor of Science in Civil Engineering. After immigrating to Canada in 2003, I decided to make a change in career direction and studied Pharmaceutical and Food Technology. I have been working in flavor industry since 2006. I worked first at Sensient Flavors Canada for eight years under the mentorship of a certified flavorist. When Sensient closed its facilities in Canada in 2014, I began working at Bonnie & Don Flavours Inc., where my main responsibility is matching flavors. I love to travel and spending time with family and friends.



Chris Waymeyer

ADM WILD Flavors & Specialty Ingredients

Apprentice

I have worked in the flavor industry for 14 years. I am married and three children (10, 8, and 6). When I am not working and chauffeuring my kids off to school, sports, and recreational activities, I try to stay active myself. I run, play soccer and volleyball. I also help coach my kid's soccer and basketball teams. I enjoy watching and going to sporting events. I love to cook which is because my wife does not. I love music and occasionally take a stab at playing the guitar.

MEMBER NEWS

Candidates elected on September 9, 2021

Congratulations!



Teng Zhao

MPL Brands

Apprentice

I was born and raised in Confucius hometown Qufu, China. Growing up, I have always been sensitive on taste and smell and always like to try and explore new foods. Having the career in flavor industry and beverage industry is truly a dream come true. I also love running, practicing yoga, and spending time with my family and friends. I obtained my Bachelor's Degree in Medicine from Shandong University and a Master's Degree in Nutritional Science from the University of Minnesota, Twin Cities.

COMMITTEE UPDATES

MEMBERSHIP COMMITTEE CO-CHAIRS



Jonas Chapman

has been a certified member since 2011. He currently works for Edlong Corp. in Illinois



Aparna Oak

has been a certified member since 2017. She currently works for Imbibe in Illinois.

SCHOLARSHIP COMMITTEE CHAIR

Megan Nolan

earned certified membership in Oct 2020. She currently works for ADM WILD Flavors & Specialty Ingredients in Kentucky.



MEDIA COMMITTEE

We have a YouTube channel!

We created a channel in YouTube to be able to upload and store our videotaped educational meetings for all to be able to access.

Go to [SFC YouTube Channel](#)

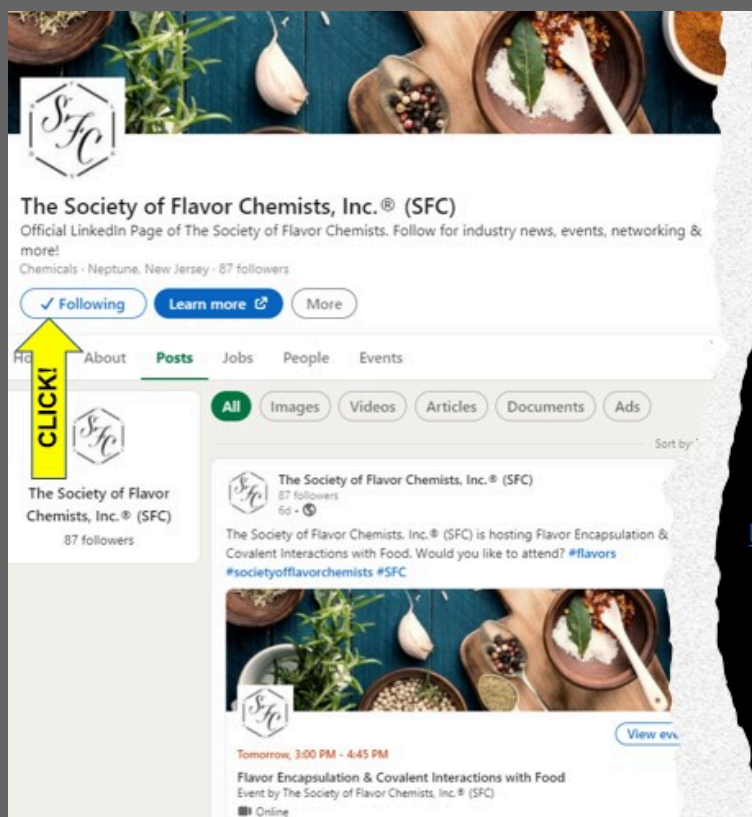
The screenshot displays the YouTube channel page for 'SFC Videos'. At the top left is the channel logo, a hexagon containing the letters 'SFC'. To the right of the logo, the channel name 'SFC Videos' is shown, along with '2 subscribers'. Below this is a navigation bar with tabs for 'HOME', 'VIDEOS', 'PLAYLISTS', 'CHANNELS', and 'ABOUT'. Under the 'VIDEOS' tab, there is a section for 'Uploads' with a 'PLAY ALL' button. Two video thumbnails are visible. The first thumbnail is for a video titled 'SEPTEMBER 2021 SFC EDUCATIONAL MEETING' with a duration of 1:25:11. The second thumbnail is for a video titled 'October 2021 SFC Chicago Meeting' with a duration of 2:36:50. Below each thumbnail, the video title is repeated, followed by the view count and upload date: '17 views • 1 month ago' for the first video and '36 views • 1 month ago' for the second.

more on MEDIA

We have a updated and refreshed our LinkedIn group site.

Follow the Official SFC LinkedIn page here

<https://www.linkedin.com/company/society-of-flavor-chemists-sfc>



Are you following us on LinkedIn?

Curated industry content

Meeting and event notifications

Industry news

Network and engage with Flavorists

Job postings

Follow the Official SFC LinkedIn page here:

<https://www.linkedin.com/company/society-of-flavor-chemists-sfc>

See you there!

Alison Freedman

SFC Media Chairperson 2022

Questions/comments/feedback : media@flavorchemist.org



Alison Freedman is the current Media Committee Chairperson. She is an active certified member since 2018. She currently works for Firmenich. For questions, suggestions, or feedback regarding the Media Committee, she can be reached at Media@flavorchemist.org.

CALENDAR

Thu, Jan 27, 2022	West Coast Meeting in Anaheim, CA Registration open. For details, click here .
Thu, Feb 24, 2022	East Coast Meeting Virtual Meeting via Zoom. Details TBD
Thu, Mar 10, 2022	CSA / NAFFS / SFC California Roundtable in Anaheim, CA Attendee registration details coming soon.
Thu, Apr 21, 2022	Midwest Meeting in Cincinnati, OH Tentative, details TBD
Tue, May 10, 2022	CSA Roundtable & SFC Annual Meeting in Newark, NJ Details TBD



Editor's Note If you would like to submit an article, announcement, and /or message relevant to our membership body, and any questions, suggestions, or feedback , please do not hesitate to contact Elsa Howerth at elsa.howerth@kerry.com