



**Chicago Section**  
Institute of Food Technologists



## *the First Section*

### December 2013 Meeting Recap & January 2014 Meeting Invitation

#### New Approach to Discovery in Food Flavor

Gary Reineccius, Ph.D., Professor and Head of Department,  
Department of Food Science and Nutrition, University of Minnesota

I was pleased to see so many people at the December dinner meeting of the Chicago Section IFT! The Section had 135 people attend – a fantastic turnout considering the weather was a bit frightful!

We were fortunate to have Dr. Gary Reineccius as our speaker. Currently, Dr. Reineccius is Head of the Food Science and Nutrition Department and also co-Director Flavor Research and Education Center; both from the U of MN. Dr. Reineccius' achievements have been recognized by several local and international organizations. He is an honorary member of the Society of Flavor Chemists. He has been granted the Palmer Award for his contribution to chromatography by the Minnesota Chromatography Forum. He has received the Distinguished Achievement and Service in Agricultural and Food Chemistry Award and been honored by being made a Fellow by the American Chemical Society. He has been presented the Stephen S. Chang Award by the Institute of Food Technologists (first flavor chemist to be so honored). These are the highest awards given to individuals in the flavor area. In 2006 he was selected to receive the new FEMA (Flavor Extract Manufacturers Association) award. This award comes from the largest flavor industry association in the US. His selection as the first recipient of this award reflects their opinion of his standing in the profession.

Dr. Reineccius first presented the history of flavor analysis – which has been around for about 50 years so is a considered a relatively young science. Initially the approach was to identify all molecules present, followed by studying the Maillard reaction, then quantifying molecules, then statistical relationships to differentiate food flavors, flavor interactions, identification and quantitation of odorants deemed potent, followed by aroma release. While significant progress has been made, a complete understanding remains unachieved.

Dr. Reineccius proposed the next generation of flavor analysis: chemometrics (flavometrics), which is a comprehensive, data-driven, multi-disciplinary approach. The approach is that all instrumental data collected are valuable *a priori* (not restricted to earlier “thinking”) to allow for an unbiased view of the food system. Chemometrics are employed to utilize mathematical & statistical tools to make rationale analysis of the chemical measurements. It became clear why chemometrics are needed: large data sets with multiple variables are obtained hence the need for data visualization and interpretation. The discussion gave an example of mandarin fruits, followed by the potential challenges and shortcomings of this approach.

### Chicago Section IFT January Dinner Meeting Invitation

**Topic:** Analytical Challenges in Emergency Response to Chemical Contamination Events in Foods

**Speaker:** Gary Doug Heitkemper, Ph.D. Inorganic Laboratory Branch Director, Forensic Chemistry Center, U.S. Food and Drug Administration

Dr. Heitkemper earned a B.A. in chemistry from Wittenberg University in 1985 and a Ph.D. in analytical chemistry from the University of Cincinnati in 1989. That same year, he joined the FDA as a research chemist in the newly established Forensic Chemistry Center (FCC). He spent most of the next 16 years as an analyst, researcher, and team leader working primarily in the fields of elemental analysis, elemental speciation, and ion chromatography.



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From 1998 to 2006, he served as the project officer on several Interagency Agreements with the U.S. EPA developing methodology to measure individual arsenic species in a variety of foods in support of drinking water regulation. In 2006, he was selected as the Inorganic Laboratory Branch Director. FCC is an ASCLD accredited crime laboratory, which has also become recognized as a leading problem solving laboratory for FDA. The Forensic Center provides national support in cases of product tampering or adulteration, counterfeit food and drug products, illegal or unapproved drugs, and fraudulent foods, drugs or medical devices. FCC counter terrorism related responsibilities have included development of screening methods for select agents, toxins and poisons for use in FDA field laboratories and FERN laboratories. Dr. Heitkemper is currently a member of the FDA Office of Foods and Veterinary Medicine's Science and Research Steering Committee and serves as the Chair of the Chemistry Methods Validation Subgroup. He recently was named to the ACRA's Advisory Council on Food /Feed.

The FDA's Forensic Chemistry Center (FCC) provides laboratory support and problem solving capabilities in emergency response to events of chemical adulteration and contamination of foods. Contamination may be intentional as in cases of product tampering, economic adulteration, and terrorism. Unintentional contamination, such as in cases of environmental or process induced contamination, have also required emergency response. Typically, a broad based approach is used to initially characterize the contamination using a variety of analytical tools and when possible provide information about the source of the contamination. Once a problem is characterized, it is often necessary to focus the required analyses and to transfer methodology to additional laboratories.

A number of factors must be taken into account when responding to these emergencies including, for example, choice of appropriate methodology, validation requirements, instrument availability, method complexity, and analysis time. Several case studies encountered over the past few years will be presented including melamine in pet and human foods, Gulf of Mexico oil spill response, and arsenic in fruit juices and rice.

Date: 13-January-2014

Location: Maggiano's Little Italy, 4999 Old Orchard Center, Skokie, IL 60077 (847) 933-9555

John Budin, Ph.D.  
Program Committee Chair, and Chair Elect CSIFT