



262nd ACS National Meeting & Exposition
August 22 – 26, 2021
Atlanta, Georgia, USA

Symposia Listed Alphabetically



Call for Papers
262nd ACS National Meeting & Exposition
August 22 – 26, 2021
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2021 ACS International Award for Research in Agrochemicals:

Receptor / Channel Targets of Chemicals
Controlling Insect and Nematode Pests, Vectors, and Pathogens

Purpose of Symposium

This symposium is in honor of Dr. David Sattelle, recipient of the 2021 International Award for Research in Agrochemicals.

The symposium will interest chemists, biochemists, and biologists working in academia, industry, and the public health sector with interests in crop protection, animal health, and the control of major insect vectors of human disease. Advances in functional genomics have enhanced our understanding of the molecular targets of chemicals used to control insects and nematodes targeting crops as well as pests and parasites of farm livestock.

The need for a larger global harvest, while meeting sustainable goals is a major challenge. Controlling insect vectors of human disease is threatened by resistance, and there are unmet clinical needs for the control of parasitic worms that impair health and trap millions in poverty. Ligand-gated ion channels and G-protein coupled receptors feature strongly in the presentations. New ligands of natural and synthetic origin are highlighted as well as new targets. How to strengthen the pipeline of new chemistry in this field and circumvent the onset of resistance will be discussed.

Suggested Topics

- Ligand-gated ion channels, voltage-gated channels and G-protein coupled receptors; targets for insecticides
- Co-factor enabled functional expression
- Pest and pollinator insecticide targets
- Target site structural studies and pharmacology
- Receptors for acetylcholine, GABA, L-glutamate
- Splicing, editing, and ligand-induced subunit switching highlight the complexity of molecular targets
- Fungal products with insecticidal activity
- Insecticides and repellents in the control of pests and insect vectors
- Anthelmintics and nematicides; control of nematode parasites of plants, animals, and humans
- Chemical challenges for the future of pest control

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***Advances in Vector Control and Insecticide Science –
Early Career Symposium***

Purpose of Symposium

Arthropod vectors of medical, veterinary, and agricultural diseases are significant threats to public health and food security, worldwide. While chemical insecticides remain one of the most effective tools in combatting these pest populations, physiological and biochemical resistance to these agents is limiting their efficacy. This ACS-sponsored symposium series will highlight advances in the field of vector control. Contributors will discuss the importance of characterizing novel biochemical targets, the development of novel insecticides/repellents/synergists, and the implementation of novel pest control paradigms that have the potential to overcome insecticide-resistant populations in diverse environments.

The goal of this symposium is to bring together scientists with diverse research programs to bolster collaboration and future research projects. We aim to devote a section of this symposium to highlight the research of early career scientists who are developing novel vector control chemistries and technologies.

Suggested Topics

- Biochemical targets of new insecticides
- Mosquito and tick control
- Overcoming insecticide resistance
- Insect-host interactions and repellents
- Novel synergist development
- Early career science
- Agricultural disease vector control

For further information, contact the organizers

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Analytical and Regulatory Strategies for Chiral Agrochemicals

Purpose of Symposium

Approximately 30 percent of agrochemicals are chiral. Stereoisomers of agrochemicals may differ in activity and toxicity, which brings significant challenges to analytical method development and related safety evaluations. Recently, EFSA has issued regulatory guidance on risk assessments for plant protection product (PPP) active substances that have stereoisomers as components or impurities or generating transformation products that may have stereoisomers.

This symposium will provide a platform to discuss regulatory strategies for risk assessments of PPP active substances or impurities containing stereoisomers and those active substances generating transformation products that may have stereoisomers, including data generation and assessments. In addition, analytical methods and technologies for the determination of actives, impurities, and transformation products in formulations and in plant, animal, and environmental samples involving separations of stereoisomers (diastereomers and optical isomers) by chromatography or other techniques will be discussed. Other ACS divisions that may benefit from this symposium are ANYL and ENVR.

Suggested Topics

- Regulatory strategies for risk assessments of plant protection product active substances containing stereoisomers as components or impurities or generating transformation products that may have stereoisomers, data generation, and assessments
- Chiral separation technologies for agrochemical actives, impurities, and transformation products
- Advances in analytical technologies for separation of stereoisomers (small molecules)
- High-throughput analysis of chiral compounds (small molecules) at trace levels
- Proposals or examples of how to conduct risk assessment of stereoisomeric residues
- Case studies where stereoisomers are evaluated

For further information, contact the organizers

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***Analytical Technologies in Agrochemistry:
Sample Preparation and Chromatographic Separation***

Purpose of Symposium

Sample preparation and chromatographic separation are two essential components in agrochemical research. Both can become challenging especially when working with complex matrices, physicochemically diverse compounds, and/or stereoisomers. Despite enhanced sensitivity in analytical instrumentation, advances in sample preparation and separation techniques are required to enable more sensitive and specific sample analysis from challenging matrices in studies at various stage, *e.g.*, metabolism studies, residue studies, and early phase discovery studies.

The purpose of this symposium is to create a forum for scientists from the industry, academia, and government agencies to discuss and share their latest research, strategies, and innovations in sample preparation and chromatographic separation. Other ACS divisions that may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Advances in sample preparation, clean-up, and concentration techniques
- Sample preparation techniques in challenging matrices, *e.g.*, plants, animal tissues, pollen, etc.
- Advanced chromatography techniques in separation of challenging analytes, *e.g.*, highly polar compounds, enantiomers, atropisomers, etc.
- Advances in analytical technologies for chiral separation in small molecules
- High-throughput analysis of stereoisomers at trace levels

For further information, contact the organizers

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***Bioavailability and Environmental Relevance of
Strongly Sorbed and Sequestered Chemicals***

Purpose of Symposium

Organic and inorganic compounds vary in their potential to sorb to soils and other media. The extent of sorption largely drives the exposure of compounds to plants, animals, microorganisms, and eventually humans. For certain compounds harsh extraction methods may be required for analytical identification and quantification, and some fraction may be classified in the laboratory as non-extractable residue (NER). Failure to consider the limited bioavailability and environmental relevance of strongly sorbed and sequestered residues can lead to gross overestimates of exposure in soil or water when conducting ecological or human health risk assessments.

The aim of this symposium is to bring to the forefront issues and challenges related to reduced bioavailability and environmental relevance of strongly sorbed or easily sequestered fractions of compounds by sharing case studies on analytical methods, data interpretation, and ways these challenges have been addressed in the context of risk assessment. This symposium is open for collaboration with other divisions such as ANYL.

Suggested Topics

- At what point do analytical extraction methods mimic the conditions in nature that can cause compounds to be released from soils and sediments?
- When is a chemical considered to be irreversibly bound and non-extractable residue (NER)?
- Approaches to aged sorption by different regulatory agencies
- Challenges and advances in extracting and analyzing strongly sorbed and sequestered chemicals
- Influence of aged sorption on predictive environmental concentration in groundwater and surface water
- Precautions in interpreting the environmental fate of compounds from studies conducted under different analytical protocols
- Appropriateness of regulatory models and scenarios in predicting environmental fate, exposure, and effects of aged, strongly sorbed, and sequestered chemicals
- Case studies in soil and sediment remediation and exposure characterization

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***Bioisosteric Replacement and Scaffold Hopping
in Crop Protection Research***

Purpose of Symposium

The discovery and development of new agrochemicals has become a difficult and resource-intensive undertaking. In recent years, research approaches based on bioisosteric replacements and scaffold hopping have proven to be a very successful strategy for inventing new environmentally friendly crop protection products.

This symposium is designed to highlight the importance of bioisosterism and scaffold hopping in modern crop protection research and to showcase recent examples of rational design approaches. Furthermore, this symposium provides a platform to discuss the latest trends and challenges in the field of bioisosterism and offers a unique platform for networking.

Other ACS divisions such as the Division of Medicinal Chemistry may benefit from this symposium.

Suggested Topics

- New innovations resulting from bioisosteric replacement and scaffold hopping
- Applications of bioisosteres in the design of novel pesticides
- Improvement of biological or product safety properties based on the use of classical and non-classical bioisosteres
- Modeling techniques to enable design based on bioisosteres and scaffold hopping
- Scope and limitations of bioisosterism and scaffold hopping
- Newest trends in the design of bioactive compounds

For further information, contact the organizers

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Biological Transformation of Organic Wastes

Purpose of Symposium

The proper management of organic wastes, which are continuously and increasingly generated globally at a gigantic amount, contributes to the development of sustainable societies. Biological transformation of organic waste is promising and is increasingly applied in several societies, due to its cost-efficiency, easy adaptation, integration, and fast-evolution. In this symposium, policies, typical model as well as recent progress on the technologies, and associated mechanisms will be reported.

We welcome scientists, entrepreneurs, and policy makers to contribute their insights on models, systems, technologies, and case-studies. The framework for the establishment of a platform for cooperation on science and technology for the biological treatment of organic wastes will be also discussed.

Suggested Topics

- National reports and policies associated with biological treatment of organic waste in developed and developing countries
- Systematical understanding of the models/chain of biological transformation of organic wastes, and the feedback on society and environments
- Modern system for the biological transformation of organic wastes
- Technologies and mechanisms associated with the biological treatment of organic wastes; nutrient transformation efficiency, greenhouse gases emission, and development of add-value products
- Integration of biological transformation of organic waste and agriculture

For further information, contact the organizers

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***Chemical Communication between Living Organisms in
Agricultural Systems – Early Career Symposium***

Purpose of Symposium

Semiochemical signals, including pheromones, allomones, kairomones, and synomones are used as a form of intra- and inter-species communication which can benefit the sender and/or receiver. Chemical cues among plants, insects, pests, and microorganisms provide an opportunity to help further our understanding of ecological interactions and allow us to manage in our ecosystem more effectively. Disruptions or modifications to these chemical cues can aid in the development of novel pest control strategies in agriculture and forestry. Research on semiochemicals, along with next generation techniques, will facilitate integrated pest management strategies with semiochemicals and will provide powerful tools for agricultural systems.

This symposium will highlight research of graduate students, post-doctoral fellows, and early career scientists from academic, industry, and government backgrounds. Presentations of their latest research results will serve as a platform to foster future collaborations. This symposium welcomes participants from other ACS divisions, such as AGFD, ANYL, BIOL, BIOT, and ENVR.

Suggested Topics

- Discovering semiochemicals using analytical techniques such as gas chromatography-flame ionization detection (GC-FID), GC-mass spectrometry (GC-MS), static and dynamic headspace techniques, single electroantennography (EAG), GC coupled to electroantennographic detection (GC-EAD), and olfactometry techniques
- The role of volatile semiochemicals (pheromones, allomones, kairomones, synomones) in chemical ecology
- Above and below ground communication and messages
- Volatile mediated interactions between insects and bacteria and fungi (symbiotic relationship) and floral microbes and insects
- Isolation and structural elucidation of semiochemicals and their synthesis
- Synthetic blends or formulations, commercial lures, nanotechnology, and new futuristic technologies

For further information, contact the organizers

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***Chemistry for Sustainable Agriculture and Public Health:
AGRO Evolution and Future Opportunities***

Purpose of Symposium

This symposium is being organized as part of the **AGRO 50 and Beyond** celebration of the golden anniversary of the Agrochemicals Division (AGRO) and will immediately be followed by a gala reception open to all AGRO members and invited guests.

Since it achieved full ACS Division status in 1970, AGRO has served as the nexus of scientific exchange related to chemistry in the service of sustainable agriculture and public health. Through its technical programs at national meetings, special workshops and symposia, educational initiatives, awards, and publications, AGRO has had major impacts on the development of agriculture in the U.S. and worldwide.

Invited symposium speakers, including noteworthy leaders and AGRO alumni from industry, academia, and government agencies, will review historic developments and contributions as well as provide perspectives on what to expect in the future for all topics of interest to AGRO. By highlighting the rich history, accomplishments, and contributors of 50 years of AGRO success, we hope to both educate and inspire the next generation regarding Divisional activities and participation. Please plan to come celebrate AGRO 50 and Beyond with members, retirees, and friends of the Division during the Atlanta ACS meeting.

Suggested Topics

- Historic contributions of AGRO to worldwide innovation and sustainable agriculture
- Evolution of agriculture and crop protection in the past 50 years
- The biotech revolution and its impact on agriculture
- The most important challenges and opportunities for AGRO contributions and programs of the future
- Farming and crop protection in the emerging digital age
- Land grant universities and changing models of education
- The role and contribution of USDA and federal research
- Advancements and outlook for regulation of agrochemicals
- Advances in formulation and application technologies
- Agrochemical environmental assessments – from observation to prediction
- Changing consumer expectations for food safety and information
- Public health and urban pest management trends and directions
- Evolution and consolidation of the crop protection and seed industry

For further information, contact the organizers

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***Design, Conduct, and Reporting of Studies to Measure Exposure to
and Effects of Chemicals on Pollinators in the Environment—
Can it be Both Practical and Realistic?***

Purpose of Symposium

Evaluating the potential effects of chemicals on pollinators has been challenging because of the multiple factors influencing pollinator health. The trade-off between the greater precision offered by highly controlled laboratory-based studies and more variable semi- and full-field studies raises legitimate concerns regarding environmental realism and the extent to which these measures are predictive. Achieving an appropriate balance between what is practical and realistic remains elusive.

This symposium will bring together efforts to overcome challenges in evaluating the potential for adverse effects from exposure anthropogenic and natural plant protection products. Research on both honey bees (*Apis mellifera*) and other non-*Apis* bees to support conservation efforts will be welcomed.

Suggested Topics

- Approaches to the design, conduct, and reporting of field and laboratory pollinator exposure and effect studies
- Ecotoxicology of natural toxins (e.g., zygacine)
- New approach methodologies linking *in vitro* and *in vivo* exposure and effects
- Molecular biology applications to identify pollen that bees eat.
- Development of levels of tolerance/resistance of bees to toxins including molecular biology applications to explore use of multivariate statistical methods for interpretation of test results
- Recent results of laboratory and field experiments on exposure and toxicity of chemicals to pollinators
- Efforts to refine existing tools for assessing exposure/effects

For further information, contact the organizers

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***Enhanced Agrochemical Applications through
Surfactant, Formulation, and Colloid Technology***

Purpose of Symposium

This symposium covers industry, government, and academic advancements on agrochemical formulation solutions as well as application technologies through surface and colloidal chemistry. The target audience for this symposium includes scientists interested in applying surfactant and colloid science amenable across industries to develop beneficial agrochemical formulations and application technologies.

Participants in this symposium will have the opportunity to gain insights into the challenges of formulation science of traditional chemical active ingredients (pesticides, nutritional, adjuvants) as well as inviting newer microbial/biological/biostimulant solutions into the growers' spray tank.

This symposium will also explore sustainability's influence on the discovery, validation, and optimization of delivery systems and end user product performance. This symposium may be of interest to AGRO, AGFD and COLL divisions.

Suggested Topics

- Formulating complex multi-active ingredient products, including biologicals
- Advances in additives and adjuvants to improve performance or mitigate adverse effects of actives, including microbial, biological, and/or sprayable RNAi
- Advances in delivery system technology (e.g., nanotechnology, controlled, or triggered release)
- Formulations that compatibilized traditional small molecule and biological mixtures
- Offsite drift reduction through management of formulation physical-chemical properties
- Formulating to optimize coating treatment processing/performance (e.g., paints, seeds treatment, powder/liquid coatings)
- Precision and customized delivery (e.g., sensor development, real time monitoring of applications, variable rate application, and drone applications)

For further information, contact the organizers

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***Environmental Fate, Transport, and Modeling
of Agriculturally-related Chemicals***

Purpose of Symposium

Effective risk assessment of pesticides requires detailed measurement and or prediction of their environmental fate in target use regions. This symposium will improve knowledge and identify research needs on this critically important topic.

Presented information is expected to improve the accuracy and confidence in pesticide exposure/risk assessments and in the process, facilitate harmonization of pesticide registration globally. Spatial and temporal variability, fate process coupling and interaction, conservation practice implementation, and changing application techniques may add also substantial variability to pesticide fate assessments. Presentations describing original research, cases studies, and literature review which address these and related topics are encouraged.

Scientists and regulators engaged in all aspects of pesticide exposure assessment, modeling, and fate evaluation will benefit by active participation

Suggested Topics

- Relating laboratory and field fate measurements
- Conduct and interpretation of environmental monitoring
- Regulatory relevance of modeling, monitoring, and environmental fate measurements
- Advances in modeling of the environment
- Policy implications of modeling, monitoring, or environmental fate
- Improving model accuracy
- Establishing model calibration and validation criteria
- Coupling fate processes and models
- Novel laboratory or field fate study designs
- Characterizing the fate of biopesticides

For further information, contact the organizers

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Everywhere but the Crop Field: Exploring Pesticide Use and Usage

Purpose of Symposium

Evaluating potential impacts of pesticide use on the environment, including species listed under the Endangered Species Act (ESA), requires an understanding of how and where products are used. Recent pesticide registration reviews from the U.S. Environmental Protection Agency have demonstrated the need to better understand use and usage in non-cropped areas. Non-crop uses pose a unique challenge because of the diversity of developed and undeveloped use sites, availability of products to the public, and application by certified and non-certified applicators. There is also no standard method that can be applied to represent actual use and usage in these settings, such as a national use survey.

This symposium will explore pesticide use and usage across the landscape in “everywhere but the crop field” to provide a better understanding of typical pesticide use in non-crop settings. For example, what types of applications are made and why? This session invites presentations from user, registrant, and regulatory communities to inform the audience of uses and practices, knowledge for evaluation of use sites, and/or how attributes might be evaluated in a risk determination. Pesticide registrants, regulatory agencies, end-users, researchers, and others attending the AGRO and ENVR sessions will find this session noteworthy and educational.

Suggested Topics

- Pesticide use and usage datasets and surveys
- Forestry, rights-of-way, rangeland
- Residential and urban, including lawn and garden, structural pest control, and vector control
- Use by federal, state, and local governments
- Invasive species control
- Turf, golf courses, other public areas
- Aquatic management
- Stored products, post-harvest crop protection, and quarantine treatments

For further information, contact the organizers

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Exposure: Approaches and Processes for Preventing, Detecting & Monitoring Agrochemical Contamination in the Environment

Purpose of Symposium

Reducing the environmental impact of agrochemical contamination is a topic with wide-ranging appeal, including regulatory agencies, university researchers, and the agrochemical industry. Environmental exposure assessments are often complex especially when evaluating more realistic, higher-tier, assessments which include mixtures, and cumulative exposure assessments. This has led to the need for designing effective monitoring studies which can be used to generate data to support model conclusions along with higher tier exposure assessments.

Prevention can be determined through environmental fate testing which determines the degradation rates and formation of degradation products. These data can impact the application of agrochemicals and are used to decrease likelihood of non-target contamination. Enhancements in instrumentation come with improvements in detection limits, allowing contamination to be found and addressed earlier. Sampling, monitoring, and detection developments allow for cheaper and faster environmental monitoring.

Presentations should focus on the cross-disciplinary aspects of these techniques and technologies. Members of AGRO, ANYL, and ENVR divisions will benefit from participation.

Suggested Topics

- Sampling techniques and cost improvement for monitoring environmental systems
- Key ideas that investigators should keep in mind when designing monitoring studies
- Analyzing the fate of agrochemicals and their possible movement through natural weather dispersion patterns
- Environmental exposures issues at various scales including temporal and spatial
- Building environmental fate experimental models to more accurately reflect agrochemical disposition

For further information, contact the organizers

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Feeding A Hungry World Amidst Varying Pesticide Regulations

Purpose of Symposium

Chemical discoveries are being made to advance agricultural production and efficacies to feed a rapidly developing population. The regulators are charged with ensuring the agricultural chemicals are safe for the environment, animals, and people. The scientific and policy differences in evaluation processes can lead to trade obstacles that require nation to nation engagement. Leading regulators from nations around the world will provide an overview of their risk assessment and management processes, and government agricultural experts will discuss the goals of their national policies. The impact of differing regulatory and trade policies will be highlighted with a view of the effect of increasing legal, technical, and trade challenges for growers in both advanced and developing countries as they strive to feed the world.

Are international science standards the same but leading to different results in different countries? How does that affect exports? Commodity group trade representatives will provide their perspective on dealing with legal uses in one nation leading to potential illegal residue situations in export markets.

Other ACS Divisions that might be interested are ANYL, ENVR, and AGFD.

Suggested Topics

- Are there international regulatory authorities to provide harmonized technical guidelines?
- Are the scientific evaluations by national authorities being conducted with differing scientific or policy views?
- Are Maximum Residue Levels being established per national legal requirements or policy guideline primarily to satisfy consumer fears?
- Do consumers have an understanding on safety and pesticide Maximum Residue Levels used for trade?
- What is the possible impact of divergent pesticide regulations in nations? Do they lead to food insecurity and lower yields of agricultural production?
- Are developing parts of the world the biggest “loser” in crop trade limitations due to varying views of pesticide regulations?
- What are the main agricultural producers and food processors views on divergent regulations for food standards and trade policies?
- How can innovation in agriculture contribute to harmonization of food standards?
- What does the future hold for the agricultural community? Will national standards diverge or converge?

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***Genome Editing in Agriculture:
Leveraging New Breeding Tools to Improve Crops and Their Production***

Purpose of Symposium

The 2020 Nobel Prize in Chemistry for CRISPR genome editing is a superior testimony of the magnitude of this scientific innovation and recognition of its potential for a revolutionary impact on the life sciences. CRISPR and other genome editing technologies are powerful plant breeding tools that can provide broad opportunities in agriculture. These technologies enable targeted editing of DNA to regulate the expression of specific genes or introduce desired allelic variations, among other applications.

Genome editing can be used to develop crops with desired consumer focused benefits (e.g., taste, nutrition, or appearance), agronomic benefits (e.g., yield or disease resistance), or environmental benefits (e.g., reduction in food waste and its impact on carbon footprint). This symposium will provide a platform for communication about gene editing in agriculture – technology basics, applications, opportunities, and challenges. Government, academic, and industry researchers are encouraged to share the unique perspectives or to highlight outcomes of collaborations or working groups. Besides AGRO, this session will be of interest to AGFD and BIOL members of ACS.

Suggested Topics

- Basic and new approaches and tools of genome editing
- CRISPR/genome editing applications for commercial trait development (enhanced food nutrition and production, disease resistance and crop protection, etc.) or improvement of breeding processes
- U.S. and international regulatory policies and the implications on international trade
- Analytical aspects of detection and traceability of commercial genome editing products in the food supply
- Communication of new technologies to the public
- and education
- Public acceptance of genome editing in agriculture

For further information, contact the organizers

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***Good Laboratory Practices (GLP) –
How to Conduct Studies Under the Regulatory Environment***

Purpose of Symposium

Good Laboratory Practices (GLPs) are a set of quality principles that provide a framework within which laboratory studies are planned, performed, monitored, recorded, reported, and archived. GLPs help assure regulatory agencies that the data submitted are a true reflection of the results obtained during the study and can therefore be relied upon when making risk or safety assessments.

The purpose of this symposium is to provide guidance for ensuring the quality and integrity of data submitted to the regulatory agencies. Participants in this symposium will gain understanding of the GLPs, how they impact the conduct of their studies, learn about common agency findings and how to avoid them, and get an overview of the current regulatory outlook of EPA GLPs.

The target audience includes anyone that works or is interested in working on studies that support applications for research or marketing permits such as those for pesticide products regulated by the EPA, Quality Assurance/Quality Control professionals, and those new to the GLP environment. Divisions that may be interested in attending this symposium include AGRO, AGFD, and ENVR. This symposium will be held in conjunction with the EPA-GLP and GLP Specialty Sections of the Society of Quality Assurance (SQA).

Suggested Topics

- GLP training for a better understanding of history, guidelines, roles, and responsibilities
- Conduct of EPA agricultural field trials
- Interpretation and enforcement of the regulations – case studies
- Agency updates and GLP advisories
- Management of multi-site studies
- Computer system validation- 21 CFR Part 11
- Best practices in GLP quality assurance
- Good documentation practices, data quality, and data integrity
- Regulatory submissions of data in the U.S. and worldwide
- Development of effective Standard Operating Procedure

For further information, contact the organizers

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***Human Health Paradigms:
Exposure, Risk Assessment, and Policies for Agrochemicals***

Purpose of Symposium

The purpose of the symposium is to promote discussion of evolving and/or proposed regulatory policies and their emerging impact on human health risk assessments for agrochemicals. Submissions which focus on methods for exposure, risk assessment, as well as policy perspectives are sought.

Exposure measurements and risk assessment models to ensure consumer, worker, and bystander safety are an integral part of regulatory process for active ingredient product approval. Advances in measurements, models, and regulation will be discussed. Discussions of U.S. and global approaches are welcomed.

Presentations describing original research, cases studies, literature reviews or policies which address these, and related topics are encouraged. Scientists and regulators engaged in all aspects of pesticide exposure assessment, modeling, and regulation will benefit by active participation. Members of AGFD and TOXI Divisions may also be interested.

Suggested Topics

- GLP training for a better understanding of history, guidelines, roles, and responsibilities
- Conduct of EPA agricultural field trials
- Interpretation and enforcement of the regulations – case studies
- Agency updates and GLP advisories
- Management of multi-site studies
- Computer system validation- 21 CFR Part 11
- Best practices in GLP quality assurance
- Good documentation practices, data quality, and data integrity
- Regulatory submissions of data in the U.S. and worldwide
- Development of effective Standard Operating Procedure

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***IN*Secticide *TAR*gets (*IN*STAR) Summit**

Purpose of Symposium

This symposium will be a continuation of the symposium series that was conceived in 2016 by Jeffrey Bloomquist after a workshop to discuss issues associated with development of new insecticides and strategies for resistance management.

The purpose of the INSTAR Summit is to provide a venue where academic, industry, and government scientists can freely discuss advances in the field and exchange ideas fostering mutually beneficial collaborations. Through this purpose, the Summit will aim to facilitate the discovery of new targets, new chemistry, and novel approaches to resistance management to ultimately enhance arthropod pest and vector control.

The INSTAR Summit has met annually since conception and has been comprised of related, yet distinct, topics. In 2021, we will focus on highlighting similarities and differences between human pharmaceuticals and insecticides that will bridge scientific barriers within these related but independent fields. The Summit will have invited oral presentations, discussion sections and an aligned poster session.

Suggested Topics

- Novel insecticide targets
- Identification and development of novel chemistry
- Commercialization of drugs/insecticides
- Barriers to advanced synthetic schemes
- Pharmacokinetic and pharmacodynamic challenges

For further information, contact the organizers

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***Metabolite and Process Impurity Identification for Agrochemical
Discovery***

Purpose of Symposium

In the early stage of the agrochemical or drug discovery, it is critical to elucidate metabolic soft spot and biotransformation pathways, which could impact biological efficacy and toxicity. However, the structure elucidation for unknown metabolites remain an extremely challenging task due to the trace level, complex matrices and the complexity of the biotransformation pathways. To overcome these challenges, it becomes imperative to have innovative and efficient approaches to unambiguously assign the structures of the metabolites for further characterization.

In parallel, the impurities present in drugs and agricultural chemicals are also strictly regulated. These impurities can be generated as by-products from manufacturing, degradation, or contamination. Identification of unknown species can prove challenging, often requiring combined expertise in mass spectrometry, organic chemistry, and analytical chemistry.

This symposium will provide a platform to communicate and discuss the newest developments in unknown identification and structure elucidation technology and their applications in agrochemical or drug discovery. Other ACS divisions that may benefit from this symposium are ANYL and ENVR.

Suggested Topics

- Emerging technologies for generation of metabolites including enzymatic, catalytic and electrochemical methods
- Cost-effective and robust *in vivo* and *in vitro* technologies to generate metabolites
- *In silico* predictive tools for metabolite identification and assessment
- Innovative pilot metabolism study designs in animal, soil and plant
- Latest techniques for isolation and purification of metabolites
- Advances in analytical technologies for identification of metabolites and impurities
- High throughput metabolite identification approaches
- Quantitative structure-activity relationships (QSAR) models for predicting metabolism
- New workflows to expedite sample analysis and data interpretation

For further information, contact the organizers

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Microplastics: Environmental Fate, Potential Effects, and Stewardship

Purpose of Symposium

Plastics benefit our society and quality of life, but the occurrence of microplastic (<5mm) pollution in aquatic and terrestrial ecosystems is a growing global concern. Examples of sources of microplastic contamination to the environment include textiles, personal care and home products, plastics, and application of fertilizer, plastic mulch, and sewage sludge to agricultural fields. Adverse effects to aquatic ecosystems have been documented but less is known regarding the impact to terrestrial ecosystems, agricultural soil, human health, and our food supply.

This symposium will discuss the current science, research, potential impact, risk assessments, stewardship, regulations, policies, and sustainable solutions for microplastic environmental contamination in aquatic and terrestrial ecosystems, considering both urban and agricultural settings. We invite researchers, scientists, regulators, policy makers, and people interested in microplastics to participate in this symposium. This symposium is open for collaboration with other divisions such as ENVR, POLY and ANYL.

Suggested Topics

- Occurrence of microplastics: local, national, global
- Benefits and concerns of plastics and microplastics
- Environmental fate, modeling, and risk assessments of microplastics
- Stewardship and solutions to mitigate concerns of microplastics
- Monitoring and analytical methods
- Policy and regulation of microplastics
- Bio-based plastics, polymers, and sustainable solutions
- Wastewater and stormwater management of microplastics
- Microplastics and agriculture, impact to food security?

For further information, contact the organizers

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Nontarget Analyses and Emerging Contaminants: Implications for Agrochemical Risk Assessment

Purpose of Symposium

Nontarget Analysis (NTA) uses powerful new techniques of environmental sample analysis coupled with real-time computer molecular identification to identify almost any molecule found in an environmental or food sample. When combined with Quantitative Structure-Activity Relation (QSAR) estimates of the chemical-physical properties of molecules and their degradation products, a broader understanding and predictability of the environmental fate of a chemical based upon its laboratory properties is possible.

Discovery of emerging environmental contaminants (EECs) by this technology has specific potential consequences for agrochemical risk assessment, including detailed tracking of degradation products in the environment and foods, and elucidation and tracking of formulation and spray additive ingredients. Registration risk assessment procedures are likely to be impacted. On the other hand, discovery and identification of thousands of new synthetic and natural chemicals in the environment may provide perspective on agrochemical exposures.

This symposium will bring agribusiness, academic environmental, and regulatory scientists up to date on the rapid advances in this field and make us aware of the potential impact of NTA findings on agrochemical environmental exposures and risk assessments. The symposium should be of interest AGFD, AGRO, ANYL, CINF, TOXI, COMP, ENVR, and ORGN Divisions.

Suggested Topics

- Laboratory hardware and methodologies for nontarget analysis (NTA): the state of the art
- Software and molecular libraries for identifying contaminants: the state of the art.
- The international laboratory consortium for nontarget analysis: the NORMAN network
- Nontarget Analysis in the regulatory world: linking environmental exposure to impact
- Nontarget analysis in the regulatory laboratory
- Nontarget analysis in the agrochemical industry laboratory
- Quantitative Structure-Activity Relationship (QSAR) estimates of physical and chemical properties of Emerging Environmental Contaminants: current capability
- Impact of NTA on commercial formulation equivalence testing.

For further information, contact the organizers

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***Off-Target: Measurement and Management of
Pesticide Drift and Volatility***

Purpose of Symposium

Off target movement of pesticides, either through drift or volatilization, has received national media attention in recent years. Researchers, growers, regulatory agencies, environmental groups, and the public are all interested in this topic, and there has been a lot of research conducted in this area. Some research has focused on characterizing and quantifying the problem and its underlying causes while other research has focused on technologies that can reduce or eliminate drift potential and its effects.

The purpose of this symposium is to discuss the research in this area including refinements in understanding the underlying causes, potential management technologies, the need for future data, and regulatory questions.

Other ACS Divisions that may be interested are ANYL, ENVR, and AGFD.

Suggested Topics

- Methods and techniques to measure off-site movement of pesticides
- Development of tools for management and mitigation
- Effect of new application technologies on drift
- Comparison of drift potential from various application systems
- Regulatory agency perspective

For further information, contact the organizers

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***Practical Residue Analytical Methods for the Analysis of Samples
from Environmental and Consumer Safety Related Studies***

Purpose of Symposium

Requirements for analytical methods used in residue analysis are rapidly changing globally for both consumer and environmental safety assessments. At the same time, instrumentation with advanced technology for detection of analytes is available. Consequently, development of practical analytical methods is becoming more challenging to balance guideline requirements with robust, cost-effective analytical methods with high throughput capabilities.

The goal of this symposium is to share novel and practical approaches used in the development of analytical methods for residue analysis of various sample types including soil, water, crop commodities, bee matrices, etc.

This symposium will focus on recent advances in analytical method development as well as new technologies to provide cost-effective and high throughput analytical methods for the analysis of field environmental, and food and feed samples. Representatives from industry, academia, and government are invited to share their perspectives on analytical method development for residue analysis. Other ACS divisions which may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Challenges and best practices for analytical method development and validation
- Method validation for global use
- Multi-residue analytical methods: a global perspective, advantages and limitations
- Application of new technologies in residue analytical methods (*i.e.*, HRMS, LC-MS/MS with ion mobility, DART/DESI, Flow injection Analysis, etc.)
- Automation for routine analysis
- Challenging analytical methods (problem-solving for analysis of compounds with unique molecular properties)
- Methods for complex matrices (bee matrices, hemp, hops, process fractions, body fluids, etc.)
- Obstacles and solutions for method transfer and adaptation
- Extraction efficiency of incurred residues: principles and approaches for various analyte classes and sample types
- Strategies for including metabolites, isomers, and structural analogs in analytical scope

For further information, contact the organizers

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Process Research and Development in Crop Protection

Purpose of Symposium

To address the food security needs of the growing world population, modern agriculture must continually develop technologies that increase production. Crop protection process chemists must develop processes to deliver large volumes of active ingredient, typically in the range of hundreds of metric tons per year that meet relatively low-cost targets.

This symposium will serve as a platform for crop protection process scientists to share their innovative solutions to these challenges. At this symposium, the audience will hear detailed presentations and case studies from crop protection organizations around the world. The latest issues relating to synthetic route design, development, and optimization in the crop protection industry will be discussed. Although the focus of this symposium is process research and development in crop protection, the content will be beneficial to process chemists in other industries and organic chemists in general.

Suggested Topics

The suggested topics for this symposium are, but not limited to, the following:

- Route scoping and selection for the synthesis of crop protection products
- Process development toward crop protection products
- Impurity identification and control in the development of crop protection products
- Application of process analytical technology (PAT) in the process development of crop protection products
- Application of continuous flow technology in the development of crop protection products
- Safety considerations, practices, and safety hazards evaluation and mitigation in process research and development
- Sustainability in process research and development
- Collaboration to drive technology innovation and process development
- Case studies of large-scale production and manufacture of crop protection related products

For further information, contact the organizers

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Regulation and Pest Management in Cannabis Crops

Purpose of Symposium

This symposium will cover a broad range of topics related to cannabis and hemp regulation, pest management consideration, and analytical chemistry. Cultivation and commercial uses for hemp, defined as cannabis and its derivatives with $\leq 0.3\%$ delta-9-tetrahydrocannabinol (THC) content, were legalized in the U.S. by the 2018 Farm Bill. Further, state-level legalization of cannabis for medical and recreational uses continued to expand with the November 2020 elections, leaving only 15 U.S. states without legalization at some level.

These trends in legality lead to differences in state-level versus federal regulation, while also increasing the need for robust analytical and biological methods, with special consideration for cannabinoids, terpenes, as well as processed materials.

The aim of this symposium will be to provide a current state of the regulatory landscape and the resulting testing requirements for cannabis and hemp across the U.S., along with well-established and emerging analysis technologies needed to support this growing industry. This symposium is intended for the AGRO Division will be of interest to the Cannabis Chemistry subdivision (CANN).

Suggested Topics

- Current state- and federal-level regulations for cannabis and hemp crops and products
- Considerations of the future regulatory landscape
- Pest management challenges facing growers
- Current testing requirements, or comparison between state-level regulation guidance
- State-of-the-science for analytical methods related to crop and processed products

For further information, contact the organizers

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Sparing Native Species in the Control of Invasive Species

Purpose of Symposium

Invasive species can be more than a nuisance in the landscape. Through proliferation they can replace native species, alter ecosystems, spread disease, and degrade our natural resources. Pesticides are one of many tools in the arsenal of tools to control invasive species, but care must be taken to spare non-target organisms.

This symposium is an interdisciplinary scientific forum to identify and merge the many technologies related to eradicating invasive species and preserving beneficial species. The symposium should interest environmental scientists, and epidemiologists involved in the research and application of science related to controlling vector-borne diseases. This symposium is open for collaboration with other divisions such as AGFD and ENVR.

Suggested Topics

- Case studies in invasive species management and habitat restoration
- Spatial technologies in tracking invasive species and ecosystem degradation
- Impact of changing weather patterns on invasive species migration
- Monitoring and modeling the effects of invasive species on native populations and ecosystems
- Risk-benefit case studies
- International and interagency collaboration
- Relevant current U.S. and global policy issues
- Public outreach programs

For further information, contact the organizers

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***Sustainability in Agriculture: New Sources and Tools for the
Development of Sustainable Crop Protection Solutions***

Purpose of Symposium

The development of crop protection solutions is critical in addressing the increased demand for high quality food to meet the needs of the growing world population. Central to this, sustainability drives innovation behind new crop protection solutions as growers, producers, and consumers demand the responsible stewardship of our land and environment.

This symposium will focus on aspects less commonly discussed in the context of sustainability – namely natural products and biologicals as sources of new sustainable crop protection solutions and predictive computational tools being leveraged to predict safety and sustainability attributes in the development of crop protection products. Paper topics from biologicals, natural products, computation, and digital technology are encouraged.

Papers from AGFD, ANYL, BIOL, BIOT, CELL, CINF, COMP, ENVR, MEDI, ORGN, and others are encouraged.

Suggested Topics

- Biologicals as sustainable crop protection solutions
- Natural products as sustainable crop protection solutions or as leads in the development of new crop protection solutions
- *In-silico* and Machine Learning models and chemoinformatic tools for guiding development of crop protection solutions
- Digital agriculture in partnership with crop protection for sustainable solutions

For further information, contact the organizers

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***Unmanned Aerial Systems (aka Drones):
Pesticide Spraying and Other Agricultural Applications***

Purpose of Symposium

This symposium is intended to facilitate dialogue among scientists in agriculture-related fields to examine the opportunities and challenges associated with the use of unmanned aerial systems (UASs, aka drones) in agriculture. Presentations related to pesticide spraying or spreading, pollination, field scouting, and related topics are encouraged.

The symposium will provide a forum for interactions among academic, industry, and government experts. It will enhance understanding of UAS spraying and related activities that may have implications for agriculture and related industries, public interest, and the environment, as well as stimulating progress toward developing this new technology on a sustainable path. This symposium may be of interest to other divisions such as ENVR and ANYL.

Suggested Topics

- Development of UAS technology for use in agriculture, public health, industrial vegetative management including integration of spraying module in UAS design
- UAS spraying – evaluation of in-field performance, off-target drift, operator exposure, etc.
- Scouting and remote sensing facilitated by drones
- Unconventional uses of UASs in agriculture (e.g., pollination, non-liquid applications, etc.)
- Evaluation of different UAS design factors affecting performance in the field
- Model development for evaluating UAS performance
- Regulatory aspects, including permitting, labeling risk assessment, and consideration of drift-reducing technology
- Addressing challenges associated with payload/power constraints and ultra-low volume spraying
- Socio-economic factors, including challenges and opportunities (labor, public support, etc.)
- Development of best management practices for UAS use

For further information, contact the organizers

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