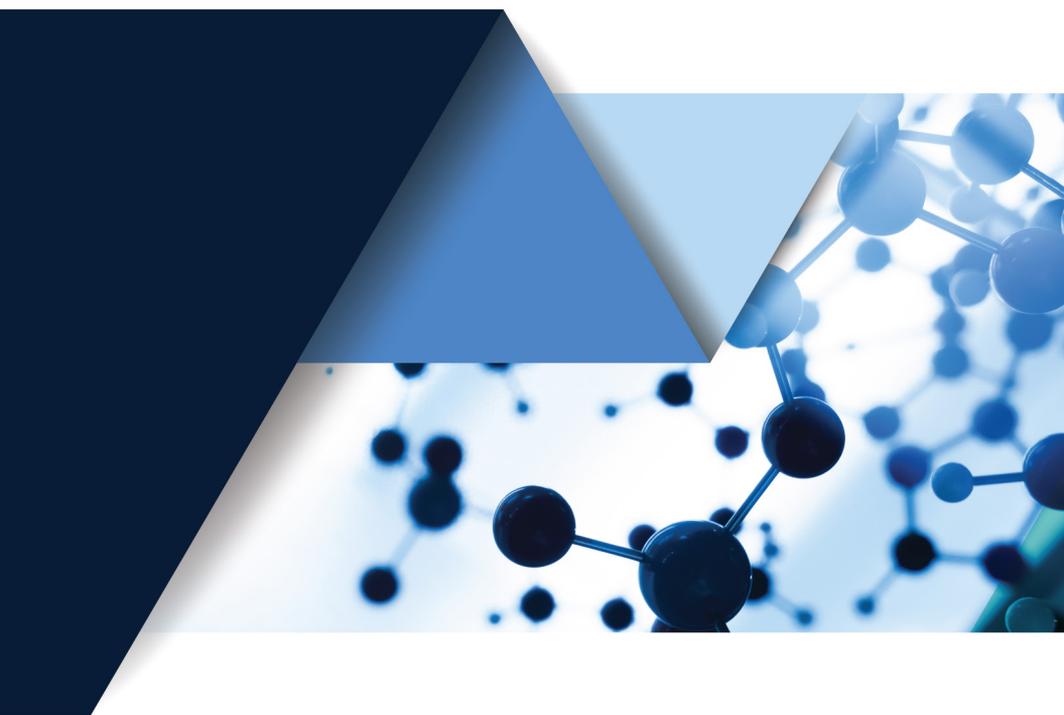


Second Annual

# Green & Bio-Based Chemistry Technology Showcase & Networking Event



April 24, 2017  
Amway Grand Plaza Hotel  
Grand Rapids, MI

**GCC** GREEN CHEMISTRY &  
COMMERCE COUNCIL

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## MEETING OVERVIEW

In support of our efforts to mainstream green chemistry, the GC3 is seeking to grow and connect a network of small and large companies that are developing, producing, using, and funding green and bio-based chemicals to enable faster market adoption of game-changing green chemistry solutions.

The goals of our second annual GC3 Green & Bio-based Chemistry Technology Showcase & Networking Event are to:

1. Connect green and bio-based startups to suppliers, brands, retailers and investors who can provide insight on their technology needs and interests, provide directional advice, and explore potential partnerships and investments for testing, development, and scale;
2. Provide an opportunity for suppliers, brands, and retailers to discover new ingredients and materials for their products, build relationships with innovative startups, and find new partnership and investment opportunities; and
3. Discuss strategic needs, interests, and directions of various industry sectors to help inform startups' R&D and applications priorities.

## AGENDA

1:00 pm - 1:15 pm	Welcome and opening remarks
1:15 pm - 2:30 pm	Presentations on strategic technology needs of industry sectors
2:30 pm - 2:45 pm	Break
2:45 pm - 4:25 pm	Presentations from invited start-ups
4:25 pm - 4:30 pm	Closing Remarks
4:30 pm - 6:30 pm	Networking Reception
6:30 pm - 9:30 pm	Networking Dinner at Bistro Bella Vita (at own expense)

## ABOUT THE GC3

The Green Chemistry & Commerce Council is a cross-sectoral, business-to-business network of companies and other organizations working collaboratively to accelerate green chemistry across sectors and supply chains. Started in 2005, the GC3 has over 100 members from leading companies and other organizations.

## ABOUT THE GC3 STARTUP NETWORK

The GC3 Green & Bio-based Chemistry Startup Network is dedicated to accelerating the development and market adoption of green chemistry technologies by supporting the growth of green and bio-based startup companies. Leveraging the diversity of the GC3 membership, we are connecting startups and small companies with established chemical suppliers, brands, retailers, and investors who can serve as strategic partners to accelerate the development and growth of promising green and bio-based chemistry technologies. Established companies can tap into the startup network to identify new, strategic technologies, potential partners and investments.

## GC3 STARTUP NETWORK STAFF

**Monica Becker**, Co-Director & Innovation Group Lead

**Laura Hoch**, Technical Fellow

**Joel Tickner**, Director

For more information about the GC3 Startup Network, please visit our website at:

[www.greenchemistryandcommerce.org/startup-network](http://www.greenchemistryandcommerce.org/startup-network)

## CURRENT MEMBERS OF THE GC3 GREEN & BIO-BASED CHEMISTRY STARTUP NETWORK





**WEBSITE:**

[www.elevance.com](http://www.elevance.com)

**REPRESENTED BY:**

Rusty Pittman, Vice President, Marketing and Business Development

Steve Block, Director, Business Development

Headquartered in Woodridge, Ill., Elevance Renewable Sciences, Inc. creates novel, high-performing specialty chemicals from natural oils using a proprietary Nobel Prize-winning catalyst technology called olefin metathesis. Olefin metathesis allows for the rearrangement of the molecular structure of oils unlocking unique chemicals that cannot be efficiently accessed through other routes. In addition, the technology can be utilized with any natural oil, providing a high degree of feedstock flexibility.

Elevance's bio-refinery in Gresik Indonesia is the first and only facility which practices natural oil metathesis at commercial scale. The company produces many novel materials including mid-chain (C10 & C12) unsaturated esters, long chain (C18) diesters and diacids, linear olefins, and modified oils and oil oligomers.

The company enables leaders in the chemical industry to deliver higher performing products, with a smaller environmental footprint, across a broad range of applications from personal care and detergents to engineered polymers and agricultural chemicals.

Elevance uses a collaborative business model to explore, develop and commercialize new applications for its bio-based chemicals with industry leaders.



**Global Leader in Natural Oil Metathesis**

Natural Oils → Industrial Scale Metathesis Production → Bio-Based Chemicals

**Specialty Intermediates**

- Unsaturated C10 Methyl Ester | Unsaturated C12 Methyl Ester
- Linear Olefins | C18 Diester/Diacid | C18 Polyols
- Oligomers of Natural Oils

**Industrial & Consumer Applications**

- Oil Field Chemicals
- Performance Coatings
- Cleaning Ingredients
- Paint Additives
- Polyester Polyols
- Personal Care Ingredients

**Partnerships they are seeking:**

**Collaborations:** Elevance is seeking opportunities to partner with leading chemical and product manufacturers to leverage its unique bio-based chemicals into new markets and applications. The company leverages a collaborative business model to explore, develop, and commercialize new applications for its materials by partnering with industry leaders in specific market segments or technology areas. Through effective partnerships Elevance accelerates the adoption of its chemicals, while enabling its partners to grow their product lines with sustainable and high-performing solutions.





**WEBSITE:**

[www.growbioplastics.co](http://www.growbioplastics.co)

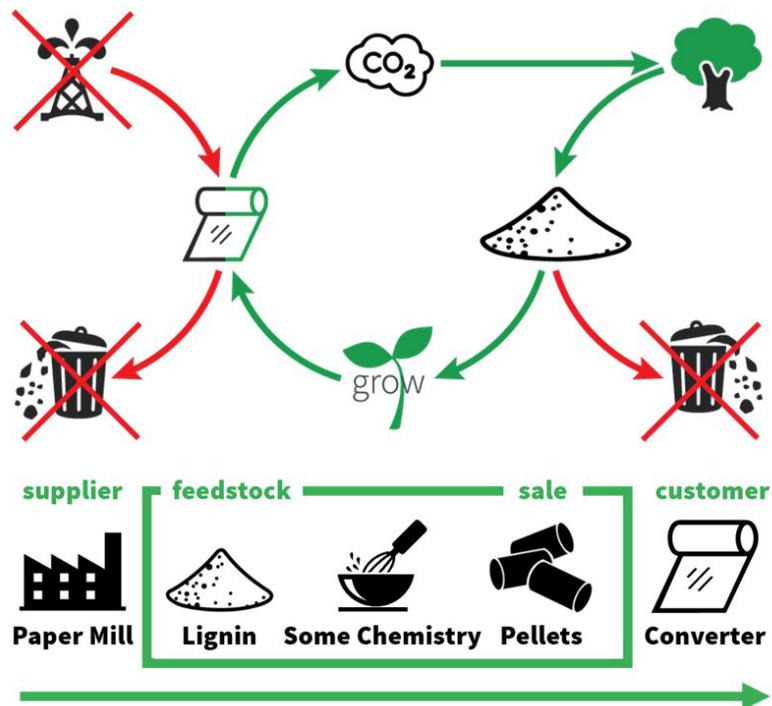
**REPRESENTED BY:**

Tony Bova, CEO, Co-Founder

Jeff Beegle, CSO & Co-Founder

Grow Bioplastics is creating a future where consumer and industrial organic wastes are viewed as a valuable resource for new materials, and not a burden on society or the planet. Our first step toward this vision is the replacement of landfill-bound oil-based plastics in agriculture and beyond with our family of biodegradable plastics made from lignin, a waste product of the paper and biofuel industry. Our first products will replace polyethylene-based plastic mulch films and greenhouse & nursery containers in agriculture. Farmers can sow plants directly in the containers, and simply plow their mulch films into their fields where they will break down naturally at a rate we can tune, saving them time and money spent on plastic collection and disposal. Our technology involves the solvent-free reactive processing of lignin with existing bio-based, biodegradable polymers into melt-processable polymer alloys with lignin contents as high as 70%.

As we grow, we'll sell our plastic resins to manufacturers of products outside of agriculture, including trash bags, rigid and foamed packaging, 3D printing, and more. Beyond plastics, we're planning on taking on many other waste streams - from food waste to wastewater, and converting them into green chemicals, materials, and energy.



**Partnerships they are seeking:**

- **Suppliers:** Part of our ongoing R&D process is the development of new biobased plastics where lignin is a major component. We are always looking for new sources of lignin to evaluate, where successful use in our technology can demonstrate increased value to biorefineries. We're also looking for producers of bio-based plastics, both degradable and otherwise, to continue growing our family of lignin based polymer alloys.
- **Demonstration Partners:** We are actively looking for partners interested in testing our plastics in final applications in various industries. Our current materials are targeted at products that make use of HDPE and LDPE resins, as well as some thermoplastic elastomers and fiber-reinforced composites, and in the future, engineering grades. Projects to create single use plastic products where biodegradation would be a desired property, like packaging, are especially exciting for us.





**WEBSITE:**

[www.hybridcoatingtech.com](http://www.hybridcoatingtech.com)

**REPRESENTED BY:**

Darin Nellis, Director of Sales & Marketing

Hybrid Coating Technologies (HCT) has developed, patented, and now sells the world's first Green Polyurethane™ for foam, coatings, adhesives and sealants that does not use toxic isocyanates or volatile organic compounds (VOCs) – a technology poised to disrupt the \$70 billion world-wide polyurethane industry. HCT is a recent recipient of the Presidential Green Chemistry Award.

Conventional Polyurethane (PU) coatings are porous, permeable and maintain poor hydrolytic stability. Conventional spray PU insulation foam is spray-applied, exposing workers to toxic isocyanates. Strict and costly health & safety measures have to be implemented in the manufacture and application of conventional polyurethane due to the toxicity of isocyanates and VOCs.

Green Polyurethane™ combines the high chemical resistance properties of epoxy and advanced durability and wear resistance properties of polyurethane. It can be applied in one layer (depending on substrate). Its low toxicity and low odor allow it to be applied without the interruption of business due to public exposure, creating an additional 30-60% in savings.

Green Polyurethane™ foam provides high R values up to 6.0, energy savings up to 30% and improved tensile strength over conventional foam.

Green Polyurethane™ is a proven technology with Fortune 500 foam development partners and existing coatings sales in North America, South America and Europe including market leader PPG-Comex.

**Partnerships they are seeking:**

- HCT's strategy is to partner with successful companies in strategic segments of the polyurethane industry and enter into commercial agreements to jointly develop cutting edge products based on its proprietary technology. HCT works with two categories of partners, end users and resellers. End users are large companies that presently use a polyurethane raw material component in their supply chain and are looking to replace what they currently use with HCT's nonisocyanate technology. An example of this is a shoe manufacturer that already purchases toxic isocyanate-based polyurethane foam for shoe insoles and would like to replace these with HCT Green Polyurethane™ insoles. Resellers are companies that are in the business of selling polyurethane end-products, such as coatings distributors, who would like to sell Green Polyurethane™ based coatings products through their existing distribution channels.
- On the manufacturing side, HCT utilizes trusted toll manufacturers to manufacture its products. This allows HCT access to a vast amount of capacity in different manufacturing locations in the world close to its marketplaces without the burden of fixed overhead expenses.



**WEBSITE:**

[www.imd-natural-solutions.com](http://www.imd-natural-solutions.com)

**REPRESENTED BY:**

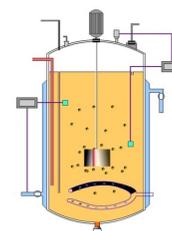
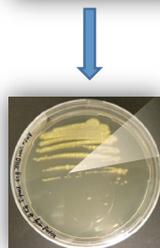
Frederic Issenhuth, Managing Director, Marketing & Sales

The biotech company IMD Natural Solutions (INS) specializes in nature-derived fine and specialty chemicals. INS develops and produces innovative ingredients and extracts from micro-organisms and plants for the FMCG industry and provides R&D services for the life science industry. INS focuses on product preservation in open and closed shelf-life, processing and hygiene. INS has created a glycolipid, a new antimicrobial molecule, produced by an edible fungus, which provides a broad microbial protection spectrum. The result is a color- and odor-free preservative, highly active against fungi, yeasts and gram-positive bacteria. INS runs its own full-scale fermentation facility in China so that it can supply the market with sufficient volumes.

Based on its long-term experience in microbial source based production and in antimicrobial and antioxidant testing, INS offers ready to market solutions as well as strategic perspectives for cosmetics/personal care, food, beverage and tech industry.



Jelly Fungus  
Edible wild type  
Basidiomycota



**Partnerships they are seeking:**

- **Collaborations:** The model is built on co-operation with distributors and strategic partners across industries, to replace traditional preservatives and anti-microbial molecules in established industries by natural solutions, and bring our product to market. The glycolipids offer a solution e.g. for the growing microbial resistances in human food and animal feed applications.
- **Customers:** First, a quick win can be immediately offered for players in the cosmetics/personal care industry. As a next step the model targets, with its glycolipid-based solution, the food and beverage industry.



**WEBSITE:**  
[www.cbirc.iastate.edu](http://www.cbirc.iastate.edu)

**REPRESENTED BY:**  
 Peter L Keeling, Innovation and Industry Collaboration Director

The Center for Biorenewable Chemicals (CBiRC) was founded in 2008 with funding from the National Science Foundation (NSF) creating a NSF Engineering Research Center (ERC) focused on advanced manufacturing for sustainable biobased chemicals. The ERC program creates multi-year, interdisciplinary, multi-institutional centers that join academia, industry and government in partnership to produce transformational engineered systems. The ERCs also develop engineering graduates who are adept at innovation and primed for leadership in the global economy. With most of the world's fuels and carbon-based chemicals being sourced from fossil carbon, only a relatively minor contribution (10%) come from biorenewable sources. CBiRC's targeted engineering research aims to identify ways that will help transform the chemical industry by increasing the range of valuable chemicals derived from renewable carbon sources. The Center's vision is that its innovative research programs will decrease our reliance on fossil carbon sources and build a foundation for a more sustainable future based on biorenewable "bio-based" chemicals.

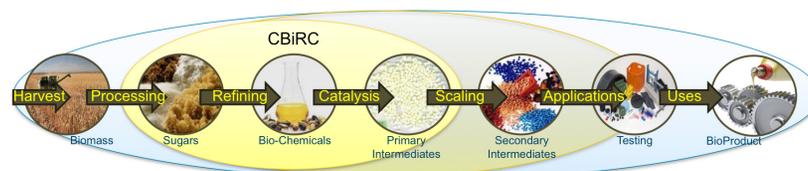
The petrochemical industry is built on C2-C4 alkenes and aromatics as intermediate molecules, which are converted to a range of products. This industry is highly developed with little opportunity for new chemical products. In comparison, biological-derived intermediates from biomass have the potential to introduce a new set of intermediate molecules, which can be converted to molecules that directly replace petrochemicals. Even more promising is the potential to convert biological-derived intermediates to novel chemical species that impart enhanced performance properties in their end use. CBiRC is exploring this newly introduced concept of bioprivileged molecules as a useful new paradigm for developing biobased chemicals. This effort is founded on developing a more systematic approach based on finding and generating the ideal types of chemical species that will provide improved properties. The bioprivileged molecule concept



## Accelerating Bioproduct Manufacture



### Applications & Analytics



creates a paradigm with which to establish a rational structure for the search. The challenge is to integrate complimentary technological advances to achieve this vision (Green Chemistry, 2017, DOI: 10.1039/c7gc00296c).

### Partnerships they are seeking:

- Industry:** To deliver on its goal of nurturing the development of the nascent bio-based chemicals industry, CBiRC is developing valuable long-term relationships with its expanding group of industry members including large- and medium-scale established companies as well as start-ups and small businesses. Through its Industry Collaboration program, these member companies leverage a unique access to innovative research and a network of highly respected expertise. Industry members come from all key sectors across the value chain focused on moving biorenewable chemical technology towards commercialization. Members include bio-based chemical and biofuels companies, petrochemical producers, agricultural product processors, chemical catalyst providers, biocatalyst providers, process licensors and end-users.
- Collaborations:** The CBiRC model is built on working with industry partners across the value chain from biomass processing to biological and chemical synthesis. In addition to the industry program, CBiRC has developed a biobased innovation program to support entrepreneurship and innovation. This has resulted in a portfolio of early-stage startup entities. Each of these innovative startups is based on new technologies and knowhow emerging from the center.



# KALION, INC.

**WEBSITE:**

[www.kalioninc.com](http://www.kalioninc.com)

**REPRESENTED BY:**

Darcy Prather, President

Kalion, Inc. is an early stage industrial biotechnology company focused on bringing economical high performance, low cost materials to market from our production platform. Our initial interest is in high purity glucaric acid. We have high value niches in pharmaceutical markets for our products. We are building large market opportunities by enhancing the performance of existing low cost materials.

Starting from first principle engineering concepts and applying those to the industrial biotech core technologies, we are able to identify the path to low cost production methods. Similarly, these principles guide us to clear value enhancing opportunities. While we may take some products through demonstration scale to significantly de-risk the technology, we work with large manufacturers to bring products to market.

To successfully bring products to market we find that functional-enhancements and functional replacements allow us to bring maximum performance for cost while allowing partners to move steadily with confidence to their green and renewable targets without compromising the consumer expectations.

We develop low cost approaches to high purity glucaric acid and related molecules. We are also developing new applications that will have compelling propositions.

**Partnerships they are seeking:**

- Kalion is looking for partners in chemicals or industrial biotechnology who looking for the next generation of enhanced performance molecules which can be used a platform to build a sustainable business that happens to be based on a renewable molecule especially manufacturer using significant amounts of polyolefins.
- Kalion is looking for brands interested in finding cost effective ways to maintain performance while gradually transitioning to increasing the renewable content where they are typically using bulk commodity oil-based polymers. If you are using polyolefins as a major component in your supply chain, we love to talk about how you can transition to a greener path, while minimizing disruption to your supply chain and the expectations of the consumer.
- Kalion is looking for brands in the nutraceutical/energy drink market who are interest in lower their materials costs for glucaric acid, glucuronolactone or myo-inositol.



**WEBSITE:**

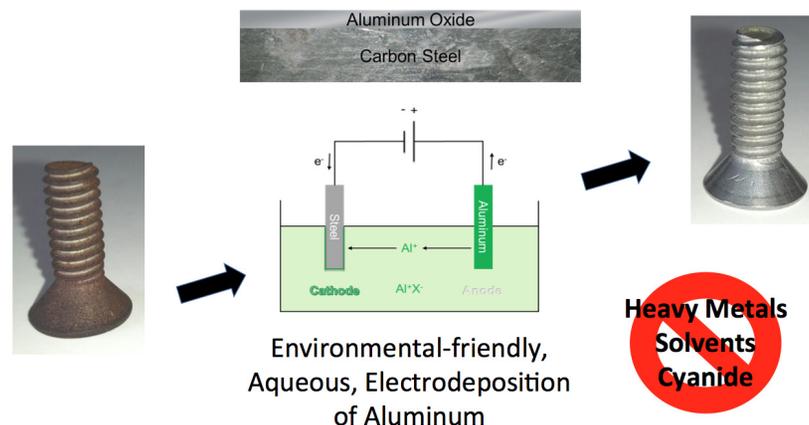
[www.lumishieldtech.com](http://www.lumishieldtech.com)

**REPRESENTED BY:**

Hunaid Nulwala, CTO

LumiShield develops coating solutions for corrosion-resistant metal products. Our advanced materials and processes produce superior results at lower cost and with much less environmental impact than our competitors. Greater sustainability is achieved through the elimination of toxic substances, which in turn leads to less regulation. Reduced regulation, a simplified process and lessened metal costs result in a lower cost to the end user, which is allowing LumiShield to rapidly create a place in the market. The LumiShield process represents a major improvement on current technology, based on a revolutionary advancement in electrochemistry which allows active metals such as aluminum to be electroplated from aqueous solutions.

LumiShield will first bring to market a product designed to allow its customers, contract electroplaters, to produce aluminum-based coatings using their existing capital equipment. With LumiShield's proprietary technology, these aluminum-based films may be grown on steel and other metals. The electroplated coating forms a hard, aluminum oxide layer, which resists corrosion and wear. Ultimately, the resulting coatings should be able to replace a variety of existing technologies in many applications. In the initial niche market, the coatings will be used as a replacement for toxic metal coatings, which are critical in the military and aerospace sectors.



**Partnerships they are seeking:**

- **Joint Development Partners:** LumiShield is looking for companies with expertise in electroplating to work with us on scale-up and commercialization of the technology.
- **Future Customers:** We are also looking to establish contact with businesses which might ultimately be interested in licensing and applying our technology.



**WEBSITE:**

[www.paxymer.se](http://www.paxymer.se)

**REPRESENTED BY:**

Amit Paul, Managing Director

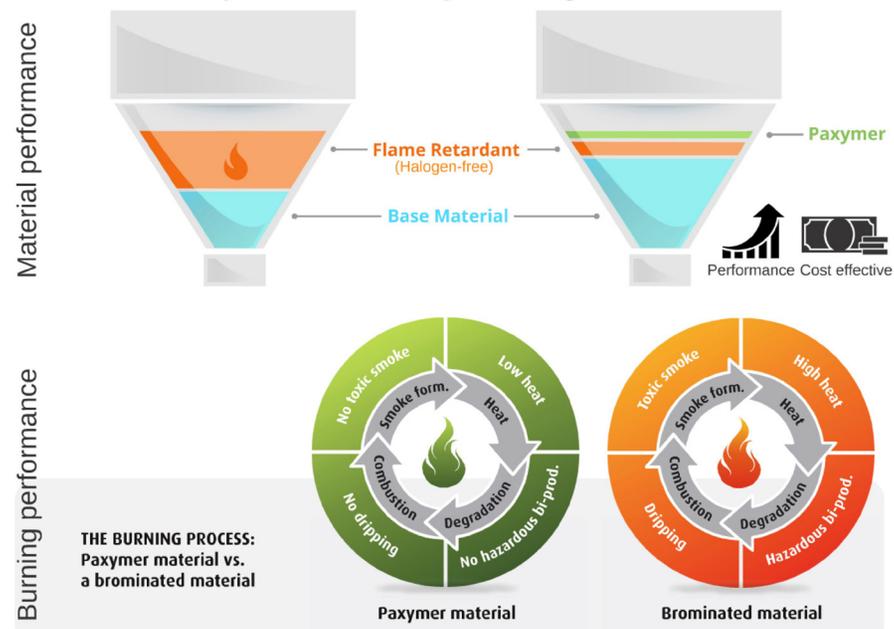
Paxymer is a flame retardant synergistic technology for boosting the performance of halogen free flame retardants in plastics. Paxymer comes in granular form and is added into the compounding or molding process when manufacturing plastics. It improves mechanical, processing and price performance by reducing the additive level while reaching a certain fire grade. Paxymer improves the burning process by reducing flame spread, eliminating dripping and reducing the amount of toxic smoke.

Paxymer is a patented technology. The company can offer full support in formulating custom formulations and testing material requirements in its own labs. Paxymer also has a number of standard formulations that it is offering to the market. The company has in-house production.

Paxymer is compatible with polyolefin plastics. The target markets are: transportation, building & construction and electrical & electronic equipment. Examples of commercialized applications:

- Compounding extrusion: Paxymer is delivered as a synergistic technology to compounders for boosting formulations currently in PP, PE, TPE
- Extruded parts: electrical conduits - rigid and corrugated in PP; and optical conduits – thick walled for blowing of optical fibers in HDPE
- Blow molded parts: HDPE for white goods application
- Injection molded parts: welding masks, furniture, electrical connectors in PP and PE

### Paxymer boosts the performance of halogen-free flame retardants & improves the safety of halogenated flame retardants



#### Partnerships they are seeking:

- **Customers:** We are looking for companies using flame retardant polyolefin plastics to add value by boosting the performance of their existing materials or migrate halogenated solutions to halogen-free solutions without deteriorating performance.
- **Other Partnerships:** We are also open to exploring alternative business models looking for long term partnerships – e.g. licensing, joint development projects, collaborations with halogen-free additive manufacturers to boost the performance of final compound.



**WEBSITE:**

[www.poly6.com](http://www.poly6.com)

**REPRESENTED BY:**

Matthew Stellmaker, Co-founder & COO

Keith Hearon, Co-founder & CEO

Poly6 Technologies is an early-stage specialty materials company with two product lines, the most public of which is Citrene™, a citrus-derived resin invented by Poly6 co-founder Keith Hearon and studied for two years at Massachusetts Institute of Technology. Poly6 is commercializing Citrene™ as a resin for additive manufacturing during early 2017. Citrene™ offers unique advantages, including low viscosity that is well-suited for inkjet printing, extremely high toughness (comparable to that of polycarbonate), industry leading UV/solvent resistance, optical clarity, high bio-based content and superior safety to competitive resins. Citrene™ has also been shown to have linear and tunable degradation in certain environments.

Poly6 is currently supplying Citrene™ within the additive manufacturing market and has several trials in other markets like UV curable ink, protective coatings for wood and other substrates, health and beauty and certain subsets of the electronics industry.

Poly6 is in Boston, MA and has a manufacturing partner located in the Northeastern United States.



Citrene™, Poly6's first product, is a biopolymer made from citrus waste. Its unique performance, unparalleled resin safety, and on-demand processing make it highly competitive across multiple industries.



**CLEAN ENERGY IMPACTS OF CITRENE™**

Compared to incumbent materials in select markets, Citrene™ has the potential to:



Reduce Global Warming Potential by

**95%**

Reduce Production Energy by

**83%**

Reduce Solid Waste From Production by

**93%**

Reduce Water Use by

**51%**

© Poly6 Technologies 2017



**Partnerships they are seeking:**

- Poly6 is looking for collaborations with end users of Citrene™. Types of end uses: high resolution performance 3D printing applications, protective UV wood coatings, ink formulators
- Poly6 is looking for academic collaborations to help with data generation and empirical studies of life cycle assessments, end of life degradation products, bioaccumulations and environmental persistence of Citrene™.

# SIRONIX

## RENEWABLES

### WEBSITE:

[www.sironixrenewables.com](http://www.sironixrenewables.com)

### REPRESENTED BY:

Christoph Krumm, Co-Founder, CEO

### Business Overview

Sironix Renewables is a seed stage company focused on commercializing a plant based Oleo-Furan Surfactant (OFS) technology for implementation in the surfactants market and laundry detergents industry. The patented technology reduces the cost and complexity of formulating a detergent product by reducing the number of chemicals needed for cleaning efficacy. Further development of the platform technology will enable expansion into additional cleaning markets as well as agricultural, paints/coatings, textiles, and oil recovery markets.

The Oleo-Furan Surfactant (OFS) is a new molecule made from renewable sugars and oils that meets or exceeds the detergency performance of current surfactants, while offering 100x greater stability in hard water compared with current surfactants. This enables detergent and other surfactant products free of harmful and expensive co-formulated chelating agents and builders.

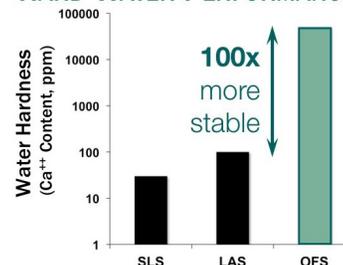
### Development Status

Sironix Renewables has raised over \$350k in seed capital for OFS technology development, and is developing a pilot scale facility for process improvements and sample production.



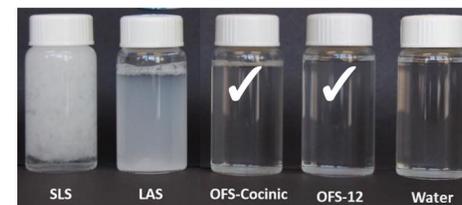
- **GREEN:** 100% bio-renewable surfactant
- **FUNCTIONAL** performance in a wide range of conditions
- **TUNABLE** characteristics for any application or market
- **SIMPLER** formulations from better performing surfactants

### HARD WATER PERFORMANCE



### VISUAL PERFORMANCE COMPARISON

Surfactant-Water Solution 50,000 ppm Ca<sup>++</sup>



### Partnerships they are seeking:

- Customers who seek samples of small production volumes of our surfactant and customized solutions for their application.
- Strategic partnerships for co-development of products for which we can offer customized solutions to add value in a given market.
- Partnerships with toll & contract manufacturers and natural oil and carbohydrate supply chain partners.



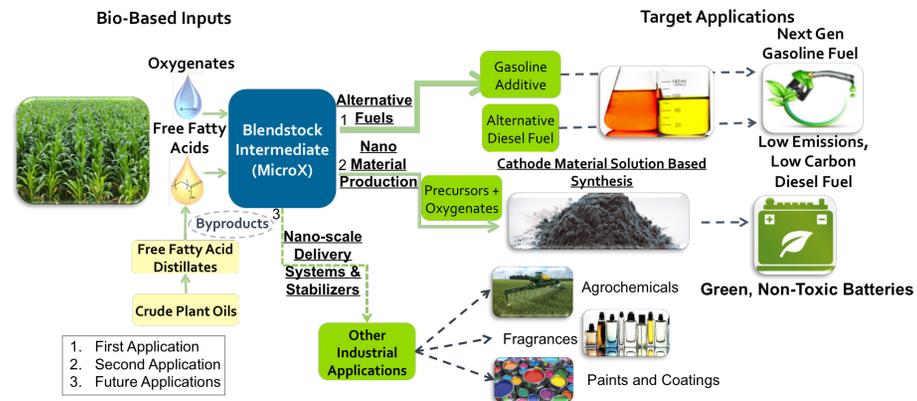
**WEBSITE:**

[www.sylvatex.com](http://www.sylvatex.com)

**REPRESENTED BY:**

Virginia Klausmeier, CEO & Founder

Sylvatex has developed a nano-chemistry platform that utilizes low carbon, low cost biobased inputs creating valuable solutions for industry processing, materials stability and alternative fuels. The first application of our technology is to provide cleaner-burning, low-carbon alternative fuels and additives. With our strategic partners we are executing a scalable co-location licensing production model that is CapEx/OpEx light and easy to implement. The target market for this application is comprised of diesel vehicles and fuel distribution networks. Sylvatex's business model is to enter into a commercial partnership with a biorefinery to co-locate our production facility followed by expansion of production through licensing agreements with additional biorefineries. The second application of our MicroX technology is as a renewable reaction media for the production of lithium-ion battery cathode materials. Our solution lowers the overall cost of battery production by requiring fewer, high energy, production steps while replacing toxic petroleum-based media with a renewable, recyclable production media. Our business model is to enter into a JDA with a battery producer to further develop and commercialize the battery application. Other applications we are looking to evaluate for our MicroX technology is as a materials stabilizer in the agrochemicals, fragrances, and paints and coatings industries.



**Partnerships they are seeking:**

- The development and management of strategic partnerships are a critical component to the adoption of Sylvatex's technology solutions. In addition to the company's current technical partnerships with national labs and the USDA, Sylvatex has established strategic partnerships with existing biorefineries and industry experts for the commercialization, production co-location and feedstock sourcing for the fuels application of the company's MicroX technology.
- Expanding the platform into nanomaterial synthesis - Sylvatex has developed a green solution based synthesis for cathode materials production for lithium-ion batteries targeting applications in EV and energy storage space, Sylvatex is seeking product development partnerships for its renewable reaction media, as well as production and distribution partnerships with key industry leaders within the battery production space.
- Sylvatex is also currently seeking additional partnerships for alternative low-carbon feedstock sourcing and developmental partners to explore other value applications.

# Invited Speakers – Large Product Manufacturers

## Zhigang Chen

### Sr. Technology Manager, Wood Care R&D, Rust Oleum

Zhigang Chen obtained his BS in Polymer Science in 1997. He worked as a coating and adhesive chemist at ICI Paints and National Starch and Chemicals for five years. He obtained his PhD from the Dept. of Coatings and Polymeric Materials at North Dakota State University in 2006. He then worked as a research scientist at the Center for Nanoscale Science and Engineering of North Dakota State University on various coating technologies including biobased coatings, UV curable coatings, anti-fouling/fouling release coatings and microelectronics materials. In 2011 he joined Ashland Performance Materials working on UV curable pressure sensitive adhesive platform technology. In 2012 he moved to Rust Oleum and is now a Sr. Technology Manager responsible for wood coatings R&D.

## Todd Cline

### Section Head - Fabric Care R&D, Procter & Gamble

Todd Cline is a Section Head in Global Fabric Care Research & Development at Procter & Gamble. He currently leads new product development for renewable/sustainability focused programs (e.g. Tide purclean, Dreft purtouch) as well as other areas such as unit dose detergents. He has over 20 years experience at P&G working across many businesses and regions - Homecare, Professional Products, Food & Beverage, and Health Care. Prior to joining P&G Todd received a B.S. in Chemical Engineering from the University of Kentucky and has a Masters of Business Administration from Xavier University.

## Greg Montello

### Senior Product Chemistry Manager, New Balance Athletic Shoe, Inc.

Greg Montello is the Senior Product Chemistry Manager for New Balance Athletics, Inc., a global footwear, apparel and equipment brand. Product chemistry compliance consists of RSL implementation, product safety and sustainability. Currently, his duties include the development, global deployment, and oversight of New Balance's Restricted Substance Manual (RSM) for all New Balance product lines. He is the Chair of the American Apparel and Footwear Association (AAFA) Environmental Committee, sits on the Brand Council of the Zero Discharge of Hazardous Chemicals (ZDHC) organization, chairs a task force of the Apparel, Footwear, International RSL Management working group (AFIRM) and supports the Green Chemistry & Commerce Council (GC3). Greg studied Environmental Toxicology as an undergrad at the University of Massachusetts, Amherst and pursued studies at the University of Oregon in Environmental Policy as a grad student.

## William C. Shearouse

### Senior Scientist, Fabric Care Research & Development, Procter & Gamble

William (Will) Shearouse received his Ph.D. in sustainable organic synthesis from the University of Cincinnati under the direction of Professor James Mack. While at the University of Cincinnati, Will researched sustainable olefination reactions using solvent free mechanochemistry. Will pursued a postdoctoral fellowship at the University of Minnesota in the Center for Sustainable Polymers in the research groups of Professors William Tolman and Theresa Reineke. At the University of Minnesota, Will investigated ADMET polymerizations of polyesters derived from glucose and castor oil. Will is a Senior Scientist in the Fabric and Home Care division of the Procter and Gamble Company where he develops liquid laundry detergent formulations. Will currently leads sustainable technology and product development programs for biobased laundry detergents.

## Jon Smieja

### Sustainable Design & Development Leader, Steelcase

Jon Smieja received his Bachelors of Science degree in chemistry from the University of St. Thomas (St. Paul, MN) in 2005 and his Ph.D. in Inorganic chemistry from the University of California – San Diego in 2012. Jon started at Steelcase in January of 2013 as a member of the Global Environmental Sustainability team where he now serves as the Sustainable Design & Development Leader for North America. His role at Steelcase involves evaluating chemistry data against human and environmental health criteria, working with suppliers to eliminate chemicals of concern, working on material innovation projects and communicating with customers in order to provide transparency about Steelcase's products.

## Candace S. Wheeler

### Retired Technical Fellow, General Motors

Candace Wheeler is a recent retiree from General Motors' Research and Development Center. Dr. Wheeler served as a GM Technical Fellow and Biomaterials Lead in their Global Energy Systems Intelligence Center. She received her BS degree in chemistry from Wheaton College in Wheaton, IL and her Ph.D. in pharmacology and toxicology from Wayne State University School of Medicine in Detroit, MI. She joined General Motors in 1981 as a postdoctoral fellow and then as a regular employee in 1983. Her early work involved studying the health effects of diesel particulate, ozone, and fibrous materials. The last 20 years, she shifted her focus to sustainable transportation including biochemicals and bioproducts, life cycle analysis, alternative fuels, and vehicle recycling. An author of numerous publications, Dr. Wheeler serves on the advisory board of two of the Department of Energy's BioEnergy Research Centers. She currently chairs the University of Michigan's Center for Sustainable Systems' Advisory Board and serves on the Board of Governors for the Great Lakes Leadership Academy. She is active in consulting work and in enjoying retirement.

# Attendees

## 3M

Maureen Kavanagh

Technical Manager - Pressure Sensitive Adhesives and Release Materials

## American Chemical Society - Green Chemistry Institute

Isamir Martinez

Program Manager Scientific Alliances & Business Engagement

## American Chemistry Council

Kevin Mulvaney

Sr. Director

## BASF

Patrick Harmon

Industry Manager

## Beautycounter

Nicole Acevedo

Principal Scientist

## Behr Process Corp

Dale McIntyre

VP Innovation and New Product Development

## BioAmber

Chris Ellen

Vice President - Sales

## Bioindustrial Innovation Canada

A. J. (Sandy) Marshall

Executive Director

## C&A Foundation

Amanda Cattermole

Consultant

## Caldrea

Sandra Tschantz

Associate Manager - Chemist

## CBiRC (Iowa State Univ)

Peter Keeling

Innovation Director

## Center for Sustainable Polymers

Laura Seifert

Managing Director

## The Chemours Company

Robert Buck

Technical Fellow

## Consumer Specialty Products Association

Steven Bennett

Vice President of Scientific Affairs

## ConVergInce Advisers

Joel Stone

President

## Covestro LLC

Sharon Papke

Director, Coatings, Adhesives & Specialties

**Covestro LLC**

Robert Saunders  
Head of Textile Coatings NAFTA

**Eastman Chemical Company**

Dawn Adcox  
Product Stewardship & Advocacy  
Manager

**Eastman Chemical Company**

Jos de Wit  
Sr. Research Associate

**Effective Advocates LLC**

Michele Jalbert  
Founder

**Elevance Renewable Sciences, Inc.**

Steve Block  
Director, Business Development

**Elevance Renewable Sciences, Inc.**

Rusty Pittman  
VP Business Development & Marketing

**Environmental & Public Health**

**Consulting**  
Ann Blake  
Founder and Principal

**Estee Lauder**

Martin Mishkin  
Vice President, R&D

**General Motors**

Candace Wheeler  
Retired Technical Fellow

**Gentex Corporation**

Sue Franz  
VP of Chemistry

**GFBiochemicals**

Tessellen Fennelly  
Global Business Development

**GOJO Industries**

Antonio Quinones  
Product Safety and Sustainability  
Manager

**Green Biologics**

Chris Lanci  
Global Business Development Manager

**Green Chemistry & Commerce Council**

Monica Becker  
Co-Director

**Green Chemistry & Commerce Council**

Sally Edwards  
Senior Research Associate

**Green Chemistry & Commerce Council**

Laura Hoch  
Technical Fellow

**Green Chemistry & Commerce Council**

Jennifer Landry  
Business Manager

**Green Chemistry & Commerce Council**

Joel Tickner  
Director

**GreenBlue Institute**

James Ewell  
Director, Sustainable Materials

**GreenCentre Canada**

Andrew Pasternak  
Director, Commercialization & Business  
Development

**Greenfield Specialty Alcohols**

Elena Frenkel  
VP Quality

**Greenfield Specialty Alcohols**

Frank Richards  
VP Business Development

**Grow Bioplastics**

Jeff Beegle  
CSO & Co-Founder

**Grow Bioplastics**

Tony Bova  
CEO & Co-Founder

**Herman Miller**

Shannon McDevitt  
Materials Engineer

**Herman Miller**

Lauren Zulli  
Sustainability Engineer

**Hybrid Coating Technologies**

Darin Nellis  
Director of Sales & Marketing

**IMD Natural Solutions**

Frederic Issenhuth  
Managing Director, Marketing & Sales

**InKemia Green Chemicals**

Lauren Zarama  
CEO

**Investor Environmental Health  
Network**

Richard Liroff  
Executive Director

**Johnson & Johnson**

Al Iannuzzi  
Senior Director EHS&S

**Johnson & Johnson**

Homer Swei  
Director Product Stewardship

**Kalion, Inc.**

Darcy Prather  
President

**Kingfisher plc**

Paul Ellis  
Head of Sustainable Chemicals Man-  
agement

**Levi Strauss & Co.**

Jennifer Benefiel  
Technical Lead for Chemical R&D

**LumiShield Technologies**

Hunaid Nulwala  
CTO

**Mango Materials**

Anne Schauer-Gimenez  
VP of Customer Engagement

**Michigan State University**

Ramani Narayan  
MSU University Distinguished Professor

**MilliporeSigma**

Ettigounder (Samy) Ponnusamy  
Fellow

**MN Pollution Control Agency**

Al Innes  
Safer Product Chemistry

**New Balance**

Greg Montello  
Senior Product Chemistry Manager

**Noble Polymers**

Meagan Marko  
Sales and Business Development  
Manager

**Novozymes**

Michael Elder  
Head of Regional Business Dev.

**Omni Tech International, Ltd.**

Lee Walko  
Biobased Business Development  
Director

**NSF International**

Donald Ward  
Sr. Research Toxicologist

**Paxymer AB**

Amit Paul  
Managing Director

**Perlmutter Associates**

Amy Perlmutter  
Principal

**Poly6 Technologies**

Keith Hearon  
Co-founder & CEO

**Poly6 Technologies**

Matthew Stellmaker  
Co-founder & COO

**Procter & Gamble**

Todd Cline  
Section Head - Fabric Care R&D

**Procter & Gamble**

William Shearouse  
Senior Scientist

**PTI Global Solutions**

Michael Schultz  
Managing Director

**Resinate Materials Group**

Brian Chermiside  
CEO & President

**Resinate Materials Group**

Kris Weigal  
Chief Commercial Officer

**Roppe Holding Company**

Ann Dougherty  
General Manager of Sustainability

**Rust Oleum**

Zhigang Chen  
Sr. Technology Manager

**Safer Made**

Martin Mulvihill  
General Partner

**schülke inc.**

Linda Sedlewicz  
Country Manager

**Series One, LLC**

Mark Richardson  
Engineering Consultant

**Shafer's Innovation and Business  
Building Services**

Andy Shafer  
Strategist and Business Builder

**Sironix Renewables**

Christoph Krumm  
CEO

**Steelcase Inc.**

Tammy Ayers  
Manager, Global Sustainable Design &  
Development

**Steelcase Inc.**

Mary Ellen Mika  
Manager, Global Compliance &  
Sustainability

**Steelcase Inc.**

Jon Smieja  
Sustainable Design & Development  
Leader

**Sylvatex Inc.**

Virginia Klausmeier  
CEO & Founder

**Target**

Chris Uecker  
Sr. Scientist

**UL - The Werces**

Sean Burek  
Business Development Specialist

**UL**

Joe LaGrow  
Sales Manager

**Washington State Department of  
Ecology**

Saskia van Bergen  
Green Chemistry Scientist



**GREEN CHEMISTRY &  
COMMERCE COUNCIL**

Business Mainstreaming Green Chemistry

The GC3 Green & Bio-based Chemistry Startup Network is dedicated to accelerating the development and market adoption of green chemistry technologies by supporting the growth of green and bio-based chemistry startup companies.

If you have any questions, please contact **Monica Becker (monica@monicabecker.com)** or **Laura Hoch (laura\_hoch@uml.edu)**

For more information about the GC3, please visit our website at [www.greenchemistryandcommerce.org](http://www.greenchemistryandcommerce.org)

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