

Industrial Workshop on Separations Technology

Speakers, Session Chairs & Panelists Biographies

(In order of the Agenda)

Jeffrey McCutcheon

**Fraunhofer USA
Center for Energy
Innovation CEI**



Jeffrey McCutcheon is The Al Geib Professor of Environmental Engineering Research & Education in the Chemical & Biomolecular Engineering Department at the University of Connecticut. He received a B.S. in Chemical Engineering from the University of Dayton and his Ph.D. in Chemical Engineering from Yale University.

Since his appointment in Fall of 2008, he has established a laboratory focused on membrane separations. He works in the areas of forward osmosis, membrane distillation, nanofiltration, reverse osmosis, pervaporation, vapor permeation, organic solvent nanofiltration and additive manufacturing for membranes. He has authored over 80 refereed publications, written 3 book chapters, and has several patents on membrane technology.

He has served the separations community as a Director for both the AIChE Separations Division and the North American Membrane Society (NAMS) and recently served a term as President of NAMS. He has received numerous awards including the 3M Nontenured Faculty Award, the Solvay Advanced Polymers Young Faculty Award, The DuPont Young Faculty Award, and the FRI/John G. Kunesch Award from the AIChE Separations Division. He recently was the winner of the 2019 Global Water Summit Water Technology Idol competition for his work on 3D printed membranes.

In 2017, he was named the Executive Director of the Fraunhofer Center for Energy Innovation. This partnership between the State of Connecticut and the German Fraunhofer Institutes is dedicated to applied research in the membrane technology space and is charged to interact directly with industries in need of solutions to separations challenges

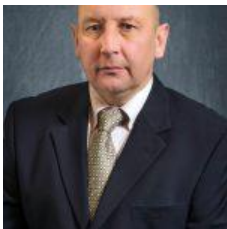
Alex Michaelis
Fraunhofer IKTS



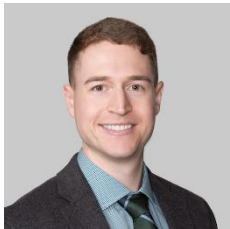
Prof. Alexander Michaelis studied physics at the University of Dusseldorf in Germany and graduated with a diploma thesis in laser and plasma physics. Subsequently he switched to the field of physical chemistry and received his doctorate in electrochemistry.

In 1995 he spent one year as faculty member at the University of North Carolina at Chapel Hill, USA. There, he worked on high temperature superconductors YBCO and Si-based microelectronic systems. In 1996 he accepted a position at Siemens AG working as senior process integration engineer in the field of microelectronics amongst others at the DRAM Development Alliance in East Fishkill, New York. In 2000, he began to work for the corporate research department of Bayer AG in Leverkusen. From there he was delegated to H.C. Starck GmbH, a Bayer subsidiary, where he was head of the Electroceramics and the New Business Development department. Furthermore, he was the managing director of InDEC B.V. working in the field of solid oxide fuel cells. During this time he also finished his state doctorate (habilitation treatise) at University of Dusseldorf.

Since 2004, Prof. Michaelis is president of the Fraunhofer Institute for Ceramic Technologies and Systems IKTS with more than 700 employees

	and a yearly budget of over 60,6 Mil. He holds the chair of Inorganic Nonmetallic Materials at Technische Universite Dresden and more than 40 patent families in materials science, microelectronics and electronics, and provided more than 360 publications. Recently, he has been elected as president of the German Ceramic Society (DKG). In 2009 he was nominated as academician of the World Academy of Ceramics WAC. Three years later he was appointed for the ACerS Bridge Building Award for his contribution in the field of energy and environmental technology and in addition elected as a member of the Energy Advisory Board of Saxony. He received the Fraunhofer Medal for outstanding achievements in the field of applied materials research in 2014. In 2015 he was appointed for the LEE HSUN Award on Materials Science of the Chinese Academy of Science and in 2016, the American Ceramic Society (ACerS) named Prof. Michaelis Fellow of the Society for his long commitment and outstanding contributions to applied research and development of advanced ceramics. During the 15th Conference & Exhibition of the European Ceramic Society (ECerS) in 2017 in Budapest, Hungary, he was appointed as Fellow of the ECerS.
J.R. Johnson ExxonMobil 	JR joined the Corporate Strategic Research division of ExxonMobil in late 2017. His research currently focuses on the development of membrane-based systems for a variety of challenges facing the petrochemical and refining industries. Particular interests include process intensification and disruptive separations technologies to displace the dependence on purely thermally driven processes. Prior to joining ExxonMobil, JR was located in Saudi Arabia at the Corporate Research & Development center for Saudi Basic Industries Corporation (SABIC) for nearly 5 years. He received his graduate degrees from the School of Chemical & Biomolecular Engineering at the Georgia Institute of Technology under the guidance of Prof. W.J. Bill Koros.
Max Christie Praxair, Inc. (a Linde plc Company) 	After completing a B.Eng. in Ceramics Science and Engineering at The University of Leeds, UK, and a Ph.D. in Materials Science and Engineering at Imperial College, London, UK, Max spent seven years at The Netherlands Energy Research Foundation (ECN) in Holland. During his time at ECN, Max worked on several large European projects that targeted the development and commercialization of Solid Oxide Fuel Cells in combined heat and power generation applications. The technology developed at ECN during that timeframe was commercialized through a spin-off company and ultimately sold to a larger European corporation. In 2000, Max joined the ceramic membranes group at The Praxair Technology Center in Buffalo, NY. During his time at Praxair, Max has led teams that developed and commercialized high purity oxygen generator technology, prototyped inert gas purification systems and commercialized rotatable sputtering targets that are consumables in the fabrication of photovoltaic cells. In his current role as R&D Director for ceramic membranes at Praxair Inc., Max is focused on scale-up, demonstration and commercialization of Oxygen Transport Membrane (OTM) technology for the conversion of natural gas to synthesis gas, a mixture of hydrogen and carbon monoxide.

Harry Cordatos United Technologies Research Corporation 	Dr. Harry Cordatos is an Associate Director at United Technologies Research Center and has 23 years of industrial experience. Dr. Cordatos has lead numerous projects related to membrane technologies for aircraft and energy applications and holds 24 issued US patents.
Jian Ren AbbVie 	Dr. Jian Ren is a Senior Scientist at AbbVie Bioresearch Center in Worcester, MA. She is responsible for developing and supporting downstream manufacturing process for early to late phase clinical biologics programs. She has led purification process development for various pipeline biologics programs and a number of innovative research projects. She holds a BS degree in Polymer Material Science from Sichuan University and a PhD degree in Chemical Engineering from the University of Connecticut.
Peter Fiske Lawrence Berkeley National Laboratory	Dr. Peter S. Fiske is the Director of the Water-Energy Resilience Research Institute (WERRI) at Lawrence Berkeley National Laboratory. WERRI's goal is to orient and align the water-related research programs at LBNL to address critical gaps in the reliability, efficiency and sustainability of water-energy systems in California and the nation. Fiske also is the Executive Director of NAWI, the National Alliance for Water Innovation - a team of three national labs and over 20 universities and companies pursuing the Department of Energy's Clean Water Hub opportunity, due to be announced in the Spring of 2018. The Clean Water Hub is a 5-year, \$100M funding opportunity to build a national, integrated research program to radically cut the cost and energy consumption for water treatment in a variety of applications including ocean desalination, inland brackish water treatment, industrial water reuse and produced water treatment.
Earl Jones Heartland Technologies	Earl Jones is the Chief Executive Officer for Heartland. Earl is a recognized thought-leader in the Water Industry and has built and led high performing teams for the past 25 years. He is a Founder and Chairman Emeritus for the North East Water Innovation Network (NEWIN). Prior to Heartland, Earl helped co-found the Private Equity Fund Liberation Capital, which provided project financing for distributed energy and water infrastructure. Earl is formerly a Senior Executive at GE, serving in a variety of leadership roles, including as the Global Commercial Leader for GE Water responsible for Sales, Partnerships, Risk, and Project Development. Earl led the global eHealth Solutions business for GE Healthcare IT, and was GE's Lean Six Sigma Leader for Supply-chain. Prior to GE, Earl was a Partner and CFO in management consulting, a supply-chain leader at Dell, and served honorably as a Submarine Officer in the US Navy. Earl holds a M.S. in EE/CS and an MBA from M.I.T., and a B.Sc. in EE from the US Naval Academy. Earl, his wife Sharon, and two sets of twins reside in Boston, MA.

Stephen Frayne Via Separations 	A native of CT, Stephen Frayne is a Senior Chemist at Via Separations, where he is an integral part of a R&D team synthesizing robust graphene oxide membranes. He graduated with his Ph.D. in Chemistry from Wesleyan University, where he worked in Prof. Brian Northrop's group, studying the fundamentals of selective thiol-Michael reactions and their applications in the synthesis of multifunctional polymers and dendrimers. Prior to joining Via, he served as a postdoctoral scholar at MIT designing new chemically resilient polymers for separations under the supervision of Prof. Jeff Grossman. He has published 12 peer reviewed papers focused on streamlined design and synthesis of organic materials and is passionate about applied chemistry, energy efficiency, and triathlons.
Jaime Mateus Anfiro 	Jaime is the CEO and co-founder at Anfiro, working on novel self-assembling polymer materials for the next generation of membranes that can reduce the cost and energy of water treatment. Heh has a PhD in Aerospace Engineering from MIT, and previously an associate at Flagship Ventures.
Kendall Weingart AquaMembranes 	A pioneer in the membrane space, Kendall Weingardt is the Vice President of Business Development at Aqua Membranes, Inc. Kendall began his career as lead developer and since 2011 he's played an integral role in Aqua Membranes Printed Spacer Technology creation, testing, and implementation in the marketplace. He is driven by a mission to use the advantages of this groundbreaking technology to improve the quality of water throughout the world by collaborating with customers, investors and innovators in the space. Kendall believes that fortune favors the willing, and with enough persistence there is no challenge too great. He holds a BS in Chemical Engineering and an MBA from the University of New Mexico. While sales, development and innovation are his passions by day, Kendall also enjoys sailing, auto mechanics, and competing in professional mountain biking events.
Michael Holm Møller Aquaporin	Michael is Aquaporin's Forward Osmosis Product Manager. He has 5 years experience working with Forward Omsosis both from technical and commercial point of view. He has a Bachelor's in Business Development Engineering and Masters in Environmental Engineering.
John Plaza Membrion	John is deeply passionate about climate change and the need for immediate action to address it. He strongly believes that while we are causing this dramatic change to our own environment, we are also completely capable of addressing the challenges with exciting and viable solutions. Entrepreneurs, investors and industry have always overcome commercial challenges in innovative and effective ways. With more than 25 years of experience in the renewable energy, clean technology, and aviation sectors, he has a proven track record of launching highly successful startups from the ground up, obtaining funding from leading private equity and venture capital firms, successfully growing operations, and structuring mission-critical partnerships and alliances specifically focused on environmentally beneficial technologies and solutions. Currently, he is the Executive Chairman of Membrion, a

	University of Washington spin-out developing low-cost, high performance ion-exchange ceramic membranes. He also serves as Executive Chairman at Agrisoma, a dynamic and industry leading Ag-tech company located in Ottawa. Highlights of his career include leading the startup, design and construction one of the world's largest profitable biodiesel companies in the world that generated over \$185M a year in annual revenue. And in addition, this facility has reduced global CO2 emissions by more than 7 billion pounds to date. He has been successful in raising over \$300M in equity and debt funding from industry leading VC, PE and Hedge Funds. In August 2015, he concluded the successful sale of Imperium Renewables and all its assets to a major competitor with a positive return to Imperium's shareholders. Prior to founding Imperium, he was a commercial airline pilot for 20 years. He has flown over 17,800 hours in more than 50 different aircraft, starting his career as a bush pilot in Northern Alaska, then going on to fly B747, DC-10 and A-320 aircraft for Northwest Airlines.
Chris Drover ZwitterCo 	Christopher Drover is a chemical engineer and entrepreneur committed to developing technology-based solutions to problems at the water-energy nexus. He is the Chief Technical Officer and a co-founder of ZwitterCo, Inc., a Tufts University spin-out delivering self-assembling zwitterionic membranes for advanced wastewater treatment. Formerly, Mr. Drover was a technical program manager and R&D engineer at Oasys Water, where he led development of the second-generation forward osmosis brine concentrator for the Chinese ZLD market and later served as a technology transfer adviser during a subsequent acquisition. Mr. Drover is a named inventor in eight different US and international patent families pertaining to water treatment and membrane technology. He holds an M.S. in Chemical Engineering from Tufts University and a B.A. in Chemistry and Physics from Ohio Wesleyan University.
Elizabeth Nelson Mother's Milk is Best, Inc. 	MMIB Inc is a Delaware C Corp, led by Co-Founders Beth Schinkel CEO and Elizabeth Nelson PhD CTO. Beth Schinkel is a NICU RN and Registered Dietitian with 20 years of clinical experience and Elizabeth Nelson PhD has 15 years of medical device engineering, materials science, and device manufacturing experience. We have developed a network of medical, chemical, engineering, FDA regulatory, financial, and management subject matter experts to build the support framework for the commercialization of its medical device to NICUs across the U.S. MMIB Inc is an agile company that has grant paid consultants who are able to take on roles within the company as we grow.
Ian Piro Isle Utilities 	As a consultant at Isle, Ian brings a deep knowledge and passion for sustainable water resource management. He has a diverse background in public utility management, wastewater operations, environmental compliance and strategic planning. Throughout his career, Ian has worked diligently to anticipate and adapt to emerging issues while minimizing risk and operational uncertainty. As the Former Environmental Compliance Manager at DELCORA, Ian worked on the front-lines of wastewater management serving a population of over 500,000. In this role, Ian lead cross-functional efforts with engineering and operations personnel to ensure the environmental sound and cost-effective operation of the DELCORA system.

	Ian has a Bachelor of Science Degree in Biochemistry from Villanova University with minors in Bioengineering and Chemistry and a Master of Science in Environmental Science from Drexel University. He maintains a Class A Wastewater Treatment License for the State of Pennsylvania.
Steve Kloos True North Venture Partners 	Steve Kloos is a Partner with True North Venture Partners, a Chicago-based firm that invests in early stage disruptive innovations in cleantech and supports those companies on their journey to transform and lead global industries over time. At True North, Steve focuses on identifying technology trends and market needs, sourcing and leading investment opportunities, assisting portfolio companies, and helping with firm management. Steve is the Chairman of the board of Current, a non-profit platform for water innovation, he serves on the ImagineH2O Advisory Board, and is as a judge for the Global Cleantech 100. Prior to joining True North, Steve worked in various R&D roles at General Electric in the US and Asia. Steve holds a PhD in Chemistry from North Dakota State University.
John Korpiel Veolia Water Technologies & Solutions 	John Korpiel is a Principal Engineer with Veolia Water Technologies. He has 22 years of experience in industrial water and wastewater treatment, specializing in the process design, optimization, and troubleshooting of physical/chemical systems, including integrated membrane systems. His current focus is on water/wastewater treatment applications in the oil & gas, mining, and power industries. He is a co-inventor of a Veolia patented technology for produced water treatment. He holds B.S. and M.S. degrees in Civil and Environmental Engineering from the University of Pittsburgh and is a licensed professional engineer in Pennsylvania and several other states.
Frank Brigano Marmon Water 	Frank A. Brigano, Ph.D., is Vice President, Senior Research Fellow for Marmon Water Inc., responsible for identifying and acquiring new technologies for the Marmon Water Group of Companies. Frank has extensive experience in water treatment and has led Research, Engineering and Product Development efforts for Point-of-Use (POU), Point-of-Entry (POE), Small Municipal Systems and Commercial Products. He is the Vice-Chairman of the NSF International Drinking Water Treatment Unit Joint Committee, and Chairman of the NSF International Certification Council. Frank is the recipient of the Lifetime Achievement/Membership and Merit Awards from the Water Quality Association (WQA). Dr. Brigano currently serves on the Water Quality Research Foundation (WQRF) Board of Directors and leads a WQRF research effort on alternative water treatment technologies. He is a Life Member of the American Water Works Association (AWWA). Frank serves as a Commissioner on the Conservation and Inland Wetlands and Watercourses Agency for the Town of North Branford Connecticut.

Rick Stover Gradiant 	Dr. Richard Stover serves as Vice President of Technology for Gradiant's Osmotics business unit, where he leads the development and commercialization of CounterFlow Reverse Osmosis (CFRO), a membrane-based brine desalination and concentration process. Dr. Stover is an accomplished product manager and business leader with a track record of successful water startup companies with expertise in reverse osmosis processes, membranes, pumps and energy recovery devices. He has numerous patents and received the European Desalination Society's Sidney Loeb award for outstanding innovation. His doctorate degree is in Chemical Engineering from the University of California at Berkeley.
Derek Dehn 3M 	Derek Dehn received his B.S. in Chemical Engineering from Michigan Technological University in 2006 after completing several co-op assignments with 3M Company in Early Pharmaceuticals and Technology, Corporate Research Process Lab, Medical Division, and Corporate Research Materials Labs. He has been a research engineer with 3M's Corporate Research Process Lab for the last 13+ years. His work focuses on developing new materials and processes for membranes, separations, extrusion and films. He has received several 3M awards for individual and team technical achievements, engineering and supply chain. Derek served as Industrial Advisory Board Chair for The MAST Center from 2016-2017 and is a member of The North American Membrane Society. He is the proud father of three children.
Manny Singh Koch Membrane Systems 	Manny Singh is the President of Koch Membrane Systems, Inc. He joined Koch in 2010 as Vice President of Technology where he was directly responsible for the management of KMS Research and Development and Product Management activities. Manny was promoted to the President of the company in Dec 2015. He has a Master's degree from University of Toronto and has been working in the membrane field for more than twenty years. Prior to joining KMS, Manny worked with Zenon/GE Water and Process Technologies, starting as a research engineer and subsequently held various management positions.
Ingolf Voigt, Fraunhofer IKTS 	Ingolf Voigt studied chemistry at Friedrich-Schiller University Jena, Germany. He earned his PhD degree in the field of solid state chemistry in 1993. He joined Hermsdorf Institute of Technical Ceramics (HITK) and started the development of ceramic membranes based on sol-gel technique resulting in the worldwide first ceramic nanofiltration membrane. He became Head of the Department of Ceramic Membranes and expanded the membrane activities to zeolite membranes, carbon membranes and perovskite membranes which are used for pervaporation, vapor permeation as well as gas separation. With about 50 people the group became one of the biggest international inorganic membrane groups. In 2010 HITK merged with Fraunhofer IKTS and Ingolf Voigt became Head of the Department of Environmental Engineering and Bioenergy. In 2012 he was appointed to the Deputy Director of the Fraunhofer IKTS including a specific responsibility for the Research Field Environmental and Process Engineering. In 2015 the group won the Corporate Environmental Achievement Award of the American Ceramic Society for the Development of Ceramic Nanofiltration Membranes for Efficient Water Treatment.

	Ingolf Voigt is teaching at the Friedrich Schiller University and the Ernst Abbe University of Applied Sciences in Jena in the fields of membrane technology and ceramic processing. He is inventor/co-inventor of 19 patents and has authored/co-authored 248 oral presentations and research publications including 3 book chapters. He is appointed member of ProcessNet subject division Membrane Technology and ProcessNet subject division Production-Integrated Water/Waste Water Technology of Germany.
Bruce Bishop CrossTek 	Bruce Bishop is a membrane industry veteran with nearly 30 years of experience. After getting his Ph.D. from MIT, he joined a ceramic membrane start-up company, CeraMem Corporation, and served in product and process development, engineering, and manufacturing for CeraMem prior to becoming CEO. He spearheaded the sale of CeraMem to Veolia Water Technologies in 2008 with a focus on the upstream oil & gas produced water market. Within Veolia, Bruce was a vice president and general manager of the CeraMem group, with P&L responsibility. During his tenure, his group was responsible for developing leading edge, produced water treatment technology leading to nearly \$200 million of revenue in membrane systems and related equipment, turnkey installation, and operations. He is currently the President & CEO of CrossTek Membrane Technology, a membrane module and systems company which started in 2016.
Kevin Donahue Alsys 	Kevin majored in Chemical Engineering at the University of Lowell. He joined Abcor (now Koch Membrane Systems) in 1980. His first role was in Product Development, where he helped to commercialize spiral wound UF elements and ½" diameter UF tubes. He transferred to the Field Service group in 1982. His accomplishments included commissioning UF systems used for fruit juice clarification in South Africa, ecoat paint in Brazil, RO systems for concentration of whey protein, and UF systems for textile size recovery. He was next appointed Manager of the Field Service Group, where he supervised a team of seven. He then served as Sales Engineer for the Automotive and Appliance group, selling UF systems and replacement membranes for ecoat paint and degreaser reuse. After two years, he was transferred to the Food and Dairy Group. His teams sold UF and MF plants for dextrose clarification, cream cheese manufacture, whey protein concentration, and fruit juice clarification. In 1990 he was appointed Business Manager for Industrial Wastewater, with worldwide responsibility for P&L. He worked with local salespeople all around the world to develop new applications, and to increase sales and profitability. He served in that role until the year 2000. From 2000 – 2009 he served in a similar role for the Specialty Applications business at KMS. As Sales Engineer for D&D Filtration from 2009 – 2011, Kevin sold products and equipment other than crossflow membranes, such as cellulose depth filters, cartridge filters, capsule filters, and a custom designed trailer mounted unit for mobile purification of transformer oil. From 2011 to 2019, Kevin was Global Sales Manager for Synder Filtration. Kevin's primary customers included OEMs and distributors throughout Europe, as well as chemical industry and biotech users, and non-dairy OEMs in the USA. Kevin joined CeraMem (part of the Alsys Group) in March 2019 in the role of Business Development Manager.

Judith Herschell Cerahelix 	Currently, Judith Herschell Cole is Chief Commercial Officer at Cerahelix, ceramic nanofiltration membrane supplier. She has been in engineering and water treatment for more than 35 years. In addition to founding an engineering and business consultancy in 2003, she was a Vice President and Officer at AECOM and Managing Director for Norit Americas Membrane Division (now part of Pentair). She has written many articles for industry publications and has been active in committee and planning boards for AWWA, WEF, AMTA, and the Marcellus Shale Coalition. She has served on multiple corporate, professional, and charitable boards. Her education includes BS in Biology and BS in Psychology from Geneva College, BS Mechanical Engineering from University of North Carolina, Charlotte, and MS work in Biology at California University of Pennsylvania.
Tobias Wölfel Inopor/Rauschert 	Tobias Woelf joined Rauschert / Inopor in 2014 for a position in the application lab. He has taken on increasing responsibility for the ceramic filtration product since that time, and is now Product Manager at Rauschert. Tobias has a Bachelor of Engineering in Environmental Engineering from the University of Applied Science Hof. He received his Master of Engineering in Project Management from the same university earlier this year.
Roman Pikalov Safbon	Roman Pikalov is a young professional graduated from the University of South Florida, Department of Chemical and Biomedical Engineering. Roman joined SafBon Water Technology right after his graduation and he is focused on ceramic membranes in water and waste water treatment markets. Roman is involved in product improvements as well as business development for ceramic membrane treatment systems in the United States.
Greg Wood, i2m 	Mr. Wood is Head of Sales and Marketing at i2m. He received his BS degree in Chemical Engineering from Bucknell University followed by his MS degree in Polymer Science from Clemson University. Mr. Wood held several positions in technology and product development early in his career and over the last 13 years has had the responsibility for leading and developing several multi-million-dollar businesses. At his current role with i2m, he is responsible for the market entry and business development of new and innovative filtration technologies.
Michael Shaw Nanostone	Michael Shaw is the Director of Application Engineering at Nanostone Water. In his role, Mr. Shaw is responsible for global applications engineering and field services associated with Nanostone's ceramic UF products. Prior to joining Nanostone, Michael spent over twelve years at Evoqua where he held a variety of roles including Director of R&D, and engineering. Mr. Shaw's water treatment experience includes various water treatment technologies such as UF, electrodialysis, electrodeionization, ion exchange and advanced oxidation. Mr. Shaw's application experience includes seawater desalination, municipal drinking water and various industrial process waters / wastewaters.