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FILTRATION CONGRESS
SAN DIEGO CALIFORNIA USA OCTOBER 5-9, 2022

CONGRESS PROGRAM

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LETTER FROM WFC13 CHAIR, WALLACE LEUNG

Welcome all international delegates to the 13th World Filtration Congress (WFC13) hosted by the American Filtration and Separations Society in San Diego, CA, USA. I also want to extend a warm welcome to all delegates from the 13 International Delegation on Filtration (INDEFI) members – Austria, Australia, China, Chinese Taipei, France, Germany, Hungary, India, Japan, Nordics, South Korea, United Kingdom, and United States.

The WFC was originally set for April 2020. Unfortunately, due to the pandemic, it was postponed twice, and we are all delighted to be meeting in person now. Despite all kinds of difficulties and challenges from the pandemic that affect every corner of the globe, there are opportunities that surface during this troubling time. The pandemic that affects health also highlights the importance of filtration and separation that affect our living. For example, filtration of airborne viruses, such as SARS-CoV-2 virus and variants become of paramount importance. Are the facemasks, respirators, air filters, and air purifiers adequate to filter the tiny virus that are carried by nuclei particles in air? Can filtration and separation help to produce large-scale pharmaceutical-grade vaccine and antibodies to combat the virus in our bodies?

Since the first World Filtration Congress held in 1974, WFC13 is the largest event ever with 4 topical tracks (solid-gas separation, solid-liquid separation, membrane filtration, and filter media) and 3 interdisciplinary symposia (environment, energy, and health). It features 7 plenary speakers, 30 keynote speeches, almost 300 technical oral presentations, 100 exhibitors displaying the latest technologies on filtration and separations, student and industry posters – all packed in the schedule between October 6th – 9th. On October 5th, we have nearly 10 short courses for delegates to be informed, or refreshed, on the latest technologies in filtration and separations. Concurrent with the short courses, there are also three informative and fun excursion tours for the delegates and their families to enjoy before the Congress starts the next day.

Not only you will learn various new technologies and gain new knowledge in filtration and separations, I am sure you will meet new friends, collaborators, and business partners from different parts of the world and make new connections. The welcome reception, coffee breaks and gala dinner which are held during the Congress are excellent forums to foster such purpose. I truly believe that WFC13 can offer something for everyone. Most importantly, relax and enjoy the Congress to be held in the beautiful city of San Diego.

Wallace Leung
WFC13 and INDEFI Chairman

LETTER FROM AFS CHAIR, JENI WONG

It is my pleasure to welcome you all to San Diego for the 13th World Filtration Congress (WFC13), hosted by the American Filtration and Separation Society (AFS). After having to postpone due to COVID-19, we are excited to see you in person where we can come together to share new ideas and meet old and new friends alike.

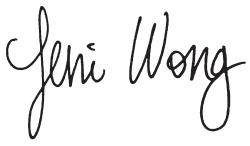
With a program comprised of 7 plenary presentations, 30 keynote lectures, and nearly 300 technical presentations, alongside student and industry posters and a sold-out expo, WFC13 is the largest filtration event in the world. None of this would have been possible without the extraordinary effort and dedication from our volunteers. A big thank you to all of our track chairs, poster chairs, and presenters, without whom we could not have such a successful event! I would specifically like to thank Wallace Leung as INDEFI and WFC13 Chair and Rahul Bharadwaj as WFC13 Operations Chair. I cannot fully express my gratitude to the many people who have dedicated their time and talents to executing this conference; coming together to better the industry as a whole.

To those joining us on Wednesday, October 5th for the short courses, we welcome you and look forward to seeing you at future AFS courses. Courses are held in person at AFS conferences as well as online in the Learning Center. We have launched our AFSCP certification with the first exam being held here in San Diego. We wish all who are sitting for AFSCP exam the best of luck!

The WFC13 expo will open on Thursday, October 6th where you can connect with colleagues, suppliers, and customers to discover the latest technologies and network with over 100 companies. The expo will open Thursday morning after the plenary session and Friday and Saturday all day. For those of you in the technical sessions we encourage you to stop by the expo on your coffee and lunch breaks. A special thank you to our Diamond sponsors Alkegen and Mativ.

Each year AFS proudly hosts a student poster competition. Students are able to share their research and work with the industry. The posters are discussed throughout the conference and will be judged Friday, October 7th. With the generous support of our student poster sponsors, AFS was able to provide students with funds to travel to WFC13. Please stop by the student posters on Thursday and Friday and engage with the students whose work is on display and who are the next generation of filtration scientists.

Thank you for joining us! I look forward to seeing you all this week in San Diego and at future AFS events!



Jeni Wong
American Filtration and Separation Society (AFS) Chair

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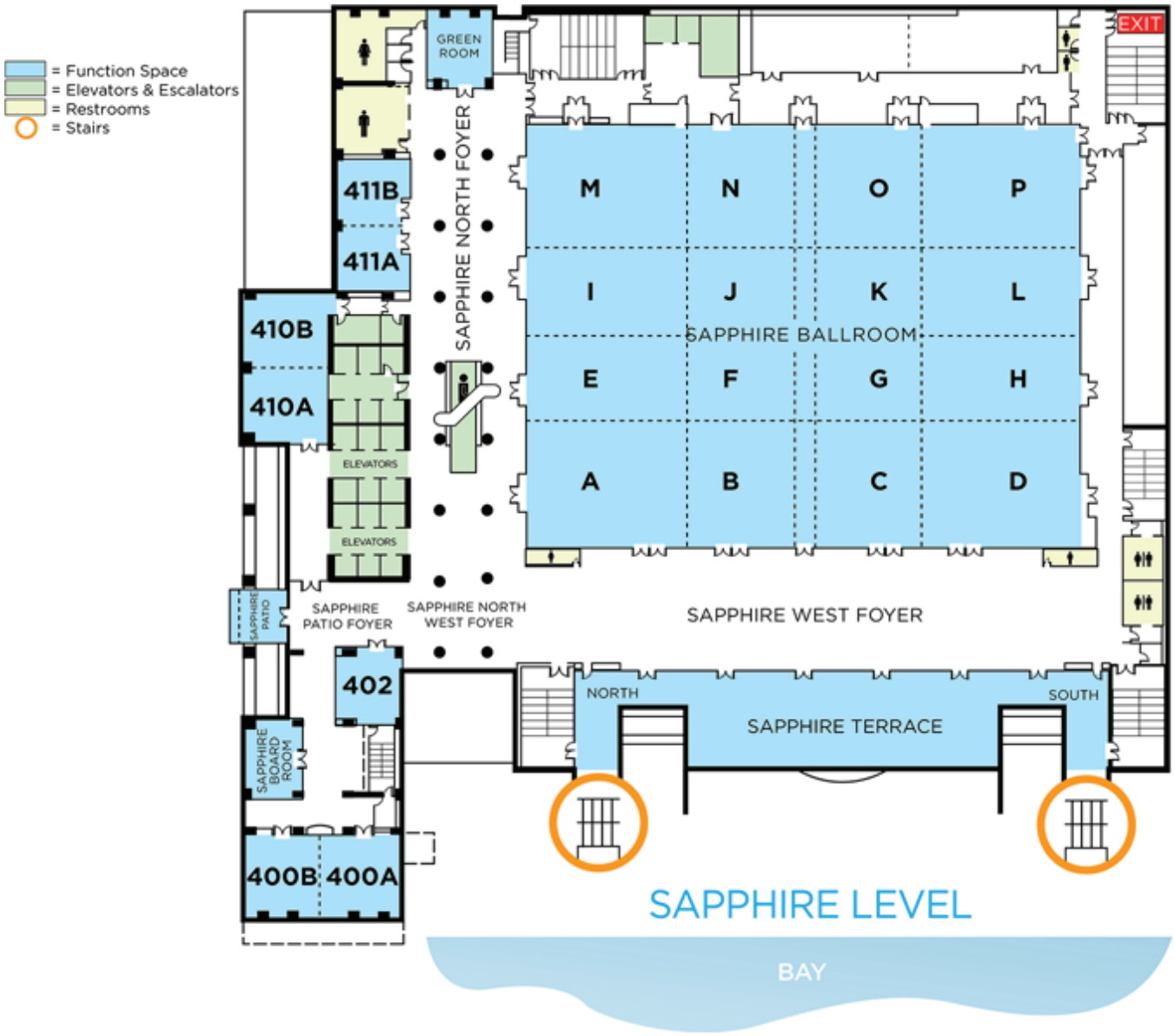

ROOM	CONTENT
Sapphire Ballroom AE	Plenary/Breakout
Sapphire Ballroom I	Keynote/Breakout
Sapphire Ballroom M	Keynote/Breakout
Sapphire Ballroom B, F, J, N, C, G, K, O, D, H, L, P	Expo
Sapphire 400	Breakout
Sapphire 402	Breakout
Sapphire 410	Breakout
Sapphire 411	Breakout
Sapphire North Foyer	Posters
Sapphire West Foyer	Expo

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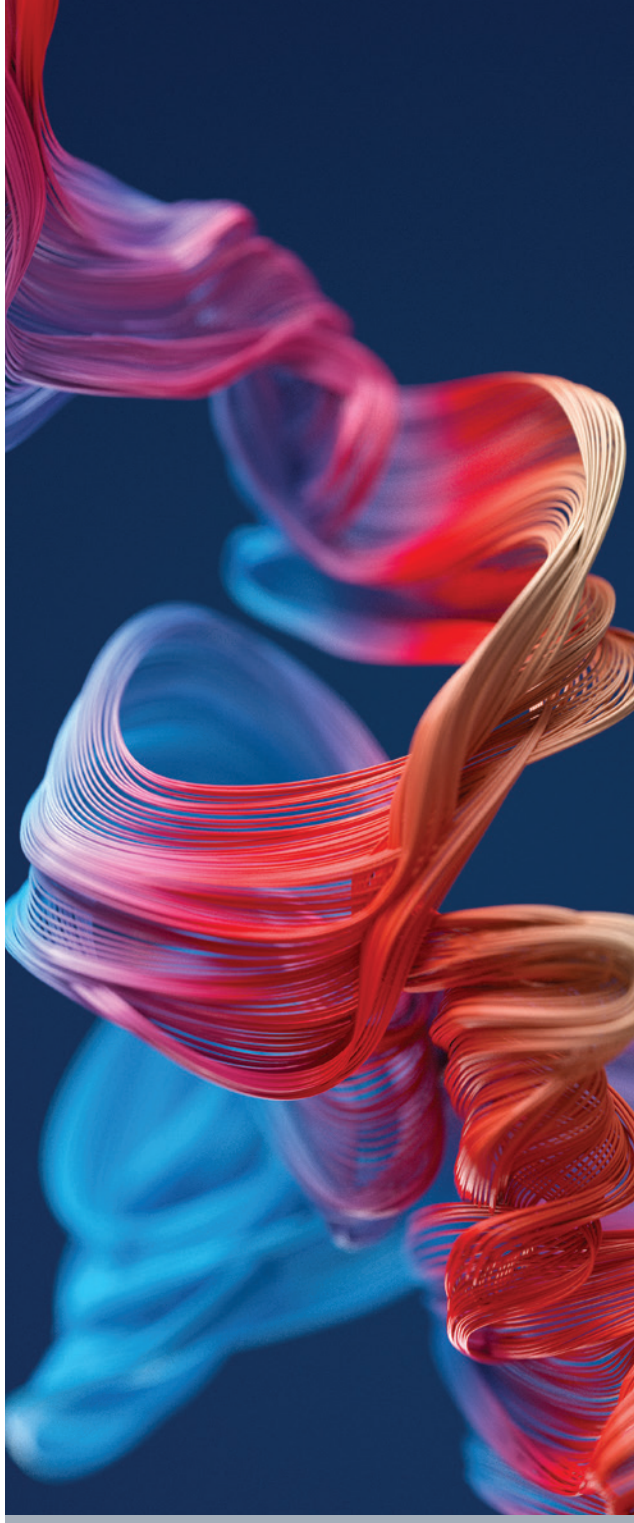

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SCHEDULE AT A GLANCE

WEDNESDAY, OCTOBER 5, 2022		
***Registration for Short courses is a separate registration and not included with Congress*		
7:00 am - 1:00 pm	Short Course Registration/ Exhibitor Registration	Sapphire Foyer
8:00 am - 12:00 pm	Short Course - Introduction to Solid/Liquid Separation, Part 1	Sapphire 400 A
8:00 am - 12:00 pm	Short Course - Introduction to Air/Gas Filtration, Part 1	Sapphire 400 B
8:00 am - 12:00 pm	Short Course - Liquid Filtration Testing Basics	Sapphire 410 B
8:00 am - 12:00 pm	Short Course - Metal Additive Manufacturing (3D Printing) within the Filtration Industry	Sapphire 402
8:00 am - 12:00 pm	Short Course - Nanofiber Filter Technologies for Filtration of Submicron Particles in Air	Sapphire 411 B
8:00 am - 12:00 pm	Short Course - Microfiltration Membrane	Sapphire 410 A
12:00 pm - 1:00 pm	Short Course Lunch	Sapphire I
1:00 pm - 5:00 pm	Short Course - Introduction to Solid/Liquid Separation, Part 2	Sapphire 400 A
1:00 pm - 5:00 pm	Short Course - Introduction to Air/Gas Filtration, Part 2	Sapphire 400 B
1:00 pm - 5:00 pm	Short Course - Reverse Osmosis	Sapphire 410 B
1:00 pm - 5:00 pm	Short Course - Introduction to Filter Media	Sapphire 402
1:00 pm - 5:00 pm	Short Course - Centrifugal Separation in Biopharmaceutical Industry	Sapphire 411 B
1:00 pm - 5:00 pm	Short Course - Ultrafiltration Membrane	Sapphire 410 A
1:00 pm - 5:00 pm	Bus departs for Nitto and Pure Water Oceanside	**Location
1:00 pm - 5:00 pm	Bus departs for Brewery Tours	**Location

THURSDAY, OCTOBER 6, 2022

7:00 am - 6:00 pm	Registration					
8:00 am - 8:45 am	Opening Ceremony					
8:45 am - 9:25 am	PE1. Engineering the Next Generation of Membrane Materials (Water) - Eric Hoek					
9:30 am - 5:30 pm	Expo Open					
9:30 am - 10:10 am	Break - Expo Hall					
10:15 am - 10:45 am	KL1. Solid Bowl Centrifuge Modeling: Advantages of Multiscale Modeling		KG2. Multip-Pass vs. Single-Pass Testing - Assessment of the Impact of HVAC		KM3. Autonomous Membrane-Based Water Treatment and Desalination	
10:45 am - 11:15 am	KL4. Scaling Water Capacity in Water Stressed World		KF5. Expanding Wetlaid Filtration Media Preformance through Enhanced Product Testing		KE6. Developments in Advanced Filtration	
11:15 am - 11:45 am	KG7. State of the Art of Gas Phase Filtration Modeling - Broader View		KM8. Proven Commercial Applications of Membrane Technology in Wastewater & Water Reuse Treatment		KE9. Approaches to Prepare Pvdf Based Hollow Fiber Membranes for Clean Water	
11:45 am - 1:10 pm	Lunch - Expo Hall – Full Congress Registrants					
1:15 pm - 2:45 pm	L1. Cake Filtration	G1. Filtration Applications	F1. Nonwoven	M1. Novel Membranes & Modules	E1. Air Emissions Control	E2. Engineering Applications
2:45 pm - 3:25 pm	Break - Expo Hall					
3:30 pm - 5:00 pm	L2. SLS in Process Industry	G2. Filtration Fundamentals	F2. Advanced Nonwovens	M2. Membrane Materials	E3. Environment & Membrane Tech.	E4. Challenges in Filtration
5:00 pm - 6:30 pm	Student and Industry Posters - Sapphire North Foyer					
6:30 pm - 8:00 pm	Welcome Reception - Hilton Bayfront - Front Lawn – Full Congress Registrants					

SESSION KEY

ENVIRONMENT	ENERGY	HEALTH	LIQUID	GAS	FILTER MEDIA	MEMBRANE

FRIDAY, OCTOBER 7

7:00 am - 5:00 pm	Registration						
8:00 am - 5:00 pm	Expo Open						
8:00 am - 8:40 am	PN2. Public Awareness of the Energy Benefits of Filtration, Val Hollingsworth						
8:40 am - 9:20 am	PE3. Filtration Solutions for Sustainable Environment (Air), David Pui						
9:25 am - 9:55 am	Break - Expo Hall						
10:00 am - 10:30 am	KG10. Effectiveness of Air Purifiers to Improve Indoor Air Hygiene		KM11. Gas Separation by Membranes Based on Cyclic Pressure Swing Permeation		KE12. Stimulus Responsive Fibrous Depth for Protein Separations		
10:30 am - 11:00 am	KL13. Current Applications and Markets for Continuous SLS Centrifuges		KF14. Is There a Place in our World for Filtration in 2050?		KN15. Novel Tools for Improving the Energy Efficiency & Proces Control of Vacuum Filtration		
11:00 am - 11:30 am	KE16. Technology Directs for the Filtration Industry		KM17. Artificial Water Channels - Toward Biomimetic Membranes for Desalination		KN18. Membrane Reactor for Energy Production: Potential Materials for Gas Molecules Separation		
11:35 am - 12:35 pm	Lunch - Expo Hall – Full Congress Registrants						
12:40 pm - 2:10 pm	L3. Cake Filtration - Cake Structure	G3. Automotive Filtration	F3. Media Design	M3. Gas Separtions	E5. Environment/ Filtration Technologies	N1. Innovation in Filtration & Coalescing	
2:10 pm - 3:40 pm	L4. Advances in Filtration Equipment	G4. Filter Testing	F4. Nanofiber	M4. Membrane Fouling	E6. New Technologies	N2. Coalescing	
3:45 pm - 3:55 pm	Break - Expo Hall						
4:00 pm - 5:30 pm	L5. Classification & Separation	G5. Indoor Air Filtration	F5. Advanced Nanofiber	M5. Membrane Characterization and Application	L6. SLS Selection & Design	N3. F & S for Fuel Cells & Energy Applications	N4. Expression/ Drying
5:35 pm - 6:45 pm	Student and Industry Posters - Sapphire North Foyer						

SESSION KEY

ENVIRONMENT	ENERGY	HEALTH	LIQUID	GAS	FILTER MEDIA	MEMBRANE

SATURDAY, OCTOBER 8

7:00 am - 5:00 pm	Registration						
8:00 am - 4:00 pm	Expo Open						
8:00 am - 8:40 am	PH4. From Farm to (Operating) Table: Air Quality and Health, Geoff Crosby						
8:40 am - 9:20 am	PN5. Energy-efficient - Separating the Useful from the Harmful for Cleaner Mobility and Cleaner Air, Martin Lehmann						
9:25 am - 9:55 am	Break - Expo Hall						
10:00 am - 10:30 am	KL19. Microstructure Design & Interface Engineering in Advanced Filters for High-Efficient Nanoscale Particle Separation		KH20. Building an Implantable Artificial Kidney, Part 1: Landscape and Challenges		KN 21. Potentials of 2D Nanomaterials in Membrane Technology for Solving Water-Energy Nexus		
10:30 am - 11:00 am	KG22. Micro-Engineered Filtration; the Study and Design of Filtration Materials at the Micro-Scale		KH23. Building an Implantable Artificial Kidney, Part 2: Technology and Opportunities		KH24. A Healthy Building is the Best Medicine		
11:05 am - 12:25 pm	Lunch - Expo Hall – Full Congress Registrants						
12:30 pm - 2:00 pm	L7. Cake Discharge/ Backwash-ing	G6. Industrial Filtration	F6. Adsorption & Innovation	M6. NF/RO Membranes & Desalination	L8. Slurry Characteri-zation & Pre-treatment	N5. Trans-portation - Fuel & Cabin Filtration	H1. Facemask & Respirators, Filtering Airborn Viruses/ Harmful Aerosols
2:00 pm - 3:30 pm	L9. Advanc-es in Centrif-ugation	G7. Filtration Modeling I	F7. Media Characteri-zation	M7. Membranes for Wastewater Treatment and Resource Recovery	N6. Fuel & Cabin Filtration	H2. Anti-microbial, Harmful Gas Breakdown	H3. Biophar-maceutical Separation I
3:35 pm - 3:55 pm	Break - Expo Hall						
4:00 pm - 5:30 pm	L10. Advances in SLS Technology	G8. Filtration Modeling II	F8. Woven	H4. Biophar-maceutical Separation II	L11. Cake Filtration, Washing & Testing	H5. Health Tech I	
5:35 pm - 6:45 pm	AFS Corporate Membership Meeting and Reception - By Invitation						
7:00 pm - 10:00 pm	Gala Dinner						

SESSION KEY

ENVIRONMENT	ENERGY	HEALTH	LIQUID	GAS	FILTER MEDIA	MEMBRANE

SUNDAY, OCTOBER 9

7:00 am - 12:00 pm	Registration					
8:00 am - 8:40 am	PH6. Membrane Technology for the Production of Biopharmaceuticals, Andrew Zydney					
8:40 am - 9:20 am	PH7. Filtration & Purification Nanofiber Technolgoies for Combating Novel Coronavirus Outbreak, Wallace Leung					
9:25 am - 9:55 am	KL25. Control & Intensification of Mass Transfer & Separation Processes with Smart Materials		KM26. Future of Membrane Separation - A Peek in the Crystal Ball		KH27. Understanding the Role of the Indoor Environment in Human Health	
9:55 am - 10:25 am	KG28. PM2.5 Separation Efficiency and Energy Assessment for Cleanable Oil-Water Soluble Mist- and Dust Filter Media				KH30. Centrifugal Separation of Monoclonal Antibody for Cancer and Vital Drugs	
10:30 am - 10:40 am	Break - Sapphire Foyer					
10:45 am - 12:15 pm	L12. Adv. Testing Tech	G9. Hot Gas Filtration	F9. Metal Filter	M8. MF/UF/RO Practices	H6. Health Tech II	
12:15 pm - 12:45 pm	Closing Ceremony					

SESSION KEY

ENVIRONMENT	ENERGY	HEALTH	LIQUID	GAS	FILTER MEDIA	MEMBRANE

PLENARY SPEAKERS

All Plenary presentations will take place in Sapphire AE, 4th Level

THURSDAY, OCTOBER 6, 8:45 AM – 9:25 AM

PE1 *Engineering the Next Generation of Membrane Materials Needed to Achieve Global Water Sustainability Goals*,
Prof. Eric Hoek, UCLA Department of Civil & Environmental Engineering

Prof. Eric Hoek is a professor in UCLA's Department of Civil & Environmental Engineering, Institute of the Environment & Sustainability and the California NanoSystems Institute. His academic work explores the union of membrane technologies, nanomaterials and electro-chemistry for water, energy, biomedical and environmental applications. He has also applied this knowledge as an entrepreneur having co-founded several technology companies and by working as an advisor to government agencies, municipalities, utilities, technology companies, investment funds, law firms and research funding agencies. Prof. Hoek has over 130 peer-reviewed scientific publications, over 70 patents filed globally, is Editor-in-Chief of The Encyclopedia of Membrane Science and is Editor-in-Chief of npj Clean Water. Dr. Hoek studied engineering at Yale University (PhD), UCLA (MS) and Penn State (BS).

FRIDAY, OCTOBER 7, 8:00 AM – 8:40 AM

PN2 *Public Awareness of the Energy Benefits of Filtration,*
Mr. Val Hollingsworth, Hollingsworth & Vose

Val Hollingsworth began his career at H&V as a Shift Supervisor and a Production Manager, then held a series of sales, marketing, and business leadership positions before becoming CEO. He also worked in the Investment Banking Division of Lehman Brothers in New York. Val earned a BA from the University of Pennsylvania, and an MBA from Dartmouth.

FRIDAY, OCTOBER 7, 8:40 AM – 9:20 AM

PE3 *Filtration Solutions for Sustainable Environment,*
Prof. David Y. H. Pui, The University of Minnesota

Professor David Y. H. Pui is a Member of the U.S. National Academy of Engineering (NAE), Regents Professor, and LM Fingerson/TSI Inc. Chair in Mechanical Engineering at the University of Minnesota. He is the Director of the world-renowned Particle Technology Laboratory (PTL), and also the Director of the Center for Filtration Research (CFR) with 21 leading international filtration manufacturers and end-users as members. He has a broad range of research experience in aerosol and nanoparticle science and filtration technology and has over 350 journal papers and 40 patents. His research has led to several ISO standards and NIST standards. He has developed several widely used commercial aerosol instruments. Dr. Pui has received many awards, including the Max Planck Research Award (1993), the Humboldt Research Award for Senior U.S. Scientists (2000), the Fuchs Memorial Award (2010) -- the highest disciplinary award conferred jointly by the American, German, and Japanese Aerosol Associations, and the Einstein Professorship Award (2013) by the Chinese Academy of Sciences (CAS). He served as President of the American Association for Aerosol Research (2000-2001), and President of the International Aerosol Research Assembly (2006-2010) consisting of 16 member associations from around the world.

SATURDAY, OCTOBER 8, 2022, 8:00 AM – 8:40 AM

PH4 *From Farm to (Operating) Table: Air Quality and Health,*
Mr. Geoff Crosby

Mr. Crosby has spent a significant portion of the last decade working with ASHRAE and ISO organizations on Air Filtration related projects, significantly as Chairman of ASHRAE GPC 35, Method for Determining the Energy Consumption Caused by Air-Cleaning and Filtration Devices. He is a voting member on ASHRAE Technical Committees for Particulate Air Contamination and Industrial Process Air Cleaning. He is engaged with ISO as the United States Advisory Panel Chairman for both General Ventilation and Sustainability.

He has been an established speaker and author in the filtration industry over the past 13 years and has recently been featured in videos for both Vox and XPRIZE. During the COVID-19 pandemic, Mr. Crosby was fortunate to work with the US CDC, US Department of Defense, US Senate, and US Congress on air filtration and US manufacturing related projects.

Mr. Crosby worked for Alkegen (formerly Lydall) starting in 2009, serving as Vice President of Marketing, developing strategic plans and tactical execution for growth and new product development in global filtration markets. Prior to Lydall, he held product development and international sales roles with Thermo Fisher Scientific and what is now Suez Water.

SATURDAY, OCTOBER 8, 2022, 8:40 AM – 9:20 AM

PN5 *Energy-efficient – Separating the Useful from the Harmful for Cleaner Mobility and Cleaner Air,*
Dr. Martin Lehmann, MANN+HUMMEL, GmbH

Dr.-Ing. Martin J. Lehmann is Principal Expert Research Network and Public Funding at MANN+HUMMEL. Before he served four years as Vice President Air Filtration and Engineering Air Filter Elements at MANN+HUMMEL GmbH. In this assignment, Dr. Lehmann has been responsible for the strategic orientation of air filtration as well as for the global R&D of air filter elements in the transportation segment. From 1998 until 2003, he worked in Prof. Kasper's research group at University Karlsruhe and earned his doctoral degree in 2005 on modeling loading kinetics and 3D MRI visualization of single fibers in air filters. In 2004, Martin Lehmann joined Cummins Filtration at Stoughton, Wisc. From 2006 until 2016, he advanced and set milestones with his simulation team for filtration at MANN+HUMMEL, Ludwigsburg, regarding simulation of filter media and elements.

Dr. Lehmann is a member of the Scientific Committee of the FILTECH, the American Filtration and Separation Society, WFC13. He is appointed member of the Scientific Advisory Board of the GSaME at Uni Stuttgart and elected board member of the AFS (2020-2022). He was co-chair of several AFS conferences and is co-chairing the 2021 AFS conference. Dr. Lehmann was an invited keynote speaker at InterPore, AFS and FILTECH and has published over 80 technical papers.

SUNDAY, OCTOBER 9, 2022, 8:00 AM – 8:40 AM

PH6 *Membrane Technology for the Production of Biopharmaceuticals,*
Prof. Andrew Zydney, The Pennsylvania State University

Dr. Andrew L. Zydney is the Bayard D. Kunkle Chair and Professor of Chemical Engineering at The Pennsylvania State University. He also serves as Director of the Penn State Center of Excellence in Industrial Biotechnology and the Penn State site in the Membrane Science, Engineering, and Technology (MAST) Center. Professor Zydney's research is focused on the application of membranes in bioprocessing, including the purification of monoclonal antibodies, vaccines, and gene therapy agents. Dr. Zydney served as Editor-in-Chief of the Journal of Membrane Science from 2010-2019 and he is Past President of the North American Membrane Society (NAMS).

He is the most recent recipient of the Alan S. Michaels Award for Innovation in Membrane Science and Technology as well as the American Chemical Society (ACS) Award in Separations Science and Technology. He has previously received the Gerhold Award for Excellence in Separation Science and the Excellence in Biological Engineering Publications award from the American Institute of Chemical Engineers (AIChE) among other recognitions. Professor Zydney has also received multiple teaching awards, including the Warren K. Lewis Award from AIChE, the Excellence in Teaching Award from the University of Delaware, and the Distinguished Teacher Award from the American Society for Engineering Education.

SUNDAY, OCTOBER 9, 2022, 8:40 AM – 9:20 AM

PH7 *Filtration & Purification Nanofiber Technologies for Combating Novel Coronavirus,*
Prof. Wallace Leung, The Hong Kong Polytechnic University

Prof. Wallace W-F Leung received his BS in Mechanical and Aerospace Engineering from Cornell University, MS and ScD both in Mechanical Engineering from MIT. For over 40 years, he has worked on filtration and separation that encompass ultrafiltration, centrifugation, vacuum filtration, and air filtration. For 18 years, he was with Bird/Baker Hughes as Director of Process Technologies directing R&D on centrifugal separation/filtration. He is internationally renowned on centrifugal separation technologies and his two books, Industrial Centrifugation Technology and Centrifugal Separation in Biotechnology. Previously, he worked for Gulf Oil and Schlumberger. Between 2005 and 2021, he was Chair Professor of Innovative Products and Technologies in Mechanical Engineering department at The Hong Kong Polytechnic University, Hong Kong, developing nanofiber technologies for clean energy, clean air, and clean water applications. He has published 32 SCI papers on nanofibers and many other papers on other topics. He is author of a new book titled *Nanofiber Filter Technologies for Filtration of Submicron- and Nano-aerosols*. The book has been listed in the World Health Organization (WHO) literature on COVID-19. He holds 55 US patents, including several patents on use of nanofibers for energy and environmental applications. Prof. Leung is multidisciplinary with expertise in mechanical, chemical, material science, and environmental engineering. He a fellow of AICHE, ASME, AFS, HKIE and Hong Kong Academy of Engineering Sciences. He is the Chair WFC13 and INDEFI. Previously, he was the chair of AFS (2000) and WFC9 (2004).

KEYNOTE SPEAKERS

THURSDAY, OCTOBER 6

10:15 am – 10:45 am

KL1, *On the Way to a Digital Twin for Solid Bowl Centrifuges: Advantages of Multiscale Modeling*
Dr. Marco Gleiß, Karlsruhe Institute of Technology — Sapphire AE

KG2, *Multi-Pass Vs. Single-Pass Air Filtration Testing: Meaningful Assessment of the Impact of HVAC Filters on Indoor Air Quality*
Mr. Bob Burkhead, Blue Heaven Technologies — Sapphire M

KM3, *Autonomous Membrane-Based Water Treatment and Desalination*
Prof. Yoram Cohen, UCLA — Sapphire I

10:45 am – 11:15 am

KL4, *Scaling Water Capacity in a Water Stressed World*
Mr. Ralph Cutler, WesTech Engineering — Sapphire AE

KF5, *Expanding Wetlaid Filtration Media Performance through Innovation and Enhanced Product Testing*
Mr. Kent Williamson, Ahlstrom-Munksjö — Sapphire M

KE6, *Developments in Advanced Filtration*
Dr. Jon McClean, Evoqua — Sapphire I

11:15 am – 11:45 am

KG7, *State of the Art of Gas Phase Filtration Modeling - Broader View*
Prof. Hooman Tafreshi, North Carolina State University — Sapphire AE

KM8, *Proven Commercial Applications of Membrane Technology in Wastewater and Water Resuse Treatment*
Dr. Cedella Beazley, Evoqua — Sapphire M

KE9, *Membrane Fouling in Aerated Mbr System: Ions and Organic Materials*
Dr. Morten Christensen, Aalborg University — Sapphire I

FRIDAY, OCTOBER 7

10:00 am – 10:30 am

KG10, *On the Effectiveness of Air Purifiers to Improve Indoor Air Hygiene*
Dr. Christoph Asbach, IUTA, Institute of Energy and Environmental Technology — Sapphire AE

KM11, *Gas Separation by Membranes Based on Cyclic Pressure Swing Permeation*
Dr. Xianshe Feng, University of Waterloo — Sapphire M

KE12, *Stimulus Responsive Fibrous Depth Filters for Protein Separators*
Prof. Ramarao Bandaru, SUNY College of Environmental Science and Forestry — Sapphire I

10:30 am – 11:00 am

KL13, *Current Applications and Markets for Continuous Solid/Liquid Centrifuges*
Mr. Mike Mullins, Siebtechnik TEMA — Sapphire AE

KF14, *Is There a Place for Filtration in our World in 2050?*
Dr. Andreas Kreuter, Freudenberg Filtration Technologies — Sapphire M

KN15, *Novel Tools for Improving the Energy Efficiency and Process Control of Vacuum Filtration*
Dr. Antti Häkkinen, LUT University — Sapphire I

11:00 am – 11:30 am

KE16, *Technology Directions for the Filtration Industry*
Dr. Michael Wynblatt, Donaldson — Sapphire AE

KM17, *Artificial Water Channels – Toward Biomimetic Membranes for Desalination*
Dr. Mihail Barboiu, University of Montpellier — Sapphire M

KN18, *Membrane Reactor for Energy Production: Potential Materials for Gas Molecules Separation*
Prof. Hui-Hsin Tseng, National Chung Hsing University — Sapphire I

SATURDAY, OCTOBER 8

10:00 am – 10:30 am

KL19, *Microstructure Design and Interface Engineering in Advanced Filters for High-efficient Nanoscale Particle Separation*
Prof. Zhaoxiang Zhong, Nanjing Technical University — Sapphire AE

KH20, *Building an Implantable Artificial Kidney, Part 1*
Dr. William Fissell, Vanderbilt University Medical Center — Sapphire M

KN21, *Potentials of 2D Nanomaterials in Membrane Technology for Solving Water-Energy Nexus*
Prof. Boaxia Mi, University of California, Berkeley — Sapphire I

10:30 am – 11:00 am

KG22, *Micro-Engineered Filtration; the Study and Design of Filtration Materials at the Micro-Scale*
Mr. Anil Suthar, Donaldson — Sapphire AE

KH23, *Building an Implantable Artificial Kidney, Part 2*
Prof. Shuvo Roy, University of California San Francisco — Sapphire M

KH24, *A Healthy Building is the Best Medicine*
Mr. Sean O'Reilly, AAF Flanders — Sapphire I

SUNDAY, OCTOBER 9

9:25 am – 9:55 am

KL25, *Control and Intensification of Mass Transfer and Separation Processes with Smart Materials*
Prof. Liang Yin Chu, Sichuan University — Sapphire AE

KM26, *The Future of Membrane Separation Technologies - A Peek into the Crystal Ball*
Mr. Peter Cartwright, Cartwright Consulting — Sapphire M

KH27, *Understanding the Role of the Indoor Environment in Human Health*
Dr. Stephanie Taylor, Building4Health — Sapphire I

9:55 am – 10:25 am

KG28, *PM 2.5 Separation Efficiency and Energy Assessment for Cleanable Oil-Water Soluble Mist-and Dust Filter Media*
Prof. Wilhelm Höflinger, Institute of Chemical, Environmental and Bioscience Engineering (Retired) — Sapphire AE

KF29,
Sapphire M

KH30, *Centrifugal Separation of Monoclonal Antibody for Cancer and Viral Drugs*
Prof. Wallace Leung, Hong Kong Polytechnic University — Sapphire I

ABOUT US

Over the years, the World Filtration Congress has earned the reputation of being the premier global filtration conference and exposition. Every four years, the global filtration societies compete for the opportunity to host this event. The American Filtration & Separations Society (AFS) is proud and honored to have been selected to host the 13th World Filtration Congress. WFC is a global congress and effects from COVID-19 during 2020 to 2021 continued to restrict international travel and participation. Therefore, AFS and WFC 13 leadership had to make the difficult decision to further postpone the congress to October of 2022. We look forward to welcoming you to San Diego October 5 – 9, 2022.

In the intervening years, the AFS has vigorously pursued quality conference forums, often reaching new record highs in conference attendance. We are pleased to have the opportunity to host the upcoming 13th World Filtration Congress and look forward to seeing you in San Diego, October 5 – 9, 2022.

The American Filtration & Separations Society

The AFS is a leading organization in the filtration and separation industries, addressing global needs through comprehensive education, diverse collaboration and international advancement. One of the missions of AFS is to help solve the world's filtration problems, increasing the availability of clean water and air around the world. There is hardly a pollution, contamination, or environmental problem that cannot be prevented or remediated through the use of filtration and separation technologies. The AFS seeks to inform industry, academia, the general public and the media of the importance and largely untold story of the filtration and separation industry in North America, its long-term, positive socio-environmental impact and future potential for the greater good.

International Delegates on Filtration

The first World Filtration Congress held in 1974, was informally coordinated by a number of individual organizations, each acting independently. In 1990, International Delegates on Filtration (INDEFI) was created as an umbrella body to coordinate and widen the competition for the right as the official host to organize future Congresses. Proposals are accepted only from registered members of INDEFI and must provide evidence that the organizing team *"has the experience and resources to stage a major world congress."* Membership in INDEFI is open to Filtration Societies that have the science and technology of filtration and separation as their principal activity. Only one member is permitted per country. At present, there are 13 member societies: Australasia, Austria, China, Chinese Taipei, France, Germany, Hungary, India, Japan, Nordics, South Korea, United Kingdom, USA.

WFC 13 Committee

INDEFI Chair
Prof. Wallace Leung
WFC Operations Chair
Rahul Bharadwaj
WFC 13 Secretariat
Lyn Sholl

Swarna Agarwal
Bob Burkhead
Neil Burns
Peter Cartwright
George Chase
Daren Chen
Wu Chen
Tinoush Dinn
Vincent Edery
Jay Forcucci
Tom Justice
Martin Lehmann
Wenping Li
Felicia Littlejohn
Baoxia Mi
Shagufta Patel
Wilson Poon
Tom Ramsey
Godwin Severa
Mary Jo Surges
Sneha Swaminathan
Jim Walker
Chris Wallace
Jennifer Wong
Scott Yaeger
Andrew Zydney

INDEFI Sponsoring Organizations

CONGRESS INFORMATION

REGISTRATION:

Registration for the 13th World Filtration Congress is located on the Sapphire Ballroom level, located on the 4th level.

- Wednesday, October 5, 7:00 am – 1:00 pm – Short course and Exhibitor Registration
- Wednesday, October 5, 1:00 pm – 6:00 pm – Exhibitor and Attendee Registration
- Thursday, October 6, 7:00 am – 6:00 pm
- Friday, October 7, 7:00 am – 5:00 pm
- Saturday, October 8, 7:00 am – 5:00 pm
- Sunday, October 9, 7:00 am – 12:00 pm

NAME BADGES:

All Congress participants are required to wear their name badge during all congress activities. Full Congress registrants will have access to the technical sessions and food and beverage events and will be required to show their badge before entering session rooms . If you lose your name badge, a $25 replacement fee will be assessed.

LANGUAGE:

English is the official language of the 13th World Filtration Congress. All oral and written presentations will be in English.

MOBILE APP:

WFC 13 has a free, official app available on iOS (iPhone/iPad) and Android (Phones and Tablets). Download the app, https://whova.com/portal/wfc_202004/?source=download_page

- View the event **agenda** and plan your schedule
- Browse keynote, plenary, and technical speakers and poster presenters
- View the **Expo Floorplan** & participate in applicable drawings and giveaways by having your badge scanned at exhibit booths
- Exhibitors may use the app to **collect leads** by easily scanning attendees' name badges
- Message with **other attendees** to coordinate meals, rides, etc.
- Receive updates such as **last-minute room change** from the organizers

Begin by downloading the Whova app in the app store or through Google play. After downloading Whova, sign up in the app by **using the same email address you used to register for the congress**, and choose a strong password. Once you're signed up, you should be taken directly to the WFC 13 app!

If you aren't directly added to the event and are asked for an event invitation code when accessing the event, please type in this invitation code: **WFC13** (Please do **not** share this invitation code with people who are NOT attendees of the congress).

Already used the Whova app in the past? Double-check that it is installed on your phone, and log in using your existing account email and password.

LUNCH:

Box lunch will be served for full congress attendees. Congress attendees are encouraged to pick up a lunch and visit the exhibitors as this is dedicated expo hall time. Staff will check badges at the entrance to each buffet in the expo hall. Exhibitors and Expo Only attendees have the following options at the hotel:

- Hudson and Nash – breakfast, lunch and dinner
- On the Rocks Food Truck – burgers and tacos to go
- The Cannery Market & Supply – grab and go
- Starbucks – breakfast, coffee and lunch
- Sweet Things Frozen Yogurt – lunch and snacks
- The Pool Club – lunch and dinner
- Odysea – late afternoon and evening hours

EXPO:

The Expo is located in the Sapphire ballroom on the 4th level.

- Thursday, October 6, 9:30 am – 5:30 pm
- Friday, October 7, 8:00 am – 5:00 pm
- Saturday, October 8, 8:00 am – 4:00 pm

SPEAKER READY ROOM

A Speaker Ready Room is available in the Sapphire Boardroom located on the 4th level. Speakers may bring their updated presentation on a USB to the Sapphire Boardroom at the following times:

- Wednesday, October 5, 3:00 pm – 5:00 pm
- Thursday, October 6, 8:00 am – 10:00 am
- Friday, October 7, 8:00 am – 9:30 am
- Saturday, October 8, 8:00 am – 9:00 am

PRESENTATION KEY

P = Plenary
K = Keynote
G = Air/Gas track
L = Liquid track
M = Membrane track
F = Filter Media track
E = Environment track
N = Energy track
H = Health track
S = Student poster
I = Industry poster

POSTER PRESENTATIONS:

Congress participants are encouraged to view the Industry and Student posters on Thursday, October 6 from 5:00 pm – 6:30 pm and Friday, October 7 from 5:35 pm – 6:45 pm. Posters will be located in the Sapphire North Foyer. Poster awards for Industry posters will be presented at the Gala dinner and awards for the student posters will be announced at the closing ceremony.

SOCIAL PROGRAMS

Welcome Reception – available to full Congress attendees
Hilton Bayfront Lawn, 6:30 pm – 8:00 pm
*In case of inclement weather, the Expo hall will be the backup location

Gala Dinner – Saturday, October 8 - advance purchase is required. Attendees who purchased the gala dinner will receive a ticket in their name badge packet.

Industry Tours – Wednesday, October 5 –advanced purchase is required. Tour participants must wear a name badge. Attendees will meet the buses at the Promenade East Foyer and will take the escalator down near the main lobby on Indigo level to the Promenade East Foyer.

- Nitto and Oceanside, 12:30 pm – 5:00 pm – buses will depart at 12:30 pm. Attendees must wear long pants and closed toe shoes. The bus will return to the hotel at 5:00 pm
- Brewery tour, 1:00 pm – 4:00 pm
- San Diego Zoo – this is not an organized tour and you may leave for the zoo at your convenience. The zoo is approximately 15 minutes from the hotel. Transportation is not provided.

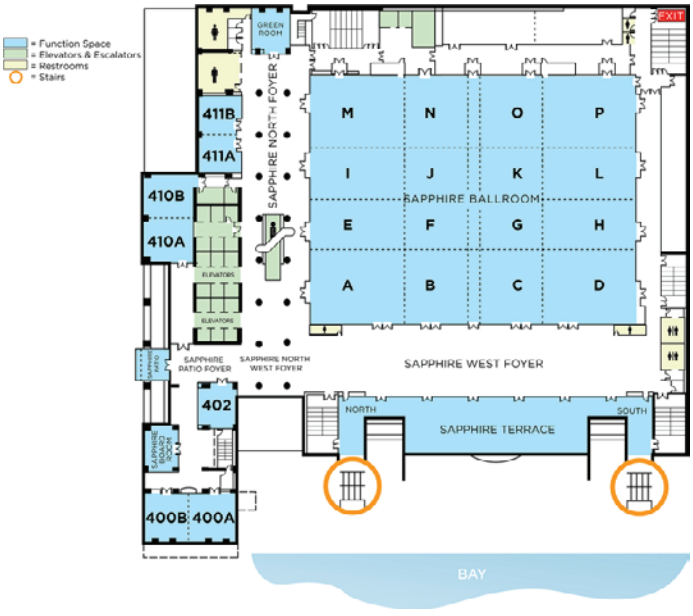
CONGRESS EVALUATION

All congress attendees will receive a link to the congress evaluation on Friday, October 9. The results from the evaluation will be shared with AFS conference chairs as well as the organizers of WFC 14. Your feedback is important and will help us plan better for future conferences. The deadline to complete the congress evaluation is Friday, October 28.

PHOTOS AND VIDEOTAPING

WFC 13 will have an official photographer during the congress. By attending the WFC 13, attendees consent to having their photographs taken and used for AFS Conference and WFC 14 Congress promotions. Attendees may not videotape or audiotape presentations at the conference without prior permission from the presenter.

SAPPHIRE LEVEL FLOOR PLAN



COMMITTEES

WFC13 CHAIRS AND TRACK CHAIRS

INDEFI AND CONGRESS CHAIR:
Prof. Wallace Leung
The Hong Kong Polytechnic University

CONGRESS OPERATIONS CHAIR:
Dr. Rahul Bharadwaj
Alkegen, USA

AIR/GAS TRACK CHAIRS:
Prof. Daren Chen
Virginia Commonwealth University, USA

Dr. Wilson Poon
W.L. Gore, USA

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MANN+HUMMEL, GmbH, Germany

Dr. Godwin Severa
University of Hawaii, USA

ENVIRONMENT TRACK CHAIR:
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Parker Hannifin, USA

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Blue Heaven Technologies, USA

Mr. Jay Forcucci
Cerex Advanced Fabrics, USA

HEALTH TRACK CHAIRS:
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Dr. Tinoush Dinn
BASF, USA

Prof. Wallace Leung
The Hong Kong Polytechnic University

Dr. Sneha Swaminathan
Hollingsworth & Vose, USA

Prof. Ranil Wickramasinghe
The University of Arkansas, USA

MEMBRANES TRACK CHAIRS:
Prof. Andrew Zydney
The Pennsylvania State University, USA

Mr. Peter Cartwright
Cartwright Consulting, USA

Prof. Boaxia Mi
The University of California at Berkeley, USA

SOLID/LIQUID TRACK CHAIRS:
Dr. Wu Chen
Dow, USA

Dr. Wenping Li
Agrilectric Research, USA

WFC13 ORGANIZING COMMITTEE

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Mr. Bob Burkhead, Blue Heaven Technologies, USA

Mr. Neil Burns, Croft Filters, United Kingdom

Mr. Peter Cartwright, Cartwright Consulting, USA

Mr. Leonard Castellano, Parker Hannifin, USA

Prof. George Chase, The University of Akron, USA

Dr. Wu Chen, Dow, USA

Dr. Tinoush Dinn, BASF, USA

Mr. Jay Forcucci, Cerex Advanced Fabrics, USA

Mr. Tom Justice, Zene Filtration, USA

Mrs. Kirsten Kulik, FAST LLC, USA

Dr. Martin Lehmann, MANN+HUMMEL, GmbH, Germany

Prof. Wallace Leung, The Hong Kong Polytechnic University

Dr. Wenping Li, Agrilectric Research, USA

Prof. Yuanzhe Liang, Stanford University, USA

Prof. Boaxia Mi, University of California, Berkeley, USA

Dr. Shagufta Patel, Parker Hannifin, USA

Dr. Wilson Poon, W.L. Gore, USA

Dr. Godwin Severa, The University of Hawaii, USA

Prof. Eunkyoung Shim, North Carolina State University, USA

Ms. Mary Jo Surges, Eaton Filtration, USA

Mr. Jim Walker, Cerex Advanced Fabrics, USA

Mr. Chris Wallace, Filtration Technology Corporation, USA

Prof. Ranil Wickramasinghe, The University of Arkansas, USA

Mr. Ken Winston, Midwest Filtration, USA

Ms. Jennifer Wong, Custom Filter, USA

Mr. Scott Yaeger, FAST LLC, USA

Prof. Andrew Zydney, The Pennsylvania State University, USA

INDEFI COMMITTEE

Australasia - Prof. Anthony Stickland

Austria - Prof. Wilhelm Höflinger

Chinese Taipei - Prof. Kuo-Lun (Allan) Tung

France - Prof. Pierre-Yves Pontalier

Germany – Prof. Eberhard Schmidt

Hungary - Prof. Nandor Nemestothy

India - Prof. Baskar Thorat

Korea - Prof. Kwang-Ho Choo

USA – Prof. Wallace Leung

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Vorobiev E. (FR)
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Waldenmaier M. (DE)
Wang R. (SG)
Wickramasinghe R. (USA)
Yao Q. (PRC)
Zydney A. (USA)

WFC13 ORGANIZER AND SUPPORTING SOCIETIES

ORGANIZER

AFS
AMERICAN FILTRATION & SEPARATIONS SOCIETY

SUPPORTING SOCIETIES

INDEFI
International Delegates on Filtration
International Delegation on Filtration

NAFA National Air Filtration Association
National Air Filtration Association

Canadian Society for Chemical Engineering | *For Our Future*
Canadian Society for Chemical Engineering

SFPP
SOCIÉTÉ FRANÇAISE DES SÉPARATIONS FLUIDES-PARTICULES
Societe Francaise Des Separations

CFS
Chinese Filtration Society

SCEJ The Society of Chemical Engineers, Japan
Society of Chemical Engineers of Japan

Filtration and Separation Association of Australasia

GÖCH
GÖCH – Austrian Chemical Society

TFS
Taiwan Filtration and Separations Society

Korean Filtration and Separation Society
KFS
Korean Filtration Society

THE FILTRATION SOCIETY JAPAN ASSOCIATION
The Filtration Society – Japan Association

MKE
MKE Chemical Society of Hungary

The FILTRATION Society
The Filtration Society of the United Kingdom

FULL SCHEDULE

***All WFC13 Activities are located in the Sapphire Meeting Rooms on the 4th Floor**

SESSION/TRACK KEY

Air/Gas	Energy	Environment	Filter Media	Health	Membrane	Solid/Liquid

THURSDAY, OCTOBER 6

Registration - Foyer
7:00 am – 6:00 pm

Opening Ceremony – Room AE
8:00 – 8:45 am

Plenary Presentation, 8:45 am – 9:25 am – Room AE
PE1
Engineering the Next Generation of Membrane Materials
Prof. Eric Hoek, UCLA, USA
Moderator: Boaxia Mi

Expo Open – Room BCDFGHJKLNOP
9:30 am– 5:30 pm

Break – Room BCDFGHJKLNOP
9:30 am – 10:10 am

Concurrent Keynote Presentations, 10:15 – 10:45 am
KL1 – Room AE
On the Way to a Digital Twin for Solid Bowl Centrifuges: Advantages of Multiscale Modeling
Prof. Marco Gleiß, Karlsruhe Institute of Technology, Germany
Moderator: Lin Zhao

KG2 – Room M
Multi-Pass vs. Single-Pass Filtration Testing: Meaning Assessment of Impact of HVAC Filters on Air Quality
Mr. Bob Burkhead, Blue Heaven Technologies, USA
Moderator: Wilson Poon

KM3 – Room I
Autonomous Membrane-Based Water Treatment and Desalination
Prof. Yoram Cohen, UCLA, USA
Moderator: Andrew Zydney

Concurrent Keynote Presentations, 10:45 – 11:15 am
KL2 – Room AE
Scaling Water Capacity in a Water Stressed World
Mr. Ralph Cutler, WesTech Engineering, Inc., USA
Moderator: Wu Chen

KF5 – Room M

Expanding Wetlaid Filtration Media Performance through Innovation and Enhanced Product Testing

Mr. Kent Williamson, Ahlstrom-Munksjö, USA

Moderator: Jay Forcucci

KE6 – Room I

Developments in Advanced Filtration

Dr. Jon McClean, Evoqua Water Technologies, USA

Moderator: Shagufta Patel

Concurrent Keynote Presentations, 11:15 – 11:45 am

KG7 – Room AE

Studying Filtration through Micro- And Macro-Scale Modeling and Experiment

Prof. Hooman Tafreshi, North Carolina State University, USA

Moderator: Daren Chen

KM8 – Room M

Proven Commercial Applications of Membrane Technology in Wastewater and Water Resuse Treatment

Ms. Cedella Beazley, Evoqua Water Technologies, USA

Moderator: Peter Cartwright

KE9 – Room I

Membrane Fouling in Aerated MBR System: Ions and Organic Materials

Prof. Morten Christensen, Aalborg University, Denmark

Moderator: Wallace Leung

Lunch (Full Congress Attendees) - Room BCDFGHJKLNOP

11:45 am – 1:10 pm

Concurrent Technical Sessions, 1:15 pm – 2:45 pm

L1, Cake Filtration – Room AE

Moderator: Ken Winston

- **L1.1, *Improved Solid Liquid Cake Filtration on Structured Filter Media***
  Gernot Kramer, Graz University of Technology, Markus Babin
- **L1.2, *Development of Composite Filter Media for Continuous Cake Filtration without Gas Throughput***
  Nikolai Benz, Technische Universität Kaiserslautern, Philipp Loesch, Sergiy Antonyuk
- **L1.3, *Continuous Vibration Compaction of Filter Cakes for Deliquoring and Avoiding Cracking***
  Tolga Yildiz, Karlsruhe Institute of Technology, Hermann Nirschl
- **L.1.4, *Innovative Research and Discussion of New Constant Pressure Cake Filtration Calculation*** Method
  Wenping Li, Agrilectric Research, Zhili Song
- **L1.5, *Research on Dynamic Filtration Process Used by Sintered Uhmwpe Filter Media***
  Wenping Li, Agrilectric Research, Shi-yong Wang, Lijang Song, Wenbo Dong

G1, Filtration Applications – Room I
Moderator: Saravanan Andan

- **G1.1, *A Sustainable Energy-Saving Solution for Air Handler Unit***
  Huansheng Chien, KJ Filtration
- **G1.2, *Air Quality in Aircraft Cabin: From Issue to Standardization***
  Vincent Edery, IFTS
- **G1.3, *Hepa Filter Clogging during a Fire Event Applied to Nuclear Safety***
  Soleiman Bourrous, IRSN, Jonathan Nuvoli, Victor Mocho, Dominique Thomas, Francois-Xavier Ouf
- **G1.4, *Visionair Clean – Science Based Approach to Optimization of Air Filtration Systems***
  Jonathan Rajala, AAF Flanders, Sean O'Reilly
- **G1.5, *Nanofiber-Based Low Energy Consuming Hvac Air Filters***
  Jayesh Doshi, eSpin

F1, Nonwovens – Room M
Moderator: Holger Leubner

- **F1.1, *Affecting Fiber Size in Meltblown Fabrics Matching Demands of Customized Filter*** Applications
  Raphael Hermes, Reifenhauser, Markus Wuescht, Markus Jansen
- **F1.2, *Fabrication of Poly (Lactic Acid) Filter Media via the Meltblowing Process and their Filtration Performances***
  Eunkyoung Shim, North Carolina State University, Mehran Jafari, Behnam Pourdeyhimi
- **F1.3, *New Test Method and Parameter for Characterizing Pleatability of Synthetic Filter Media***
  Guenter Mueller, Sandler AG, Florien Bauer, David Weidt
- **F1.4, *Increasing Functional Area of Filters Using Metal Additive Manufacturing***
  Neil Burns, Croft Filters, Mark Burns, Darren Travis, Louise Geekie

M1, Novel Membranes and Modules – Room 400
Moderator: David Jassby

- **M1.1, *Modeling and Experimental Study for Multichannel Ceramic Membranes Filtration and Fouling Mechanisms***
  El Hadji Ibrahim Ndiaye, TOTAL, Matthieu Jacob
- **M1.2, *Novel Spiral Element Design – Maximizes Membrane Performance***
  Scott Yaeger, FAST International, Kirsten Kulik
- **M1.3, *Polyamide Nanofiltration Membranes from Emulsion-Mediated Interfacial Polymerization***
  Yuanzhe Liang, Stanford, Shihong Lin
- **M1.4, *High Recovery Single Pass Industrial Waste Water Spiral Element and System***
  Scott Yaeger, FAST International, Kirsten Kulik

E1, Air Emission Control – Room 402
Moderator: Aurelie Goux

- **E1.1,** ***A Rain-Shower Based Cleaning System for Simultaneous PM2.5 Removal and CO2 Capture***
  Sheng-Chieh Chen, Virginia Commonwealth University, Min Tang, Thomas Kuehn, Charles Lo, Dahai Zhao, Xiaofeng Xie, Jing Sun, Qingfeng Cao, David Y. H, Pui
- **E1.2,** ***Robustness of Diesel Particulate Filters to Control Pn Emissions***
  Kavitha Moorthy, Cummins Filtration
- **E1.3,** ***Performance Characteristics and Peculiarities of an Aerosol Flow in a Sampling Cyclone***
  Dzmitry Misiulia, University of Kaiserslautern, Goran Liden, Sergiy Antonyuk
- **Panel Discussion**

E2, Engineering Applications – Room 410
Moderator: Rishit Merchant

- **E2.1,** ***Novel Liquid Filtration and Separation Applications for Electrified Powertrains***
  Martin Lehmann, MANN+HUMMEL, GmbH, Michael Harenbrock, Robin Ising, Simon Leininger, Marius Panzer, Uwe Staudacher, Alexander Traut, Andreas Wildermuth
- **E2.2,** ***New Developments for Sludge Conditioning and Dewatering by Screw Centrifuge***
  Pascal Ginisty, IFTS, Marcos Oliveira, Sam Azimi, Vincent Rocher
- **Panel Discussion**

Break – Room BCDFGHJKLNOP
2:45 pm – 3:25 pm

Concurrent Technical Sessions, 3:30 pm – 5:00 pm
L2, SLS in the Process Industry – Room AE
Moderator: Tinoush Dinn

- **L2.1,** ***Candle Filter Study –from Laboratory Evaluation to Plant Operation, and Troubleshooting***
  Lin Zhao, Dow, Wu Chen
- **L2.2,** ***Membrane System Design Optimization for Biotech-Based Commodity Chemical*** **Processing**
  Kang Hu, Suez Water Technology & Solution
- **L2.3,** ***Filtration Instead of Evaporation Saves Opex in PE Production***
  Stefan Schoepf, Lenzing Filtration, Stefan Strasser
- **L2.4,** ***Hydrocarbon Contaminant Removal from Refinery Sour Water***
  Prashant Kulkarni, Parker Hannifin, David Burns

G2, Filtration Fundamentals – Room I
Moderator: Qisheng Ou

- **G2.1,** ***Influence of Hygroscopic Salt Particles on the Performance of Surface Filters***
  Qian Zhang, University of Wuppertal, David Horst, Eberhard Schmidt
- **G2.2,** ***Particle Loading Behavior of Hollow-Fiber Membranes***
  Pavel Bulejko, Brno University of Technology, Ondrej Kristof, Tomas Sverak, Mirko Dohnal

- **G2.3, *Porosity Measurement of Nanoparticle Deposit Formed by Filtration at Different Peclet Numbers***
  Jonathan Nuvoli, CNRS LRGP, Soleiman Bourrous, Francoi-Xavier Ouf, Dominique Thomas
- **G2.4, *Transport Mechanisms of Water-soluble Particulate Matter through Gas Cleaning Filters***
  Almuth Schwarz, Karlsruhe Institute of Technology, Jorg Meyer, Achim Dittler
- **G2.5, *Water Uptake by Particles Cakes Formed on Filters Surfaces during Fires***
  Francois-Xavier Ouf, IRSN, Laura Lintis, Soleiman Bourrous, Cecile Vallieres

F2, Advanced Nonwoven – Room M
Moderator: Jim Walker

- **F2.1, *Sustainable Micro-Fibrillated Fibers in High Efficiency Filter Media Design***
  Andrew Slater, Lenzing Fibers
- **F2.2, *Meltblown Nonwovens from a Biodegradable Polymer as High-Performance Filter Media***
  Gajanan Bhat, University of Georgia, Homeira Azari, Robert Green
- **F2.3, *Structures and Filtration Properties of Hydroentangled High Surface Area Spunbond*** Nonwoven Media
  Eunkyoung Shim, North Carolina State University, Dennis Luzius
- **F2.4, *Stability of Electrostatic Charge under Real Life Conditions***
  Andreas Demmel, Mativ

M2, Membrane Materials – Room 400
Moderator: Piran Kidambi

- **M2.1, *Influence of 2D Materials on Membrane-Assisted Crystallization***
  Elena Tocci, Institute on Membrane Technology, Maria Luisa Perrotta, Lidietta Giorno, Francesca Macedonio, Enrico Drioli, Annarosa Gugliuzza
- **M2.2, *Effects of Edge Functional Groups on Desalination Performance in Graphene Oxide*** Membranes
  Ruosang Qiu, Monash University, Meng Wai Woo, Xiwang Zhang
- **M2.3, *Nanoporous Atomically Thin Membranes***
  Piran Kidambi, Vanderbilt University
- **M2.4, *Targeted Surface Modification for Membrane Performance Improvements***
  Jens Kohnert, Aculon

E3, Environmental & Membrane Technologies – Room 410
Moderator: Devendra Saroj

- **E3.1, *Superhydrophilic Membrane Coated Mesh for Oil/Water Separation***
  Qingye Lu, University of Calgary
- **E3.2, *Micellar Enhanced Ultrafiltration of Phenol from Water using Ceramic Membrane***
  Yousef Alanezi, PAAET

- **E3.3, *Wastewater Recovery & Reuse in a Potable Supply - A Zero Liquid Discharge Application***
  Peter Cartwright, Cartwright Consulting
- **Panel Discussion**

E4, Challenges in Filtration – Room 402
Moderator: Jon Rajala

- **E4.1, *Building Air Filtration Efficiency Classification Systems across the Globe***
  Jenny Berens, Freudenberg
- **E4.2, *Tire Wear Microplastics in Effluent Rainwater - Filtration in the Field***
  Dominik Herper, GKD, Daniel Venghaus, Daniel Dreschers, Joerg Boedecker
- **E4.3, *Investigations on Abrasive Wear of Filter Media in Tailings Filtration***
  Bernd Frankle, Karlsruhe Institute of Technology, Hermann Nirschl
- **E4.4, *Development of the New Generation Challenge Aerosol for General Ventilation Filter Evaluation***
  R. Vijayakumar, Aerfil, Xin Feng, Hui Zhang, Bin Lu

Student and Industry Poster Presentations – North Foyer
5:00 – 6:30 pm

Welcome Reception – (Full Congress Attendees) - Hilton Bayfront, Front Lawn
6:30 – 8:00 pm

FRIDAY, OCTOBER 7

Registration - Foyer
7:00 am – 5:00 pm

Expo Open – Room BCDFGHJKLNOP
8:00 am– 5:00 pm

Plenary Presentations, 8:00 am – 9:20 am – Room AE
PN2, 8:00 – 8:40 am
Public Awareness of the Energy Benefits of Filtration
Mr. Val Hollingsworth, Hollingsworth & Vose, USA
Moderator: Chris Wallace

PE3, 8:40 – 9:20 am
Filtration Solutions for Sustainable Environment
Prof. David Pui, University of Minnesota, USA
Moderator: Wallace Leung

Break – Room BCDFGHJKLNOP
9:25 – 9:55am

Concurrent Keynote Presentations, 10:00 – 10:30 am

KG10 – Room AE

On the Effectiveness of Air Purifiers to Improve Indoor Air Hygiene

Prof. Christof Asbach, IUTA, Germany

Moderator: Wilson Poon

KM11 – Room M

Gas Separation by Membranes Based on Cyclic Pressure Swing Permeation

Prof. Xianshe Feng, University of Waterloo, Canada

Moderator: Boaxia Mi

KE12 – Room I

Stimulus Responsive Fibrous Depth Filters for Protein Separators

Prof. Bandaru Ramarao, SUNY College of Environmental Science and Forestry, USA

Moderator: Shagufta Patel

Concurrent Keynote Presentations, 10:30 – 11:00 am

KL13 – Room AE

Current Applications and Markets for Continuous Solid/Liquid Centrifuges

Mr. Mike Mullins, Siebtechnik TEMA, USA

Moderator: Wu Chen

KF14 – Room M

Is There a Place for Filtration in Our World in 2050?

Dr. Andreas Kreuter, Freudenberg Filtration Technologies, Germany

Moderator: Bob Burkhead

KN15 – Room I

Novel Tools for Improving the Energy Efficiency and Process Control of Vacuum Filtration

Prof. Antti Häkkinen, LUT University, Finland

Moderator: Martin Lehmann

Concurrent Keynote Presentations, 11:00 - 11:30 am

KE16 – Room AE

Technology Directions for the Filtration Industry

Mr. Michael Wynblatt, Donaldson, USA

Moderator: Rahul Bharadwaj

KM17 – Room M

Artificial Water Channels - Toward Biomimetic Membranes for Desalination

Dr. Mihail Barboiu, University of Montpellier, France

Moderator: Boaxia Mi

KN18 – Room I

Membrane Reactor for Energy Production: Potential Materials for Gas Molecules Separation

Dr. Hui-Hsin (Anna) Tseng

Moderator: Godwin Severa

Lunch (Full Congress Attendees) – Room BCDFGHJKLNOP

11:35 am – 12:35 pm

Concurrent Technical Sessions, 12:40 pm – 2:10 pm

L3, Cake Filtration/Cake Structure – Room AE

Moderator: Alan Tung

- **L3.1,** ***Insight into Filter Cake Structures using Micro Tomography: The Dewatering Equilibrium***
  Eric Löwer, Technical University Bergakademic Freiberg, Thomas Leißner, Urs Peuker
- **L3.2,** ***Network Model of Porous Media: Review of Old Ideas with New Methods***
  Urs Peuker, Technical University Bergakademic Freiberg, Simon Esser, Eric Löwer
- **L3.3,** ***Impact of Geometrically Imperfect Filter Cakes on the Filter Cake Washing Process***
  Florian Sauer, Hochschule Mannheim - University of Applied Sciences, Hendrik Henn, Bernhard Hoffner
- **L3.4,** ***Impurity Removal during Filtration and Washing – a Mechanistic Modelling Approach***
  Bhavik Mehta, Siemens Process Systems Engineering, Sara Ottoboni, Ekaterina Gramadnikova, Niall Mitchell, Cameron Brown

G3, Automotive Filtration – Room I

Moderator: Saru Dawar

- **G3.1,** ***Filtration Technology for Cabin Air Filter Systems Providing Enhanced Interior Air Quality***
  Thomas Heininger, MANN+HUMMEL, GmbH, Daniel Ebnet, Eval Hallbauer, Christoph Krautner, Martin Lehmann
- **G3.2,** ***Pure Air for Mobile Fuel Cell Systems***
  Tobias Beisel, Freudenberg Filtration
- **G3.3,** ***Reducing Fine Dust Emissions - Filtration Solutions for Non-exhaust Emissions: Brake Dust and Front-End Filter***
  Martin Lehmann, MANN+HUMMEL, GmbH, Tobias Wörz, Steffen Pfannkuchen, Lukas Bock, Eric Thébault, Andreas Beck
- **G3.4,** ***Trends and Technologies for Enhanced Cabin Air Quality***
  Saru Dawar, Freudenberg Filtration

F3, Media Design – Room M

Moderator: Ken Winston

- **F3.1,** ***Innovative Hybrid Combi Media for Liquid Filtration Application***
  Neeraj Shukla, Welspun India, Lalit Joshi
- **F3.2,** ***Innovation in Nonwovens Analysis and Optimization Using Artificial Intelligence (AI) with Geodict***
  Andreas Wiegmann, Math2Market, Mehdi Azimian, Andreas Griesser
- **F3.3,** ***Bond Halogen Filtration Media***
  Matt Utley, Great Lakes Filters
- **F3.4,** ***Modeling of Cake Forming Dust Filtration with Differently Structured Needled Felts and Evaluation of Tensile Adhesion Strength***
  Qian Zhang, University of Wuppertal, David Horst, Eberhard Schmidt

M3, Gas Separations – Room 400
Moderator: Kaiyi Liu

- **M3.1, *Nano-Material Enhancing Mechanical Strength of Free-Standing Hollow Fiber Membrane for Gas Separation***
  Yu-Ting Lin, National Chung-Hsing University, Ming-Yen Wey, Hui-Hsin Tseng
- **M3.2, *Effect of Surface Property on Performance of Ionic Liquid Hollow Fiber Membranes***
  Wen-Hsuing Lai, National Chung Hsing University, David Wang, Ming-Yen Wey, Hui-Hsin Teng
- **M3.3, *Polymers of Intrinsic Microporosity (PIMs) with Cavities Tuned for CO2 Separation***
  Elena Tocci, Institute on Membrane Technology, Carmen Rizzuto, Alessio Fuoco, Bekir Satilmis, Marcello Monteleone, Elisa Esposito, Lidietta Giorno, Peter M. Budd, Johannes C. Jansen
- **M3.4, *Construction of Organosilica Membrane with 3-Dimension Network for High Gas Separation Performance***
  Jing Yi Li, National Chung Hsing UniversityMing-Yen Wey, Hui-Hsin Tseng

E5, Environment/Filtration Technologies – Room 410
Moderator: Jon McClean

- **E5.1, *Computational Fluid Dynamics – Non Newtonian Fluids***
  Thomas Grimm-Bosbach, John Crane
- **E5.2, *Specialized Filtration – Centrifugal Compressor Dry Gas Seal Coalescing Filters***
  Brian Adamson, John Crane
- **E5.3, *Numerical Study on Gas Distribution and Spray Atomization in a Wet Scrubber***
  Ondrej Kristof, Brno University of Technology, Pavel Bulejko, Tomas Sverak, Josef Kalivoda
- **E5.4, *Improved Filtration System for Injection Waters***
  Pathik Gopani, Gopani Companies, Raj Karan Khurana

N1, Innovation in Filtration & Coalescing – Room 402
Moderator: Chris Wallace

- **N1.1, *Meltblown High Flow Filters Improve Performance and Reduce Costs of Pre-EDR Filtration***
  Mark Summe, Water Technologies & Solutions, Travis Stifter, Thomas Aune, David Olson, Kathleen Terryll, Zachary Eastling, Faraz Farahani, Joseph Aldridge
- **N1.2, *Modeling Filtration Kinetics of Depth Filter Using Tomographic Data***
  Kevin Hoppe, Suez, Gerhard Schaldach, Reiner Zielke, Wolfgang Tillman, Markus Thommes, Damian Pieloth
- **N1.3, *Evaluation of a Novel Trapezoidal Shaped Liquid Filtration Cartridge Filter***
  Chris Wallace, Filtration Technology Corp.
- **Panel Discussion**

Concurrent Technical Sessions, 2:10 pm – 3:40 pm

L4, Advances in Filtration Equipment– Room AE

Moderator: Antti Häkkinen

- **L4.1,** ***General Improvement of Electrodewatering in a Filter Press via Anode Flushing***
  Jessica Désabres, Choquenet SAS, Maksym Loginov, Eugène Vorobiev
- **L4.2,** ***In-Situ Cleaning Process of Chamber Filter Presses with Sensor-Controlled and Demand-Oriented Automation***
  Patrick Morsch, Karlsruhe Institute of Technology, Roman Werner, Harald Anlauf, Dominik Geier, Thomas Becker, Hermann Nirschl
- **L4.3,** ***Filtration 4.0 - How Filtration Processes Profit from Iiot Solutions***
  Scott Koehler, Andritz Separation, Michael Panholzer, Marco Gerards
- **L4.4,** ***Filter Belt Crystallizer - A Concept for Modular, Integrated and Quasi-Continuous Production and Separation of Crystalline Systems***
  Timo Dobler, Karlsruhe Institute of Technology, Marco Gleiß, Hermann Nirschl
- **L4.5,** ***Vacuum Filtration in Corrosion Resistant Design***
  Farooq Ellahi, Andritz Separation

G4, Filter Testing – Room I

Moderator: Don Thornburg

- **G4.1,** ***Accelerated Air Filter Ageing with a Synthetic Nano-Aerosol***
  Jesus Marval, Politecnico di Torino, Luis Medina, Emanuele Norata, Paolo Tronville
- **G4.2,** ***Filter Media Testing in Accordance with Iso 16890***
  Sven Schütz, Palas GmbH, Sven Schuetz, Martin Schmidt
- **G4.3,** ***High Throughput Quality Control Filter Testing***
  Justin Koczak, TSI Incorporated, Tim Johnson, Juergen Spielvogel
- **G4.4,** ***Testing and Estimating Efficiencies of Ventilation Filters at PM2.5 and 10***
  Vijayakumar, Aerfil, Xin Feng
- **G4.5,** ***Inter-Laboratory Test Comparison of Filtration Performance of Air Filter-Media for HVAC System***
  Long Cen, Nanjing Tech University, Bin Zhou, Don Thornburg

F4, Nanofiber – Room M

Moderator: Josh Manasco

- **F4.1,** ***Electrospun Activated Carbon Nanofibers Reinforced with Cellulose Nanocrystals for Adsorption Applications***
  Zaher Hashisho, University of Alberta, Rania Awad, Yaman Boluk
- **F4.2,** ***Nanofiber Layers in Depth Filtration Products***
  Kari Luukkonen, Fibertex
- **F4.3,** ***Computational Analysis and Optimization of Filters with GeoDict, from Filter Media to Filter Element***
  Mehdi Azimian, Math2Market, Sven Linden, Liping Cheng, Andreas Wiegmann

- **F4.4, *Nanofiber for Filtration Application***
  Joan Gao, APA Associates, Philip Johnson

M4, Membrane Fouling – Room 400
Moderator:

- **M4.1, *Development of Pore Size Monitoring System of Fouled MF/UF Membranes Using Electrokinetic Phenomena***
  Kazuho Nakamura, Yokohama National University
- **M4.2, 3 *Phase Hybrid Hydrocyclone Design: Modeling and Experimental Study for Fouling Control and Optimization Membrane Filtration Processes***
  Matthieu Jacob, Total, Mohammed Arezki Chekroun, El Hadji Ibrahima Ndiaye, Arnaud Cockx, Alain Line
- **M4.3, *Measurement of Charge Effects on Fouling Layer Strength with Fluid Dynamic Gauging***
  Mads Jørgensen, Aalborg University, Tuve Mattsson
- **M4.4, *Regenerative Capability of Membranes in Case of Fouling Caused by Microalgae***
  Volker Bächle, Karlsruhe Institute of Technology, Marco Gleiß, Hermann Nirschl

E6, New Technologies – Room 410
Moderator: Ken Winston

- **E6.1, *Effects of Relative Humidity and Particle Hygroscopicity on Aging Characteristics of Electret***
  Shen-Chieh Chen, Virginia Commonwealth University, Shihang Li, Fubao Zhou, Da-Ren Chen
- **E6.2, *The Geographical Key to Filter Energy Consumption***
  Jenny Berens, Freudenberg Filtration Technologies
- **E6.3, *Experimental Characterization of a Fibrous Media Properties to Predict Its Permeability***
  Félicie Théron, IMT Atlantique, Walid Mirad, Aurelie Joubert, Nancy Zgheib, Laurence Le Coq
- **Panel Discussion**

N2, Coalescing – Room 402
Moderator: Martin Lehmann

- **N2.1, *Generating Representative Feed Drop Sizes for Liquid-Liquid Coalescer Evaluations***
  Hari Nemmara, Filtration Technology Corporation, Stefano Tagliaferri
- **N2.2, *Improvement in Barrier Filter's Water Removal Performance Using Novel Electrowet Coalescer***
  Mohammad Assaleh, University of Akron, George Chase, Ashish Gadhave, Ashish Bandekar, Jianyu Zhou
- **N2.3, *Detaching Water Droplets from a Fiber Using a Magnetic Field***
  Noor Farhan, North Carolina State University, Hooman Tafreshi
- **N2.4, *Novel Method to Measure Droplet Contact Angle with a Fiber***
  Noor Farhan, North Carolina State University, Hooman Tafreshi
- **N2.5, *Improved Filtration Performance of Coalesce Filters by Electrospun Nanofibers: Dependence on Fiber Materials and Surface Energy***
  Feng Chen, China University of Petroleum, Zhongli Ji, Martin Lehmann

Break – Room BCDFGHJKLNOP
3:45 pm – 3:55 pm

Concurrent Technical Sessions, 4:00 pm – 5:30 pm
L5, Classification and Separation– Room AE
Moderator: Lin Zhao

- **L5.1,** ***Using the Size-Dependent Particle Deposition in Crossflow-Filtration for a New Classification Process***
  Philipp Loesch, Technische Universitat Kaiserslautern, Sergiy Antonyuk
- **L5.2,** ***Continuous Fractionation of Fine Particles using Crossflow with a Superimposed Electrical Field***
  Simon Paas, Technische Universitat Kaiserslautern, Philip Loesch, Kai Nikolaus, Sergiy Antonyuk
- **L5.3,** ***Maximum Pore Size, Choosing the Most Statistically Robust Parameter***
  Keith Brockelhurst, Whitehouse Scientific, Graham Rideal
- **L5.4,** ***Capillary Based Modeling of Local Saturation in Multilayered Coalescing Filter Media***
  Seyedeh Neda Mehdizadeh, University of Akron, George Chase

G5, Indoor Air Filtration – Room I
Moderator: Shawn Chen

- **G5.1,** ***Durable Charged Meltblown Media for Hvac Filtration***
  Saravanan Andan, Berry Global
- **G5.2,** ***Filtration Performance of Antimicrobial and Regular Hvac Electret Filter in Realistic Conditions***
  Aurélie Joubert, IMT Atlantique, Safaa Abd Ali, Yves Andrès
- **G5.3,** ***Nanoparticle Filtration: Optimizing Retention Capacity by Filter Associations***
  Augustine Charvet, LRGP, Universite de Lorraine, Stéphanie Pacault, Dominque Thomas
- **G5.4,** ***New Pleat Media with Consistent Merv Rating and Lower Resistance***
  Saravanan Andan, Berry Global
- **G5.5,** ***Filtration in Combination with Inactivating Technologies can Reduce 99.99% of SARS-CoV-2 in the Air***
  Jennifer Wagner, Genesis Air, Josh Long

F5, Advanced Nanofiber – Room M
Co-moderators: Saravanan Andan and John Hancock

- **F5.1,** ***Filtering Nano-Aerosols with Electret Nanofiber Filter***
  Wallace Leung, The Hong Kong Polytechnic University, Qiangqiang Sun
- **F5.2,** ***High Temperature Resistant Nanofiber and Its Filtration Application***
  Qisheng Ou, The University of Minnesota, David Y. H. Pui
- **F5.3,** ***Simulation of Slip Flow for Nanofiber Media Filtration***
  Liping Cheng, Math2Market, GmbH, Sven Linden, Mehdi Azimian, Andreas Wiegmann

- **F5.4, *Development of Robust Nanofiber Filter Media for Critical Filtration***
  Nitin Satav, MilliporeSigma, Martin Cuddy, Saptarshi Chattopadhyay

M5, Membrane Characterization and Application – Room 400
Moderator: Scott Yaeger

- **M5.1, *Photolytic Quorum Quenching for Biofouling Control in Membrane Bioreactors: Microbial Community Dynamics***
  Kwang-Ho Choo, Kyungpook National University, Kibaek Lee, Huarong Yu, Jae-Ho Shin
- **M5.2, *Integrity Testing of Polyethersulfone and Polysulfone Highly Asymmetric Microfiltration Membranes***
  John Simonetti, Pacific Membranes, Melissa Simonetti, Phillip Simonetti, Gregory Simonetti
- **M5.3, *Liquid-Liquid Porometry, Evapoporometry and Pore Network Simulations of Ultrafiltration Membranes***
  René Peinador Davila, IFTS, Otman Maalal, Melike-Begum Tanis-Kanbur, Jia-Wei Chew, Didier Lasseaux, Marc Prat
- **M5.4, *Evaluation of Pore Interconnectivity within Asymmetric Virus Filtration Membranes***
  Fatemeh Fallahianbijan, Penn State University, Sal Giglia, Christina Carbrello, Andrew Zydney

L6, SLS Selection and Design – Room 410
Moderator Bernard Hoffner

- **L6.1, *The Need for a Novel Approach to Design of SLS Equipment***
  Tinoush Dinn, BASF
- **L6.2, *How to Select Right Filter for Liquid Solid Separation***
  Kalyan Roy, Oberlin Filter Company
- **L6.3, *In-Depth Study of Different Filter Aids on Their Properties and Evaluation***
  Jacob Misuraca, Imerys, Wenping Li, David Gittins
- **L6.4, *Digital Design of Continuous Filtration Processes via Mechanistic Modeling***
  Bhavik Mehta, Siemens Process Systems Engineering, Niall Mitchell, Cameron Brown, Sara Ottoboni
- **L6.5, *Industrial Reuse of Water with Low-Maintenance Filters to Help Achieve Sustainability Goals***
  Nirag Shah, Eaton Filtration

N3, Filtration & Separation for Fuel Cells & Energy Application – Room 402
Moderator: Len Castellano

- **N3.1, *Flue Gas Condensate Cleaning via Air Gap Membrane Distillation***
  Imtisal-e-Noor, KTH Royal Institute of Technology, Andrew Martin, Olli Dahl, Henrik Dolfe
- **N3.2, *Membrane Filtration for Purification of Sugarcane Bagasse Extracts***
  Nga Pham, Institut National Polytechnique de Toulouse, Vincent Oriez, Nicolas Beaufils, Jerome Peydecastaing, Philippe Behra, Pierre-Yves Pontalier

- **N3.3, *Protecting Fuel Cells: Development of Cathode Air Filters for Relevant Application Environments***
  Thomas Heininger, MANN+HUMMEL, GmbH, Eva Hallbauer, Martin Lehmann
- **Panel Discussion**

N4, Expression/Drying – Room 411
Moderator: Barry Perlmutter

- **N4.1, *Analysis of Electrokinetic Response of Solid-Liquid Mixture during Expression Operation***
  Masahi Iwata, Osaka Prefecture University, Kazuya Shimoizu, Tomohiro Iwasaki, Mohammed Saedi Jami
- **N4.2, *Monitoring and Visualization of Cake Dewatering in Vacuum Filters by Temperature Measurements***
  Teemu Kinnarinen, LUT University, Ville Kauranen, Hinri Montonen, Manu Huttunen, Jero Ahola, Tuomo Lindh, Vesa Karvonen, Antti Hakkinen
- **N4.3, *Continuum Approach to Optimizing Downstream Final Drying with Upstream Solid-Liquid Filtration***
  Barry Perlmutter, Perlmutter & Idea Development
- **N4.4, *Steam Pressure Filtration: Combination of Water Insoluble Liquids and Dewatering with Steam***
  Urs Peuker, TU Bergakademie Freiberg, Simon Esser
- **N4.5, *Electrochemical Antifouling Filtration System Powered by Free Piezoelectricity***
  Masoud Rastgar, University of Alberta, Joel Fleck, Robin Graessner, Mohtada Sadrzadeh

Student and Industry Poster Presentations – North Foyer
5:35 – 6:45 pm

SATURDAY, OCTOBER 8

Registration - Foyer
7:00 am – 5:00 pm

Expo Open – Room BCDFGHJKLNOP
8:00 am– 4:00 pm

Plenary Presentations, 8:00 am – 9:20 am – Room AE
PH4, 8:00 – 8:40 am – Room AE
From Farm to (Operating) Table: Air Quality and Health
Mr. Geoff Crosby, USA
Moderator: Rahul Bhardawaj

PN5, 8:40 - 9:20 am – Room AE
Energy-Efficient – Separating the Useful from the Harmful for Cleaner Mobility and Cleaner Air
Dr. Martin Lehmann, MANN+HUMMEL, GmbH, Germany
Moderator: Wu Chen

Break – Room BCDFGHJKLNOP
9:25 am – 9:55 am

Concurrent Keynote Presentations, 10:00 am – 10:30 am
KL19 – Room AE
Microstructure Design and Interface Engineering in Advanced Filters for High-Efficient Nanoscale Particle Separation
Prof. Zhaoxiang Zhong, Nanjing Tech University, China
Moderator: Wenping Li

KH20 – Room M
Building an Implantable Artificial Kidney Part 1: Landscape and Challenges
Dr. William Fissell, Vanderbilt University Medical Center, USA
Moderator: Wallace Leung

KN21 – Room I
Potentials of 2D Nanomaterials in Membrane Technology for Solving Water-Energy Nexus
Prof. Boaxia Mi, University of California, Berkeley, USA
Moderator: Godwin Severa

Concurrent Keynote Presentations, 10:30 am – 11:00 am
KG22 – Room AE
Micro-Engineered Filtration; the Study and Design of Filtration Materials at the Micro-Scale
Mr. Anil Suthar, Donaldson, USA
Moderator: Daren Chen

KH23 – Room M
Building an Implantable Artificial Kidney Part 2: Technology and Opportunities
Prof. Shuvo Roy, University of California San Francisco, USA
Moderator: Wallace Leung

KN24 – Room I
A Healthy Building is the Best Medicine
Mr. Sean O'Reilly, AAF Flanders, USA
Moderator: Martin Lehmann

Lunch (Full Congress Attendees) – Room BCDFGHJKLNOP
11:05 am – 12:25 pm

Concurrent Technical Sessions, 12:30 pm – 2:00 pm
L7, Cake Discharge/Backwashing– Room AE
Moderator: Chris Wallace

- **L7.1, *Description of the Filter Cloth Deformation during Backwashing Filtration***
  Patrick Morsch, Karlsruhe Institute of Technology, Harald Anlauf, Mermann Nirschl
- **L7.2, *New Developments for Dry Cake Discharge Assessment from Filter Media***
  Pascal Ginisty, IFTS, Patrick Morsch, Kristin Neubauer, Yannick Feith, Harald Anlauf, Hermann Nirschl

- **L7.3, *Self-Cleaning Filters- Options and Challenges***
  Anita Gupta, John Brooks Company
- **L7.4, *Solids Removal in Cooling Circuits through Automatic Backwash Filter Prevents Legionella Growth***
  Stefan Schoepf, Lenzing Filtration
- **L7.5, *Influence of Regeneration Variables during Backwashing Treatment into Gas-Phase after Liquid Filtration***
  Patrick Morsch, Karlsruhe Institute of Technology, Harald Anlauf, Hermann Nirschl

G6, Industrial Filtration – Room I
Moderator: Ming Ouyang

- **G6.1, *Design Improvement of the Injection Pipe of a Pulse-Jet Bag Filter***
  Alain Ginestet, CEITAT, Mirela Robitu, Lionel Boiteux
- **G6.2, *Development of an Industrial Cartridge Filter for High Volume Flows***
  Markus Stecher, Scheuch, GmbH, Hans Engelhardt, Gerald Schluckner
- **G6.3, *Modelling Parameters Influencing Continuous Dust Emissions Monitoring in Industrial Fertilizer Prilling Tower***
  Elisangela Krauss, Yara International, Monica Aguiar
- **G6.4, *Precoating for Improving the Regeneration of Filters Used for Metallic Nanoparticles Removal***
  Nassim Khirouni, CNRS, Augustin Charvet, Dominique Thomas, Denis Bemer

F6, Adsorption and Innovation
Moderator: Chris Sipes

- **F6.1, *Advances and Trends in Air Cleaning: Control of Nox from Automobile Exhaust***
  Chris Mueller, AAF Flanders, Henri Seng, Tavatchai Satienrattanakul
- **F6.2, *Surface Functionalized Attapulgite for Mercury Adsorption***
  Bo Wang, Active Minerals International
- **F6.3, *Ion Exchange Resins and Applications for Gas Phase Air Filtration***
  Lane Flora, Jacobi Carbons, David Baer
- **F6.4, *Multi-sorbent Gas Adsorption Media for Complex Application Demands for Indoor Air Quality and Electrical Vehicle Intake (Fuel Cell)***
  Behnaz Shoar, Alkegen, Chris Sipes

M6, NF/RO Membranes and Desalination – Room 400
Moderator: Jayesh Shah

- **M6.1, *Nano Filtration Using Polysulfone Membrane***
  Jian Tan, Pall Corporation, Rajan Beera, Jim Connors, Eilidh Bedford
- **M6.2, *Extending the Limitations of Reverse Osmosis Membranes for Reclaiming Challenging Waste Waters***
  David Shin, Hydranautics, Richard Franks

- **M6.3, *Printed Spacers Create More Efficient Spiral Wound Elements***
  Michael Izzo, Henkel, Kevin Roderick, Dan Oberle, Craig Beckman
- **M6.4, *Minimal Liquid Discharge (MLD): A Water Source and Discharge Solution***
  Tina Arrowood, DuPont, Jon Johnson, Bill Carlin
- **M6.5, *Practice Guidelines from Three Decades of Membrane Technology Application in Treatment of Wastewaters from Chemical Industry***
  Jacek Malisz, BASF

L8, Slurry Characterization and Pre-treatment – Room 410
Moderator, Urs Peuker

- **L8.1, *ANDRITZ Metris Addiq Rheoscan Ai – real-Time, Automatic Adjustment of Polymer with the Use of Artificial Intelligence***
  Stefan Peter, Andritz Separation, Magdalena Karner, Steve Jacoby
- **L8.2, *Investigations on Filter-Aid Filtration with Compressible Filter Layer***
  Urs Peuker, TU Bergakademie Freiberg, Diana Neuber, Sophie Kühne, Sebastian Lösch
- **L8.3, *Development of Adsorptive Filter Aid from Amorphous Rice Hull Ash***
  Wenping Li, Agrilectric Research, Carl Kiser
- **L8.4, *A Reactive Filter-Aid: Highly Porous Adsorbents for Efficient Oil Treatment***
  Viren Singh, IMERYS, Jacob Misuraca, Li-Chih Hu

Concurrent Technical Sessions, 2:00 pm – 3:30 pm
L9, Advances in Centrifuge Technology– Room AE
Moderator: Farooq Ellahi

- **L9.1, *Dynamic Modelling and Simulation of Mechanical Fluid Separation in Decanter* Centrifuges**
  Marco Gleiß, Karlsruhe Institute of Technology
- **L9.2, *Correlations between Vibration Patterns and the Separation Process of Disk Stack Centrifuges***
  Nils Janssen, University of Wuppertal, Florain Klau Freese, Uwe Janoske
- **L9.3, *Improving Continuous Solid-Liquid Separation Processes in Centrifuges by Means of Resolved Simulation***
  Helene Wettich, Karlsruhe Institute of Technology, Marco Gleiß, Hermann Nirschl
- **L9.4, *Process Simulation of Multidimensional Separation in Tubular Centrifuges***
  Marvin Winkler, Karlsruhe Institute of Technology, Marco Gleiß, Hermann Nirschl
- **L9.5, *Scale-Up and Optimization of Filtration processes: Pressure Filter to Centrifuge***
  Niall Mitchell, Siemens Process Systems Engineering, Christopher Burcham, Kevin Girard, Christopher Polster

G7, Filtration Modeling – Room I
Moderator: Prashant Kulkarni

- **G7.1, *Electret Filter Media: Experimental and Numerical Investigations of Submicron Aerosol Deposition***
  Maxmilian Kerner, Technische Universitat Kaiserslautern, Kilian Schmidt, Stefan Schumacher, Christoph Asbach, Sergiy Antonyuk
- **G7.2, *Experimental and Numerical Characterization of the Airflow around a Pleated Filter***
  Félicie Théron, Walid Mrad, Aurélie Joubert, Nancy Zgheib, Laurence Le Coq
- **G7.3, *Introduction of a New Gas-Liquid Coalescence Filtration Model and Coalescence Mechanism***
  Wenqi Li, University of Akron
- **G7.4, *Experimental and Theoretical Analysis of Loading Characteristics of Electret Media for Nanoparticles***
  Sheng-Chieh Chen, Virginia Commonwealth University, Chi-Yu Tien, Chuen-Jinn Tsai

F7, Media Characterization – Room M
Moderator: Mehdi Azimian

- **F7.1, *Simulation-Enhanced Bubble Point Testing for Woven Wire Meshes***
  Dominik Herper, GKD
- **F7.2, *On the Relationships of Particle Retention and Morphology of Polymeric Membranes***
  Wilson Poon, W.L. Gore & Associates
- **F7.3, *A Further Development of the Liquid Liquid Porometry for Characterization of Hydrophobic Membranes and Hollow Fibers***
  Dana Dutczak, Porometer, Izabela Struzynska-Piron, Danny Pattyn, Marnix Landkroon, Krees van der Kamp, Isabel Kienbaum
- **F7.4, *Functionalization and Characterization of Sintered Filters***
  Félicie Théron, IMT Atlantique, Audrey Villot, Elisabeth Lys, Audrey Guyon

M7, Membranes for Wastewater Treatment and Resource Recovery – Room 400
Moderator: David Jassby

- **M7.1, *Phosphorous Recovery from Wastewater using Membrane Processes***
  Morten Christensen, Aalborg University, Katie Kedwell, Cejna Anna Quist-Jensen
- **M7.2, *Membrane Engineering for Desalination, Minerals Extraction and Blue Energy Production***
  Enrico Drioli, ITM-CNR, Francesca Macedonio
- **M7.3, *RO Reject Water Recovery and Reuse Using Membrane Distillation***
  Scott Yaeger, FAST International, Kirsten Kulik
- **M7.4, *Separation of Volatile Fatty Acids from Anaerobic Effluents Using Various Membrane Technologies***
  Nandor Nemestothy, University of Pannonia, Aron Bona, Peter Bakonyi, Laszlo Gubicza, Katalin Belafi-Bako

N6, Fuel and Cabin Filtration – Room 410

Moderator: Hooman Tafreshi

- **N6.1, *Round-Robin Study on ISO16889***
  Christian Desquilles, Alkegen, Ashish Gadhave, Rahul Bharadwaj, Adam Burnett, Donald Avery
- **N6.2, *Evolution of Filter Element Technology***
  Frank Spehl, MANN+HUMMEL, GmbH
- **N6.3, *How Does ISO 16890 Filter Class Affect Indoor Air Quality?***
  Magnus Johnsson, Ivanka Poljak, Frank Spehl
- **N6.4, *A Perspective Towards the Digital Revolution in Filter Media Development***
  Friedemann Hahn, MANN+HUMMEL, GmbH, Florian Keller, Andre Schmeisser, Martin Lehmann, Thomas Gose
- **N6.5, *Ambient Air Quality in China: An Update on the Impact of Particulate and Gaseous Pollutants on IAQ***
  Christopher Muller, AAF Flanders, Henry Yu, James Zhao

H2, Antimicrobial, Harmful Gas Breakdown – Room 411

Moderator: Vinayak Suryakant Sutkar

- **H2.1, *Breakdown of Harmful NOx and VOC by Photooxidation Using Whitewash***
  Yun Li, Wallace Leung
- **H2.2, *Fluid and Impurity Transport during Online Isolation Experiments Conducted with X-Ray Tomography***
  Sara Ottoboni, CMAC, Muhid Shahid, Alan Martin, Tholozile Kathyola, Gunjan Das, Sven Schroeder, Shashidhara Marathe, Christopher Rau, Kaz Wanelik, Chri John Price
- **H2.3, *A Different Type of Uv Provides Significant Advantages***
  George Diefenthal, NewTech Aqua Solutions
- **H2.4, *Antimicrobial Nano Zinc Ozide for Non Woven Filter Media***
  Matt Utley, Great Lake Filters
- **H2.5, *Filtration Media Functionalized with Zinc Oxide***
  Kevin Urman, Ascend Performance Materials, Ted Wieczorek, Keh Dema

H3, Biopharmaceutical Separation I – Room 402

Moderator: Swarna Agarwal

- **H3.1, *The Effect of Permeate Flux on the Clearance of Minute Virus of Mice***
  Ranil Wickramasinghe, University of Arkansas, Xianghong Qian
- **H3.2, *Exploring Monoclonal Antibody (mAb) Filtration through Virus Retentive Membranes***
  Matthew Billups, The Pennsylvania State University, Swarnim Ranjan, Melissa Holstein, Sanchayita Ghose, Andrew Zydney
- **H3.3, *Innovative Combination of Microwaves with Centrifugal Forces for Natural Products Extraction***
  Pascal Ginisty, IFTS, Marie Cabanne, Marc Valat, Lea Segret, Jean-Michel Guibert, Raphaelle Leroy
- **H3.4, *Integrated Filtration and Washing Modelling of Active Pharmaceutical Ingredients and Impurities***
  Bhavik Mehta, Siemens Process Systems Engineering, Sara Ottoboni, Niall Mitchell, Cameron Brown, Ekaterina Gramadnikova

Break – Room BCDFGHJKLNOP
3:35 pm – 3:55 pm

Concurrent Technical Sessions, 4:00 pm – 5:30 pm
L10, Advances in SLS Technology– Room AE
Moderator: Marco Gleiß

- **L10.1,** ***Multidimensional Separation by Magnetic Seeded Filtration***
  Frank Rhein, Karlsruhe Institute of Technology, Hermann Nirschl
- **L10.2,** ***Filtration Technology Meets Digitalization***
  Maximilian Stahl, Andritz Separation, Juergen Kern
- **L10.3,** ***Dewatering of Nanofibril Cellulose: Effect of External Electric Field on the Contact Angle of Air-Water-Cellulose Interfere***
  Hans Theliander, Chalmers University, Ann Liden, Nabin Karna, Tuve Mattsoon
- **L10.4,** ***Identifying and Avoiding Common Pitfalls in Lab and Pilot Scale Solid-liquid Filtration Testing***
  Garrett Bergquist, Steri Technologies

G8, Filtration Modeling II – Room I
Moderator – Ashish Bandekar

- **G8.1,** ***Modelling Purification of Flue Gas in Reactive Filters***
  Kristian Kiradjiev, University of Nottingham
- **G8.2,** ***Performance Prediction of AMC Filter & Gas Purifiers: A Computational Modeling Approach***
  Amlan Chakraborty, Entegris
- **G8.3,** ***Permeability Modeling of Non-Woven Media with Fiber Size Distribution***
  Nathalie Bardin-Monnier, CNRS – University of Lorraine, Augustin Charvet, Dominique Thomas
- **G8.4,** ***Submicron Aerosol Particle Filtration - Performance Prediction Using Deep Neural Networks***
  Maximilian Kerner, Techniche Universitat Kaiserslautern, Robert Hesse, Sergiy Antonyuk
- **G8.5,** ***Uncertainty Quantification in Filter Design***
  Simon Padron, Parker Hannifin

F8, Woven – Room M
Co-moderators: Bob Burkhead and Vincent Edery

- **F8.1,** ***Engineering an Ultra-High Flow Weave – Latest Achievements in Wire Mesh Technology***
  Dominik Herper, GKD, Markus Knefel
- **F8.2,** ***Increasing the Filtration Performance of Woven Wire Cloths***
  Martin Mueller, Bopp USA,
- **F8.3,** ***Wire Mesh Buyers Be Aware***
  Dominik Herper, GKD, Markus Knefel
- **F8.4,** ***Comparison of BEKIPOR® Filter Media to Alternative Metallic Solutions***
  Aurelie Goux, Bekaert, Stefan Vandendijk

H4, Biopharmaceutical Separation II – Room 402
Moderator: Sal Giglia

- **H4.1,** ***Pioneering Continuous Automatic Piston Discharge Centrifuge for the Bioprocessing and Biopharmaceutical Industries***
  Jing Liu, Celeros
- **H4.2,** ***Fructooligosaccharide Production using an Membrane Reactor and Subsequent Fermentation with Bacillus Coagulans***
  Rong Fan, University of Applied Sciences Mittelhessen, Jan Philipp Burghardt, Mehrdad Ebrahimi, Doreen Gerlach, Peter Czermak
- **H4.3,** ***Novel Centrifugal Classification of Inclusion Body (IB) from Recombinant Protein***
  Wallace Leung, The Hong Kong Polytechnic University
- **H4.4,** ***Defect Detection Sensitivity of Bubble Point Type Tests for Sterilizing Grade Filters***
  Sal Giglia, MilliporeSigma, Anand Alembath, Joseph Hersey

L11, Cake Filtration, Washing and Testing – Room 410
Moderator: Susie Reynolds

- **L11.1,** ***Filter Cake Washing of Porous Particles***
  Urs Peuker, TU Bergakademie Freiberg
- **L11.2,** ***Pre-dewatering of Filter Cakes in Single- And Multistage Cake Washing***
  Bernhard Hoffner, Hochschule Mannheim – University of Applied Sciences, Andreas Brueckner, Thomas Sprott
- **L11.3,** ***Application of Wash Liquid: The Hinge Point for Good Filter Cake Washing***
  Hendrik Henn, Hochschule Mannheim – University of Applied Sciences, Florian Sauer, Bernhard Hoffner
- **L11.4,** ***Nonlinear Parameter Estimation of Liquid Cake Filtration Experimental Data***
  Thomas Buchwald, TU Bergakademie Freiberg, Urs Peuker
- **L11.5,** ***How we Improved Efficiency and Fabrication Cost for an All New Cake Building Filter Including First Performance Results***
  Stefan Strasser, Lenzing, Stefan Schoepf

H5, Health Technologies II – Room 411
Moderator: KJ Choi

- **H5.1,** ***Modernization of the Biotechnology-Based Insulin Production***
  Maximilian Stahl, Andritz Separation, GmbH, Gunnar Grim
- **H5.2,** ***Automating the Final Filtration and Dispensing Process***
  Zach Welch, Parker Hannifin, Aradhana Singh, Dean Pighim
- **H5.3,** ***Nanofiltration Must Be Combined with Laminar Vertical Flow to Minimize Virus Infection Risk***
  Andreas Meyer, NanoCleanAir, GmbH, Jorg Meyer, Heinz Burtscher, Jan Czerwinski, Thomas Lutz, Rainer Mayer, Barbara Rothen, Joachim Frey, Ernest Weingartnerz
- **H5.4,** ***Exploring the Role of Anti-Solvent Effects during Washing on Active Pharmaceutical Product Purity***
  Sara Ottoboni, CMAC, Muhid Shahid, Chloe Faure, Leo Lue, Christopher Price

AFS Corporate Membership Meeting and Reception (Invitation only) – Sapphire Terrace
5:35 pm – 6:45 pm

Gala Dinner – Indigo A (2nd Level), Advanced Purchase Required
7:00 pm

SUNDAY, OCTOBER 9

Registration - Foyer
7:00 am – 12:00 pm

Plenary Presentations, 8:00 am – 9:20 am – Room AE

PH6, 8:00 – 8:40 am – Room AE
Membrane Technology for the Production of Biopharmaceuticals
Prof. Andrew Zydney, The Pennsylvania State University, USA
Moderator: Wallace Leung

PH7, 8:40 - 9:20 am – Room AE
Filtration and Purification Nanofiber Technologies for Combating Novel Coronavirus Outbreak
Prof. Wallace Leung, The Hong Kong Polytechnic University, Hong Kong
Moderator: Rahul Bharadwaj

Concurrent Keynote Presentations, 9:25 am – 9:55 am

KL25 – Room AE
Control and Intensification of Mass Transfer and Separation Processes with Smart Materials
Prof. Liang-Yin Chu, Nanjing Sichuan University, China
Moderator: Wenping Li

KM26 – Room M
The Future of Membrane Separation Technologies - A Peek into the Crystal Ball
Mr. Peter Cartwright, Cartwright Consulting
Moderator: Andrew Zydney

KH27 – Room I
Understanding the Role of the Indoor Environment in Human Health
Dr. Stephanie Taylor, Building4Health, USA
Moderator: Rahul Bharadwaj

Concurrent Keynote Presentations, 9:55 am – 10:25 am

KG28 – Room AE
PM 2.5 Separation Efficiency and Energy Assessment for Cleanable Oil-Water Soluble Mist-and Dust Filter Media
Prof. Wilhelm Höflinger, University Wien, Austria
Moderator: Daren Chen

KH30 – Room I
Centrifugal Separation of Monoclonal Antibody for Cancer and Viral Drugs
Prof. Wallace Leung, The Hong Kong Polytechnic University, Hong Kong
Moderator: Ranil Wicksramasinghe

Break – Room Sapphire Foyer
10:30 am – 10:40 am

Concurrent Technical Presentations, 10:45 am – 12:15 pm
L12, Advances in Testing Technology – Room AE
Moderator: Nicolas Petillon

- **L12.1,** ***Single Particle Light Scattering Spectroscopy (SPLS) Sizing and Counting of Particles (SPLS) from Nano- To microscale: Filtration Application***
  Dietmar Lerche, LUM GmbH, Elia Wollik, Holger Woehlecke, Heinz Lichtenfeld, Martin Hussels
- **L12.2,** ***Using Standards to Measure Microfiltration Performance***
  Fred Lybrand, Hollingsworth & Vose
- **L12.3,** ***2D and 3D Ice Characterization in Jet A1***
  Nicolas Petillon, IFTS, Vincent Edery, Pierre Colin Gervais, Iheb Haffar, Frederic Flin, Christian Geindreau
- **L12.4,** ***Chemical Analysis of the Exhaust Water from a Solid Oxide Fuel Cell***
  Lane Bortell, Harding University, Caleb Wilson, Jonathan Sheumaker, Irfan Hussaini, Jeffery Massey
- **L12.5,** ***Multiwavelength Reflectance and Machine Learning Methods for In-Line Characterization of Dispersions***
  Dietmar Lerche, LUM GmbH, Sebastian Boldt, Philipp Menesklou, Ouwen Zhai, Hermann Nirschl

G9, Hot Gas Filtration – Room I
Moderator: Jon Rajala

- **G9.1,** ***A New Approach towards Hot Gas Filtration: Introducing a New Kind of High Temperature Filter Medium***
  Dominik Herper, GKD, Hans Schlebusch
- **G9.2,** ***Combined Filtration Process for Biomass Combustion Plants to Remove Particulate and Gaseous Pollutants***
  Hans-Joachim Schmid, University of Paderborn, Janis Beimdiek, Sascha Schiller, Friedrich Prill, Mario Koenig, Mijam Mueller, Ingo Hartmann
- **G9.3,** ***Influence on Nanoparticle Collection of Operating Conditions of a Lab-Scale Spray Scrubber***
  Aurélie Joubert, IMT Atlantique, Emmanuel Adah, Rachid Boudhan, Sylvain Durecu, Laurence Le Coq
- **Panel Discussion**

F9, Metal Filter – Room M
Moderator: Friedrich Edelmeier

- **F9.1,** ***High Performance Metal Filter Cloth - Developments in Woven Wire Filtration Media***
  Friedrich Edelmeier, Haver & Boecker
- **F9.2,** ***How Metal Fibers Are Key to the Sustainability Challenges in Aviation***
  Jeffrey Mothersbaugh, Bekaert

- **F9.3, *Cleaning and Validation of Metal Filters***
  Susie Reynolds, Carolina Filters, Andrew McCord
- **F9.4, *NIST Traceable Characterisation of Sub-55micron Metal Filter Media***
  Antti Häkkinen, LUT University, Graham Rideal, Marina Angeslava

M8, MF/UF/RO Membranes and Practices – Room 400
Moderator: Scott Yaeger

- **M8.1, *Comparing Performance of Different Hollow Fiber Membranes in Treatment of Municipal Wastewater***
  Sean Carter, Toray Membranes, Susan Guibert
- **M8.2, *Case Study of Tubular UF Used with Caustic Softening Process***
  Doug Frick, Peter Cartwright
- **M8.3, *Performance and benchmarking study of newly developed Aquaporin Inside® CLEAR series low energy BWRO membranes***
  Brett Holmberg, Aquaporin, Xuan Tung Nyugen, Jan Benecke
- **Panel Discussion**

H6, Health Technologies II – Room 402
Moderator: Tinoush Dinn

- **H6.1, *COVID-19 and Bioaerosol Filtration***
  Kyung-Ju Choi, Clean & Science
- **H6.2, *Application of Centrifugal Filtration to Characterize Protein Crystal Suspensions***
  Benjamin Radel, Karlsruhe Institute of Technoloy, Tu Hoang Nguyen, Hermann Nirschl
- **H6.3, *Numerical Simulation of Circulating Tumor Cell Deformation in Constricted Microchannel for Enhanced Separation Efficiency***
  Yong Ren, University of Nottingham, Aiguo Wu, Xiawei Wu, Jing Wang, Wallace Leung
- **H6.4, *Diabetes Biosensor Based on Surface Plasmon Resonance and Microfluidics Techniques***
  Jing Wang, University of Nottingham, Yong Ren, Chiew-Foong Kwong

Closing Ceremony – Room AE
12:15 pm – 12:45 pm

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EXHIBITOR LISTING

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A2Z Filtration Specialties	315
ACS Industries	428
Acteev by Ascend	610
Ahlstrom-Munksjö	115
Air Techniques International (ATI)	404
Alkegen	101
American Filtration & Sep. Society (AFS)	615
Bekaert	309
Beot®	505
Berry Global	215
Beverlin Specialty Tube	124
BinNova Microfiltration, GmbH	618
Black Powder Solutions, Inc.	612
Blue Heaven Technologies	511
BMP America, Inc.	617
Cerex Advanced Fabrics	204
CFF GmbH & Co	229
Clean and Science Co., Ltd.	622
Croft Filters Limited	330
DAP America Inc.	118
Diemme Filtration (Aqseptence Group)	620
Dorstener Wire Tech	401
Eaton Filtration	201
Ekato Corporation	619
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Fibertex Nonwovens	513
Fibervisions, An Indorama Ventures Co.	321
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Lenzing Fibers Inc.	422
Lenzing Filtration	317
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MAAG Group Americas	328
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PFAFF, GmbH	116
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Polimeros y Derivados	430
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PPG Engineered Materials	410
Reifenhauser Enka Tecnica	323
Reifenhauser REICOFIL	500
Rosedale Products, Inc.	415
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Sandler AG	519
SGS IBR Laboratories	408
SiLi Sigmund Lindner GmbH	325
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Sprial Water Technologies, Inc.	616
Steri	520
Stockmeier Urethanes, USA, Inc.	105
Superior Felt & Filtration	207
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Unique Pretty Ind. Co., Ltd.	219
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Whitehouse Scientific, Ltd.	210

NOTES

INDUSTRY AND STUDENT POSTERS

SESSION/TRACK KEY

Air/Gas	Energy	Environment	Filter Media	Health	Membrane	Solid/Liquid

Industry Posters = IP Student Posters = SP

THURSDAY, OCTOBER 6

INDUSTRY POSTERS

IP1 - ***Evalith®798 UNIQUE Monolith Surface PATTERN PET Filter Media for Industrial Air Filtration***
Johns Manville, Michele Blackburn, Christian Hassmann, Joerg Meier, Steven Westbrook

IP2 - ***Generation of Cylindrical Pleated Structures for Optimization of Digital Filter Flow Performance***
Math2Market, Philipp Eichheimer, Liping Cheng, Mehdi Azimian, Andreas Wiegmann

IP3 - ***Nanofiber-Based Low Energy Consuming HVAC Air Filters***
eSpin Technologies, Ryszard Wycisk, Jayesh Doshi

IP4 - ***Effect of Current Density and Contact Time in Electro-Coagulation on Membrane Fouling***
Hoseo University, In-Soung Chang, Kyung-Rae Kim

IP5 - ***Membrane Extraction for Recovery of Strategic Metals from Low-Concentrated Solutions***
University of Applied Sciences Zwickau, Anja Gerbeth, Bernhard Gemende, Burkhardt Fassauer

IP6 - ***New Highly Efficient Adsorbents for Arsenic Removal from Contaminated Water***
University of Applied Sciences Zwickau, Bernhard Gemende, Anja Gerbeth, Matthias Leiker

IP7 - ***In-Situ Evaluation of Filter Media Modified by Biocidal Nanomaterials to Control Bioaerosols***
UFSCar, Mônica Lopes Aguiar, Paula Rosa, Andre Bernardo

IP8 - ***Aerosol Elimination by Mouth and Nose Coverings during Exhalation and Cough/Sneeze***
Warsaw University of Technology, Tomasz Sosnowski, Andrej Vilkotsky, Ernest Szajna

STUDENT POSTERS

SP1 - ***A Multiscale Mathematical Model for Particle Filtration***
Arkady Wey, University of Oxford, Ian Griffiths, Jon Chapman, Chris, Breward

SP2 - ***Transport of Impurities and Residual Solvent during Static Drying***
Mariam Siddique, EPSRC, University of Strathclyde, Audrey Laux, Sara Ottoboni, Christopher Price, Paul Mulheran

SP3 - ***Combination of Electrowet-Coalscer and Fiber Media Membrane for Enhanced ULSD- Water Separation***
Mohammad Assaleh, The University of Akron, George Chase, Ashish Bandekar, Jianyu Zhou

SP4 - ***Orientation Distribution Function of Fibres in Nonwoven Fabrics***
Yasasween Hewavidana, Louborough University

SP5 - ***Integrated Preparation and Separation of Temperature-Sensitive Crystals on a Quasi-Continuous Laboratory Filter***
Timo Dobler, Karlsruhe Institute of Technology, Benjamin Radel, Marco Gleißß, Hermann Nirschl

SP6 - ***Separating Microplastics from Dilute Suspensions with Magnetic Seeded Filtration***
Frank Rhein, Karlsruhe Institute of Technology, Hermann Nirschl

SP7 - ***Dewatering Microfibrillated Cellulose: The Use of Electro-Assisted Filtration***
Anna Lidén, Chalmers University of Technology, Nabin Karna, Hans Theliander

SP8 - ***Nanoporous Solid Polymer Gels as Hosts for Peo-Ppo-Peo Block Copolymer Surfactants***
Patrik Gotak, University of Akron, Navin Kafle, Toshikazu Myoshi, Sadhan Jana

SP9 - ***Sustainability and Circular Economy in Desalination Industry***
Srija Madduri, Homi Bhabha National Institute, VSSL Prasad Talluri

SP10 - ***Accessing the Intrinsic Permeability and Selectivity of Polyamide-Based Membranes***
Rui Chen, Vanderbilt University

SP11 - ***Design, Fabrication and Performance Testing an Advanced Forward Osmosis Water Purification System***
Edward Bruffey, Hawaii Natural Energy Institute

SP12 - ***Development of Filter Media by Electrospinning for Air Filtration of Nanoparticles***
Daniela Bonfim, Federal University of Sâo Carlos, Mônica Lopes Aguiar, Vadila Guerra

SP13 - ***Optimizing the Synthesis and Filtration Performance of Layer-stacked MoS2 Membranes***
Monong Wang, UC Berkeley, Boaxia Mi

SP14 - **Sacrificial MoS2--Polyelectrolyte Layers for Control of Membrane Fouling in Reverse Osmosis**
Kelly Conway, UC Berkeley, Boxia Mi

SP15 - ***Ultrafiltration of Colloid Nanoparticles down to 1.7 Nm in Isopropyl Alcohol (IPA)***
Jie Zhang, Virginia Commonwealth University, Sheng-Chieh Chen, Dores Segets, Wilson Poon

SP16 - ***One-Step Modification of Mussel-Inspired Janus Pvdf Membrane for Emulsion Separation***
Sher Ling Lee, National Taiwan University, Allan Kuo-Lun Tung

SESSION/TRACK KEY

Air/Gas	Energy	Environment	Filter Media	Health	Membrane	Solid/Liquid

Industry Posters = IP Student Posters = SP

FRIDAY, OCTOBER 7

INDUSTRY POSTERS

IP9 - ***In-Line Monitoring of Quality Parameters in Aqueous Dispersions for Process Control***
LUM GmbH, Sebastian Boldt, Hermann NIrschl, Dietmar Lerche, Ouwen Zhai, Philipp Menesklou, Jessica Frohligh

IP10 - ***Quantitative Assays for Determination of Antibacterial Water Filters – Testing Protocols Proposal***
Warsaw University of Technology, Maciej Pilarek, Andrzej Krasinski, Michal Stor, Kamil Wierzchowski, Jolanta Mierzejewska, Leon Gradon

IP11 - ***Improvement of Coalescence Filters Performance by Coating of Polymer Fibrous Media***
Warsaw University of Technology, Andrzej Krasinski

IP12 - ***Integrated Filtration, Washing and Drying Modelling to Predict Continuous Isolation Performance***
CMAC, Sara Ottoboni, Cameron Brown, Ekaterina Gramadnikova, Jan Sefcik, Christopher Rice

IP13 - ***Membrane Casting Support Media: Reemay Elite***
Berry Global, Saravanan Andan

IP14 - ***Recovery of Ethanol from Water Using Graphene Composite Poly (1-Trimethylsilyl-1-Propyne) via Pervaporation***
National University of Singapore, VSSL Prasad Talluri

STUDENT POSTERS

SP18 - ***Precoating Influence in Ultrafine Dust Filtration***
Bárbara Andrade, UFSCar, Rafael Sartim, Mônica Lopes Aguiiar

SP19 - ***Laboratory Evaluation of Low-Cost Light Scattering Particular Matter Sensors of Different Designs***
Weiqi Chen, University of Minnesota

SP20 - ***Synthesis, Characterization and Acidic Gas Sorption Testing of Novel Metallo-Ionic Liquids***
Edward Bruffey, Hawaii Natural Energy Institute

SP21 - ***Performance Testing of Cordless Handheld Vacuum Cleaners***
Chih-Chieh Chen, National Taiwan University, Maxie Lin, Yu-Mei Kuo, Li-Yi Li, Chih-Wei Lin, Sheng-Hsui Huang

SP22 - ***3D Modeling for the Air Filtration Process***
Chih Yu Hu, National Taiwan University, Allan Kuo-Lun Tung

SP23 - ***Removal of Arsenic Using a Graphene Oxide Magnetic Adsorbent Impregnated to Tann***
Min Young Lee, Kyungpook National University, Bo Gyeong Park, Sang June Choi

SP24 - ***Advanced Impregnated Activated Carbons for Fuel Cell Air Purification***
Jacob Vasquez, Hawaii National Energy Institute, Godwin Severa

SP25 - ***A Uniform Metal Oxide Coated Geotextile for Photocatalytic Water Treatment***
Alexander Aragon, Wake Forest University, Eunkyoung Shim, Xiaomeng Fang, Scott Geyer, Kyana Young

SP26 - ***Sorbent Based Microwave Driven Atmospheric Water Harvesting***
Suman Nepal, University of Akron

SP27 - ***Novel Entrained Flow SCR Using Online Synthesized Catalyst Particles***
Janis Beimdiek, Paderborn University, Sascha Schiller, Hans-Joachim Schmid

SP28 - ***Influence of Seams on Air Permeability of Filters with Different Aging Times***
Camila Raquel de Lacerda, Federal University of Sâo Carlos, Daniela Patricia Freire Bonfim, Rafael Sartim, Mônica Lope Use of Meltblown Nonwoven Fabric Filter for Water Treatment s Aguiar

SP29 - ***Use of Meltblown Nonwoven Fabric Filter for Water Treatment***
Jaime Cardenas Sanchez, Wake Forest University, Kyana Young, Xiaomeng Fang, Eunkyoung Shim, Alexander Aragon, Judy Assad, Hunter Szewczyk, Felipe Morales

SP30 - ***Nonwoven Filter Media Development for Stormwater Runoff Treatment***
Dominic Garcia, North Carolina State University, Carols Zimeri, Eunkyoung Shim, Kyana Young

SP31 - ***Effects of Polymer Rheology on Meltblowing Fiber Formation***
Majid Joghataei, North Carolina State University

SP32 - ***Manufacturing of Mechanically Robust Aerogel Composites for Airborne Nanoparticles Removal***
Aparna Arun Agrawal, The University of Akron

SP33 - ***Vapor-Induced Pore-Forming Method for Facile Ceramic Membrane Preparation Using Atmospheric Plasma Spraying***
Fang-Ting Tao, National Taiwan University

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Plenary Speakers

Dr. Wu Chen
Principal Research Scientist
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B.F. Goodrich Endowed Chair and Professor of School of Polymer Science and Engineering
The University of Akron

Submit your Abstract

Submit your abstract for technical presentation. Full-time students are invited to submit an abstract for the student poster competition. **Deadline to submit is Friday, January 13, 2023.** Visit the conference website to learn more about the conference and submit your abstract.

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