23" Annual



TPO 2022 GLOBAL AUTOMOTIVE ENGINEERED POLYOLEFINS CONFERENCE Troy, MI • October 2-5, 2022 Powered by SPE Detroit Section

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TP@°2022 YOLEFINS Troy, MI • October 2-5, 2022

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THANK YOU for attending the 2022 SPE TPO Automotive Engineered Polyolefins Conference - the World's Leading Automotive Polyolefins Forum. We are ecstatic that we can hold this conference as an in-person event once again. On behalf of our Planning Committee and the Society of Plastics Engineers, especially the Detroit Section, we welcome you to the Conference and wish you a very successful event.

S

We are all proud to be in our 3rd decade of hosting the TPO Conference, and now in our 23rd year, we take deep dives into the technical advancements, challenges and solutions in this rapidly evolving industry while looking ahead to our exciting future. As we do every year, we have strived to further strengthen the core fundamentals of this unique Conference, providing the latest polyolefin technical information sharing that encompasses many important automotive categories, and to offer unparalleled interaction spanning the entire automotive spectrum of technologies, processes, and applications. Through the combination of our Technical Program, Exhibition, Tutorials, and featured Keynote Addresses, we also provide a showcase for the innovations and emerging technologies with polyolefinic materials that are helping drive and shape the unprecedented changes in our industry, reinforcing this year's theme, "Sustainable Mobility".

Whether you're here to present a paper, exhibit your company's products and services, find solutions to your engineering challenges, network, or perhaps be inspired to push the boundaries and create/innovate, we hope that you find what you're looking for at this year's event.

As we look forward to our 23rd Annual Conference,

• We are expecting over 600 attendees from around the world.

WELCOME

- · We've assembled a comprehensive, new full 3-day Technical Program format to accommodate the industry demand, featuring over 60 presentations organized in seven Technical Sessions, including an updated session this year, Sustainable Materials and Parts.
- We offer two special technical Tutorials on Sunday, October 2 regarding recent material developments and soft trim applications.
- · We feature a diverse field of Platinum and Gold Sponsors and Exhibitors, in an integrated expo and technical program environment with abundant interaction opportunities each day and evening.

Additionally, as has become an important and well-received component of this Conference over the last 20+ years, we have five exciting Keynote Speakers who are going to help us better understand the latest trends and market forces at work in our industry today and those that will drive our tomorrow. We truly hope that you leave here better informed than when you arrived, with the opportunity to meet new contacts as you collectively work to drive automotive plastics forward. We've built numerous networking opportunities into our 2022 program - in addition to sponsored evening receptions and daily breakfasts and lunches, we also feature early-open and continuous exhibition times, and morning /afternoon breaks in the program so you can take advantage of the tremendous amount of collective automotive plastics knowledge gathered here this year.

Finally, we'd like to acknowledge the effort of all 47 members of our voluntary Planning Committee that have worked diligently to bring this year's program to you. Our team has been hard at work over the past year to put on this conference, considering suggestions and comments from previous in-person conferences. It is our sincere desire for the 2023 TPO Conference to remain an in-person event with a possible virtual component added. Each of our attendees and sponsors will have the opportunity to help our continuous improvement efforts by participating in a feedback survey. Please tell us what went well and what did not and offer suggestions for the future.

Over the next few days, enjoy the 2022 TPO Conference, and we look forward to having you all with us again in 2023.



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TECHNICAL PROGRAM HIGHLIGHTS

The technical program features 7 technical tracks with 63 presentations covering a broad spectrum of topics of current interest. For the first time, the conference program is scheduled to run three concurrent sessions for 3 full days. We made every effort to balance the program for all 3 days. Further the conference features Student Poster Contest and please make time to review the posters on Tuesday in the Niles Room and encourage students to pursue careers in plastics.

Short (about 50 words) abstracts of all talks are provided in the Proceedings Book and on the conference website (along with copies of all presentation files) for your convenience in selecting specific talks you want to attend. The three session rooms are adjacent to each other making it convenient if you prefer to change from one session to the other. We have allowed transition time of 5 minutes between talks to facilitate switching to different sessions with no noise disruption in the session rooms.

Two or three Co-Chairs for each of the 7 sessions have shared the responsibility in recruiting quality presentations and work-out all the logistics in gathering all required documentation in a timely manner. The session chairs have the complete autonomy in running their session for providing greater value to the participants. We are fortunate to have highly dedicated session chairs who recruited superb quality presentations on cutting edge technologies. The Program Schedule provides details of the session chairs and their affiliations.

Session Chair's mission is to ensure both the presenters and the participants have pleasant experience and receive enhanced value with the interactions. Based on the available time after the presenter concludes the talk, the session moderator will facilitate discussions with Questions and Answers. We urge you to engage the presenters in discussion for elaboration of details and improved clarity of the subject discussed. The presenters will be delighted to address any questions and gratified with the interest you showed in asking for clarification. Further the value of the conference improves with the dialogue and discussion during the conference.

We believe strongly that we gain greater value with personal interactions with presenters at a conference than simply listening to the talks. Please seek out the presenters during breaks, lunches or receptions and get to know and engage them in discussions for improved learning. Remember both you and the presenter have a commonality of interest on the same technical topic.

Thank you for supporting the conference with your participation. Please provide us feedback on what you liked and how we can improve. More importantly we seek your support for next year event in volunteering to organize a session (by recruiting presenters) or join the organizing committee (for managing sponsorships and exhibits).



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Matt Sprouse, Washington Penn Plastics Co., Inc

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MATERIALS DEVELOPMENT

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Bill Windscheif, Advanced Innovation Solutions, Ltd.

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All Times Shown in EST U	ISA SUNDA	Y OCTOBER	2.2022	
12.00 PM	EXHIBITION SET-UP STARTS			
3:30 PM	SUNDAY TUTORIAL: TPOs for Automotive: The History and Developments in the Past 5 Years Mike Balow, Auxin Consulting MODERATOR: Michael Shoemaker, Borealis Compounds			
4:15 PM	SUNDAY TUTORIAL: TPOs in Automotive Interior Soft-Trim Applications - An Overview Dr. Pravin Sitaram, Director Product Innovation & Sustainability Advanced Materials & Technology, Haartz Corporation			
5:00 PM	EVENIN	NG RECEPTION Sponsored By Formosa	Plastics Group	
	MONDAY OCTOBER 3, 2022			
7:00 AM	CONFERENCE OPENS/REGISTRATION			
8:00 AM	EXHIBITOR HALL OPENS / BREAKFAST			
8:30 AM	WELCOME REMARKS: Conference Co-Chair, Neil Fuenmayor, LyondellBasell			
8:40 AM	SPONSORSHIP MESSAGE	SPONSORSHIP MESSAGE		
8:45 AM	KEYNOTE: Global Polypropylene: New Capacity Expected to Outpace Post Covid Demand Joel Morales, Vice President Polyolefins Americas, Chemical Market Analytics by OPIS a Dow Jones Company			
9:30 AM	LUNCH SPONSOR REMARKS			
9:40 AM	KEYNOTE: Challenges, Opportunities, and our Role in Sustainable Mobility Jim Hillier, Sr. Director, Advanced Polymer Solutions, LyondellBasell			
10:25 AM	TECHNICAL PROGRAM HIGHLIGHTS:	Mike Balow, Technical Program Co-Chair, Au	xin Consulting, LLC	
10: <mark>35</mark> AM	N	ETWORKING BREAK Sponsored by SIRA	1AX	
	TRACK-I	TRACK-II	TRACK-III	
	EXTERIOR TRIM & STRUCTURAL APPLICATIONS Mark Pilette, Magna Exteriors Charlie Yang LyondollBasell	SUSTAINABLE MATERIALS & PARTS Mike Balow, Auxin Consulting, LLC Murali Baddy, Cok	POLYOLEFIN ELASTOMERS & VULCANIZATES Dr. Bhavesh Shah, Lion Elastomers Dr. Dave Patel Mitsubichi Chemical	
	Andrew Sanders, Borealis Compounds	Mark Allen, Dow	Dr. Nadeem Bokhari, Sumitomo Chemical	
	Lightweight Thermoplastic	The Drive Towards	Optimization of Injection Molding Process	
11:00 AM	Removable Roof Panels Rob Selle Magna Exteriors	Sustainability of Plastics Andy Brewer Plastics Industry	Parameters for Improving Adhesion in TPEs Nischay Kodihalli Shivaprakash Mitsubishi Chemical America	
11:30 AM	High Performance	The Recycling	Innovative Styrenic Block Copolymer	
	Light Translucent TPO	Commitment Dilemma	Solutions to Enhance Sustainability	
11:35 AM	Benny Zhao Kingfa	Phillip Goldberg	in Automotive Applications	
12.05 PM	Kingta Columbia Recycling David Iruong, Kraton Polymers NETWORKING LUNCH Separated by Sumitores			
12.0317	EXTERIOR TRIM & SUSTAINARIE MATERIALS POLYOLEEIN ELASTOMERS			
	STRUCTURAL APPLICATIONS	& PARTS	& VULCANIZATES	
1:45 PM	Advanced Copo = Higher Robustness: Opening New Applications for Glass Fiber Reinforced Polypropylene Sven Nietzel, LyondellBasell	Advancing A Circular Economy for Plastics Eric Hartz, Nexus Circular	New Generation Thermoplastic Vulcanizate, Crosslinked SBC / TPV-S Mithat Akan, Elastron	
2:15 PM	Next Generation	NGR "One-Step"	Sustainable Automotive Weather	
2:20 PM	Exteriors Andrew Sanders, Borealis	Recycling Machines Warren Kim, NGR	Seals with Santoprene Prashant Bhadane, Celanese Corporation	
2:55 PM	Plastic Body Panel: New Innovation for Automotive Light Weight Solution Bumper and Exterior Trim Applications Charlie Yang, LyondellBasell	Automotive Shredder Residue Plastics Recy- cling: Working Towards Realization Jeff Spangenberger Argonne National Laboratory	Novel Development of Bio-Based TPEs Christopher Engel Avient Corporation	
3:25 PM NETWORKING BREAK Sponsored by the TPO Global Automotive Conference		notive Conference		
	PROCESS ENABLING TECHNOLOGIES	SUSTAINABLE MATERIALS & PARTS	POLYOLEFIN ELASTOMERS & VULCANIZATES	
	Matt Sprouse, Washington Penn Plastic Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee	Automotive Circularity: Material Selection and Product Design	Shaping a Sustainable Future While Reducing Cost With a High Performance RTPV	
3:55 PM	Processing Highly Filled Compounds on Twin Screw Extruders: Tips, Myths and Realities Charlie Martin, Leistritz Extrusion	Kevin Lyons Inteva Products LLC	Edgar Gonzalez, Synesis LLC Greg Zenner, LyondellBasell	
4:25 PM 4:30 PM	Weight Reduction of Plastic Components by Using Advanced Technology Trevor Pruden. Arburg. Inc.	Sustainable Interior Surfaces - Monomaterial Concepts for Circularity Ryan Bailey, Continental	Ultra-Low Compression Set TPV for Dynamic Seal Application Michio Morita, ENEOS Materials Corporation	
5:30 PM	EVENING	RECEPTION Sponsored By Advanced C	omposites	

TUESDAY OCTOBER 4, 2022

7:00 AM	CONFERENCE OPENS / REGISTRATION			
8:00 AM	EXHIBITOR HALL OPENS / BREAKFAST			
8:30 AM	WELCOME REMARKS: Conference Co-Chair, John Haubert, Stellantis			
8:40 AM	SPONSORSHIP MESSAGE			
8:45 AM	KEYNOTE: Mergers and Acquisitions of TPO and Olefin based Compounders in North America Saquib Toor, Board Member, Alterra Holdings and Beaconhouse Capital Managing Partner			
9:30 AM	TPO GLOBAL AUTOMOTIVE CONFERE	TPO GLOBAL AUTOMOTIVE CONFERENCE RECOGNITION		
9:40 AM	KEYNOTE: Supplying the Automotive Industry with High Performing, Circular Compounds Massimo Pavin, Founder and CEO, Sirmax			
10:25 AM	SOCIETY OF PLASTICS ENGINEERS (SE	PE) MESSAGE		
10:35 AM	NETWORKING	BREAK Sponsored by the TPO Global Autor	notive Conference	
	TRACK-I	TRACK-II	TRACK-III	
	PROCESS ENABLING TECHNOLOGIES	SUSTAINABLE MATERIALS & PARTS	POLYOLEFIN ELASTOMERS & VULCANIZATES	
	Matt Sprouse, Washington Penn Plastic Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee	Sustainable PCR/PIR Materials for	Manufacturing of Fused Deposition Modeling Compatible Thermonlastic Electomeric Materials	
	Cost and Durability Benefits of Innovative	Dr. Arash Kiani	Pratiksha Awasthi	
11:00 AM	Labeling Technology for Polyolefins Jason Brownell, Polyfuze Graphics Corp.	Alterra Holdings	IIT Delhi	
11:30 AM	Simulating the Challenges and	Developing Sustainable Material	Santoprene TPV in EV Cooling	
11:35 AM	Opportunities of Recycled Plastics Anand Bora Moldex3D	Roadmaps for Automotive Lisa Madenjian Dow	Hose Applications Paul Zwick Celanese Corporation	
12:0 <mark>5 P</mark> M	NETWORKING LUNCH Sponsored by the TPO Global Automotive Conference			
	PROCESS ENABLING	SUSTAINABLE MATERIALS	INNOVATIONS IN	
	TECHNOLOGIES	& PARTS		
	SmartChronos for Compounding Operation Dr. Arash Kiani	Developments in Circulen Recover TPO Compounds with Recycled Feedstocks for Automotive Bumper and Exterior Trim	Austin Wagenhals, Ford Motor Co. Hoa Pham, Sonoco Products Co.	
1:45 PM	Alterra Holdings	Applications Matt Tiza, LyondellBasell	Opportunities and Challenges for TPEs in Electric Vehicle Interiors Robert Eller, Robert Eller Associates LLC	
2:15 PM	Gas Assisted Push Pull: A Novel Technology	Circular Economy Solutions:	Advances in Non-score Deployable	
2:20 PM	to Increase Weld Line Mechanical Properties Dr. Giovanni Lucchetta, Sirmax	a Holistic Approach Michael Shoemaker, Borealis	Materials for Instrument Panels Michael Murelli, The Haartz Corporation	
2:50 PM	MATERIALS DEVELOPMENT	SUSTAINABLE MATERIALS & PARTS	INNOVATIONS IN AUTOMOTIVE INTERIORS	
2:55 PM	Tiger Stripe free TPO Compound Methodology Mark Evans Borealis Compounds, Inc.	Sustainable TPO-Based Mechanical Recy- cling Solutions for Automotive Applications Petya Yaneva SABIC	Soft Smart Surfaces in Automotive Trim Jeremy Husic Inteva Products LLC	
3:25 PM	NETWORKING I	BREAK Sponsored by the TPO Global Autom	notive Conference	
	MATERIALS DEVELOPMENT Mark Jablonka, Dow	PERFORMANCE ADDITIVES & COLORANTS	INNOVATIONS IN AUTOMOTIVE INTERIORS	
	Peter Glenister, LyondellBasell Catherine Wilson, Ford Motor Company	Nancy Cliff, BASF Dr. John Mara, Amfine Chemical Corp.	Slush Grade Thermoplastic Polyolefin for	
3:55 PM	Materials for Incorporation of PCR into Molded Parts for the Automotive Industry Timothy Dean, ExxonMobil Product Solutions	Polymer Additive Technologies to Meet Recent Chemical Regulatory Trends Yuhei Hattori, ADEKA Corp.	Automotive Interiors Dr. Murali Reddy / Dr. Greg Farrar CPK	
4:25 PM	EMI Materials for Blind Spot Detector (BSD) Brackets	Review of Non-Halogen FRs Maggie Baumann	Lightweighting on the Vehicle Interior with a Focus on Seating	
4:30 PM	Ned Bryant RTP Company	Performance Polymers and Additives	Kevin DeGrood Borealis Group	
5:00 PM	EVENIN	NG RECEPTION Sponsored By Alterra H	oldings	

WEDNESDAY OCTOBER 5, 2022

MA 00	CONFERENCE OPENS / REGISTRATION			
MA UC	EXHIBITOR HALL OPENS / BREAKFAST			
30 AM	WELCOME REMARKS: Conference Co-Chair, Bill Windscheif, Advanced Innovative Solutions Ltd.			
10 AM	SPONSORSHIP MESSAGE	SPONSORSHIP MESSAGE		
45 AM	KEYNOTE: How Smart Surfaces, Sustainable Materials are Transforming Vehicle Interiors Drew Winter, Principal Analyst – Cockpit of the Future at Wards Intelligence			
) AM	FEATURED PRESENTATION: How Posit	ive Plastics Education is Making a Difference,	Eve Vitale, SPE Foundation	
AM	ECOTEK LAB: Keith Young			
۹W	ECOTEK LAB STUDENT POSTER COM	PETITION RECOGNITION: Sassan Tarahom	i	
M	SPONSORSHIP MESSAGE			
Λ	NETWORKING	BREAK Sponsored by the TPO Global Auto	motive Conference	
	TRACK-I		TRACK-III	
		PERFORMANCE ADDITIVES		
	Mark Jablonka, Dow	Nancy Cliff, BASF	Dr. Pravin Sitaram, Haartz Corporation	
	Peter Glenister, LyondellBasell	Dr. John Mara, Amfine Chemical Corp.	Austin Wagenhals, Ford Motor Co.	
	Catherine Wilson, Ford Motor Company		Hoa Pham, Sonoco Products Co.	
	PCR/PIR PP with Biobased and Glass Fiber for EV Applications	Improving Melt Strength of Virgin and Recycled PP Compounds	New Anti-bacterial/Anti-viral Thermoplastic Elastomers	
	Dr. Sassan Tarahomi	with an Ionic Monomer	Shinichiro Shimomura	
	Alterra Holdings	Brett Robb, Total Cray Valley	Sumitomo Chemicals Co., Ltd.	
	THERMOFIL CIRCLE – Developing	New Polymer Processing Additives (PPA)	Electrically Conductive	
	Reinforced Polypropylene Compounds with a Reduced Carbon Footprint, without Com-	for Polyolefin Production and Process	I hermoplastic Elastomers for	
	promising Performance	Mike McCormack	Juan Espinosa	
	Nicolas Schlutig	SACO AEI	Kraiburg	
		UNCH Sponsored by the TBO Global Autor	nativa Conference	
	DEVELOPMENT	& COLORANTS	AUTOMOTIVE INTERIORS	
	A Cost-Effective Approach to Natural Fiber	Additive Solutions to Enhance the Quality	Improving Sustainability Through	
	Reinforced Polypropylene (NFPP)	of Recycled Plastics Nancy Cliff/Dr. Oliver Beich	Mold-In-Color TPO Material Robert Mimme	
	Inteva Products LLC	BASF Corp.	Advanced Composites	
	The Effect of Talc Shape/Fineness on	Management of Polyolefin VOCs	Pre-Applied Adhesive Technology for the	
	PP and TPO Performances	Using Special Additives	Automotive Interior Industry	
	Piergiovanni Ercoli Malacari IMI Fabi SpA	Richard Marshall	Greg Wilkins Supstar Engineering Americas	
			Charger Engline Anti-stic List	
	Altibright "Pyrophyllite. A New High Brightness, High Aspect Ratio	Development of Novel Intumescent System Offering High Flame Retardancy	vieaner, resher Automotive Interiors with Antimicrobial Material Solutions	
	Reinforcement for High Quality TPO's	, Čui Čhun	from Microban	
	John Hurley Trinity Performance Minerals	ADEKA Corp.	Dr. Mai Ha Microban International	
	Irinity Performance Munerals Microban International			
	MATERIALS PERCORMANCE ADDITIVES			
	MATERIALS	PERFORMANCE ADDITIVES	INNOVATIONS IN	
	MATERIALS DEVELOPMENT	PERFORMANCE ADDITIVES & COLORANTS	INNOVATIONS IN AUTOMOTIVE INTERIORS	
	MATERIALS DEVELOPMENT Effect of Surface Modifying Ultra Fine Talcs	PERFORMANCE ADDITIVES & COLORANTS Measuring Uncertainties	INNOVATIONS IN AUTOMOTIVE INTERIORS Contact Angle Measurement: Easy Method	
N .	MATERIALS DEVELOPMENT Effect of Surface Modifying Ultra Fine Talcs of Various Morphologies on Mechanical Performance of TPO Compounds	PERFORMANCE ADDITIVES & COLORANTS Measuring Uncertainties in Emission Testing Dr. Huaiyuan (Ethan) Hu/	INNOVATIONS IN AUTOMOTIVE INTERIORS Contact Angle Measurement: Easy Method to Determine Flame Treated Composite Surface Variability and Pressure Sensitive	
Ň	Effect of Surface Modifying Ultra Fine Talcs of Various Morphologies on Mechanical Performance of TPO Compounds Moulee Palaniappan	PERFORMANCE ADDITIVES & COLORANTS Measuring Uncertainties in Emission Testing Dr. Huaiyuan (Ethan) Hu/ Dr. Michael Holzwarth	INNOVATIONS IN AUTOMOTIVE INTERIORS Contact Angle Measurement: Easy Method to Determine Flame Treated Composite Surface Variability and Pressure Sensitive Wetting with Varying Acrylic Acid Content	
	Effect of Surface Modifying Ultra Fine Talcs of Various Morphologies on Mechanical Performance of TPO Compounds Moulee Palaniappan Magris Talc USA	PERFORMANCE ADDITIVES & COLORANTS Measuring Uncertainties in Emission Testing Dr. Huaiyuan (Ethan) Hu/ Dr. Michael Holzwarth IMAT	INNOVATIONS IN AUTOMOTIVE INTERIORS Contact Angle Measurement: Easy Method to Determine Flame Treated Composite Surface Variability and Pressure Sensitive Wetting with Varying Acrylic Acid Content Raymond Sanedrin	
	Effect of Surface Modifying Ultra Fine Talcs of Various Morphologies on Mechanical Performance of TPO Compounds Moulee Palaniappan Magris Talc USA	PERFORMANCE ADDITIVES & COLORANTS Measuring Uncertainties in Emission Testing Dr. Huaiyuan (Ethan) Hu/ Dr. Michael Holzwarth IMAT	INNOVATIONS IN AUTOMOTIVE INTERIORS Contact Angle Measurement: Easy Method to Determine Flame Treated Composite Surface Variability and Pressure Sensitive Wetting with Varying Acrylic Acid Content Raymond Sanedrin KRÜSS USA	
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2022 EXHIBITORS LOCATIONS



2022 EXHIBITORS ALPHABETICALLY

Exhibitor	46
Platinum	11
Platinum	1
Exhibitor	49
Gold	30
Gold	4
Gold	21
Gold	24
Exhibitor	50
Gold	13
Gold	7
Gold	48
Exhibitor	31
Gold	44
	Exhibitor Platinum Exhibitor Gold Gold Gold Exhibitor Gold Gold Gold Exhibitor Gold Gold

Cimbar Performance Minerals	Gold	5
Continental	Exhibitor	32
Dow	Gold	12
Elastron	Gold	25
Eneos Materials	Gold	27
Entec Polymers	Exhibitor	18
ExxonMobil	Gold	14
Formosa Plastic	Platinum	10
GEON Performance Solutions	Exhibitor	9
H.B. Fuller	Gold	22
Highland Plastics	Exhibitor	40
Imerys	Gold	16
IMI Fabi LLC	Exhibitor	42
Inteva Products	Gold	No Booth

2022

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2022 EXHIBITORS LOCATIONS



2022 EXHIBITORS ALPHABETICALLY

Kal-Polymers	Exhibitor	53
Kingfa Sci. & Tech.(USA), Inc	Gold	33
KRAIBURG-TPE	Exhibitor	41
Kraton Polymers	Exhibitor	43
LyondellBasell	Gold	6
Magna	Gold	20
Magris Talc	Gold	28
Media		7
M. Holland	Gold	26
Mitsubishi Chemical Group	Gold	2
Mitsui Plastics	Gold	52
Monolith	Exhibitor	38
MRC Polymers	Gold	29
Mytex Polymers	Exhibitor	3

Nexeo Plastics	Gold	34
NOF America Corporation	Exhibitor	45
Ravago Manufacturing Americas	Exhibitor	23
RTP Company	Exhibitor	37
SABIC	Gold	39
Sirmax North America, Inc	Gold	15
Spartan Polymer	Lanyard Sponsor	No Booth
SPE Detroit Section		51
Struktol	Gold	36
Sumitomo Chemical	Platinum	8
Sunstar Engineering	Exhibitor	47
UBE Materials	Ad Sponsor	No Booth
United Paint & Chemical Corp.	Exhibitor	35
Washington Penn	Exhibitor	19

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2022 KEYNOTE SPEAKERS

Now in its third decade, the 23rd Annual **SPE® TPO AUTOMOTIVE ENGINEERED POLYOLEFINS CONFERENCE** is the *world's leading engineered polyolefins forum,* highlighting advances in polyolefin materials, processes, and applications technologies as well as a growing range of thermoplastic elastomers (TPEs) and thermoplastic vulcanizates (TPVs).

The conference keynotes take place each morning and will kick off **Monday**, **October 3 at 8:45 a.m.** with an opening keynote by **Joel Morales** followed by our second keynote, **Jim Hillier at 9:40 a.m.**



JOEL MORALES Executive Director Polyolefins Americas, Chemical Market Analytics by OPIS, a Dow Jones company

Global Polypropylene: New Capacity Expected to Outpace Post Covid Demand

Much has changed in the global PP market over the last few years as the impact of Covid-19, among other

things, has resulted in elevated global shipping costs of containers from Asia to Western Markets. As a result PP prices in Western Markets have disconnected from Asian prices like never before. This presentation will discuss the landscape for key future trends in pricing, demand and new capacity as the world continues to work its way towards a post Covid normalcy.

ABOUT JOEL MORALES

Joel joined the company in March 2013 to cover Polyethylene (PE) and Polypropylene (PP) in North America. He is currently the service leader of three market advisory subscription services: The Global Plastics and Polymers Report, the North American PE Report and the North American PP report.

He has brought a wealth of industry knowledge to IHS Markit through multiple stints along the plastics' value chain. He began his career with polyolefins manufacturer, Solvay Polymers, which later became Ineos, in technical services and product development before he was moved into field sales. After 5 years at Solvay Polymers, Joel moved into resin distribution sales for both Muehlstein and then United Polychem as a Product Manager where he managed and sold polyethylene and polypropylene resins into various customer segments. In his most recent role prior to joining Chemical Market Analytics, Joel was a purchasing manager for Silgan Plastics, a major, blow-molding and injection molding plastics converter. Joel graduated from The Massachusetts Institute of Technology in 1999 with a Bachelor of Science in Chemical Engineering and a minor in psychology. JAMES HILLIER Sr. Director, Advanced Polymer Solutions, US and Canada, LyondellBasell

Challenges, Opportunities, and our Role in Sustainable Mobility



Sustainability has become the dominant factor at the forefront of

our global economy and has created transformational opportunities for the Automotive industry. In our lifetimes, no megatrend has become so ubiquitous so quickly, nor has generated the magnitude of expectations for the pace of change.

From material and technology innovation, to infrastructure, supply chains, partnerships, regulatory drivers, and evolving consumer demands, how we navigate and prioritize action as the world makes the transition to a low-carbon economy is critical. Challenges, Opportunities, and our Role in Sustainable Mobility will provide discussion and insight encompassing these areas as we chart the future of the Automotive industry.

ABOUT JAMES (JIM) HILLIER

James R. (Jim) Hillier is the Sr. Director of Advanced Polymer Solutions for LyondellBasell, one of the world's largest plastics, chemicals, and refining companies. Mr. Hillier assumed the position in December of 2020 after his previous role leading LyondellBasell's Digital Transformation.

Mr. Hillier has served in recent years as the Site Manager for the Clinton Complex, one of the largest chemical plants in Iowa, Chief of Staff for Global Manufacturing and Refining, and Director for Compounding and Catalysts, Americas as part of a career that spans 23 years after joining LyondellBasell predecessor companies in 1999 at the Morris, Illinois site. He has served in engineering, management, finance, and commercial roles leading both regional and global teams at numerous locations in the Gulf Coast and Midwest.

His focus throughout his career has been on the development of high performing organizations, teams, and people. He has served on the boards of the Clinton Regional Development Corporation, Tuscola Economic Development Corporation, Ohio Chemistry Technology Council, and ACC Durable Goods Leadership Team. He is a graduate of the University of Wisconsin with Bachelor of Science degrees in Chemical Engineering, Biochemistry, and Molecular Biology and was recognized in 2016 with the University of Wisconsin College of Engineering early career award.

2022 KEYNOTE SPEAKERS

Saquib Toor will launch day two of the TPO conference on Tuesday, October 4 at 8:45 a.m. followed by Massimo Pavin at 9:40 a.m. Details on their keynote presentations are below.



SAQUIB TOOR Board Member, Alterra Holdings and Beaconhouse Capital Managing Partner

Mergers and Acquisitions of TPO and Olefin based Compounders in North America

Mr. Toor will present an overview of the mergers and acquisitions of TPO and Olefin based compounders in North America and how it impacts the new development of TPO, TPE,

TPV for the automotive and other industries. TPO and Olefin based products are one of the fastest growing materials for automotive applications globally.

ABOUT SAQUIB TOOR

Mr. Toor has over 17 years of investment and corporate advisory experience including public and private equity investing, distressed debt investing and investment banking.

Mr. Toor was an Executive at D.E. Shaw & Co. and Knighthead Capital prior to Beaconhouse, where he was responsible for sourcing private and distressed investments opportunities, performing due diligence, analyzing companies and industries and credit documentation. He invested in a variety of asset classes (equities, performing credit, distressed credit) and industries (Consumer, Education, Healthcare Services, Biotechnology, Food & Retails, Middle East and 'off the run' situations).

Previously a Principal at Centerbridge Partners and JLL Partners, Mr. Toor's responsibilities included executing private equity transactions as well as making credit investments for the hedge fund.

Mr. Toor worked at Donaldson, Lufkin & Jenrette in the Los Angeles office earlier in his career. His duties involved private placements, high yield offerings, equity offerings, mergers & acquisitions and restructurings.

Saquib received both his Bachelors of Science in Economics and his Masters in Business administration from the Wharton School at the University of Pennyslvania.

MASSIMO PAVIN Founder and CEO, Sirmax

Supplying the Automotive Industry with High Performing, Circular Compounds

We are all aware that our planet's resources are limited. As a conscientious people we have a responsibility to direct initiatives towards usage reduction, reuse and recycling. Automotive is at the core of this green revolution. In fact, recycled plastic can ensure very high performance, with characteristics comparable to prime.



The concept of upcycling is the creation of an end product of higher quality than the originating base material and that can be used for the production of durable goods, such as various automotive applications. All of these products can be made from either post-industrial or postconsumer plastics. In both cases, certification and traceability of the material is crucial. In the U.S., unlike Europe, most recycled plastics are now derived from post-industrial.

Sirmax Group has invested \$30 mil to build a post-industrial PP scrap recycling plant on our campus in Anderson, Indiana, using the same quality standards and processes already in use at the group's other European and international plants, inspired by ISO standards for the processing of prime resins. The Sirmax strategy is to use post industrial transitionally until post consumer sources are readily available.

Sirmax is the only PP compounder with in-house recycling capabilities in both the United State (post-industrial) and Europe (post-consumer), truly providing polypropylene compoiunds with controlled and traceable recycled content.

ABOUT MASSIMO PAVIN

Massimo Pavin is the founder and CEO of Sirmax. He has a master's degree in civil engineering and an MBO obtained from Bocconi Business School with a visiting semester at University of Florida. He founded Maxplast in 1992, that then became Sirmax in 1999. Sirmax is a leading company in the production of thermoplastic compounds with 13 plants worldwide, 800 employees, sales of 570 million Ib and global revenue of 480 million euros. He also has served in several positions in industrial associations in Italy, and was President of the Padua section of the General Confederation of Italian Industry from 2011 to 2015.

2022 KEYNOTE SPEAKERS

Drew Winter will wrap of the keynotes on the third day of the conference, on **Wednesday, October 5 at 8:45 a.m.** See below for details on Mr. Winter and his presentation.



DREW WINTER Principal Analyst – Cockpit of the Future at Wards Intelligence

How Smart Surfaces, Sustainable Materials are Transforming Vehicle Interiors

Electrification and autonomous features are turning the act of driving into an experience. Future cockpits will be expected to provide a variety of pleasing interactions that entertain, energize, and soothe driver and occupants on

demand. TPOs promise to play a pivotal role in this transformation. Smart interior surfaces with embedded electronics will reduce distraction and create varied experiences and interior environments by displaying as much or as little information as occupants want to see, changing colors and offering dramatic cockpit design opportunities.

The growth of electric vehicles and environmental concerns worldwide is creating demand for more sustainable interior materials that occupants can see and touch – and also unseen materials such as sound insulation.

Many automakers now offer premium alternatives to leather and suede such as "Vegan leather." More are being developed to include an impressive array of post-consumer materials from wine bottle corks to nylon fishing nets. Tesla already has eliminated leather from its vehicles, Volvo announced last year it is eliminating leather in future EV applications. Volvo's director of global sustainability says the vegan leather market is expected to reach \$83 billion (€73 billion) in value by 2025.

But sustainability initiatives aren't just about EVs. They are part of every OEM and supplier's future plans. Materials suppliers are responding with an impressive array of sustainable products and processes.

ABOUT DREW WINTER

Drew Winter is a Principal Analyst – Cockpit of the Future at Wards Intelligence, a business unit of the Informa Tech Automotive Group that also includes WardsAuto and TU Automotive.

Drew Winter has been researching and writing about automotive interiors for more than 20 years, first as an award-winning automotive journalist and then as a producer of the WardsAuto Interiors and WardsAuto User Experience conferences.

Drew is also a judge for the annual Wards 10 Best Interiors and Wards 10 Best UX awards in addition to being a long-time juror for the North American Car, Truck and Utility of the Year awards.



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2022 SPE TPO STUDENT POSTER COMPETITION

Science at work





Keith Young, Ecotek Labs

SPE Foundation The and Ecotek Lab have committed to a 10-year partnership to offer equitable STEM experiences related to the plastics and composites industry for the students of Detroit. This includes research stipends for student projects, positive plastics education through the PlastiVan[®], access to SPE conferences, and more.



TUESDAY, OCTOBER 4 Student posters will be displayed in Niles I & II Judging from 3:00-4:00pm

WEDNESDAY, OCTOBER 5 Winners announced at 10:00am



Ecotek Lab: Keith Young at <u>ecoteklab@gmail.com</u> PlastiVan/SPE Foundation: Eve Vitale at <u>evitale@4spe.org</u>







51ST-ANNUAL

AUTOMOTIVE INNOVATION AWARDS COMPETITION & GALA HONORING THE BEST IN AUTOMOTIVE PLASTICS



ASTICS: ENABLING AN EVOLUTION IN MOBILITY

MOST INNOVATIVE USE OF PLASTICS AWARDS

The Automotive Division of the Society of Plastics Engineers (SPE®) is announcing a "Call for Nominations" for its 51st-annual **Automotive Innovation Awards Gala**, the oldest and largest recognition event in the automotive and plastics industries. This year's Awards Gala will be held Wednesday, **NOVEMBER 2**, 2022 at the Burton Manor in Livonia, Mich. Winning part nominations in 11 different categories, and the teams that developed them, will be honored with a **Most Innovative Use of Plastics** award. A **Grand Award** will be presented to the winning team from all category award winners.

A special category has been added for the 51st-annual Automotive Innovation Awards: **EV and AV Systems,** to recognize innovative polymer components for Electric and Autonomous Vehicles.

SPONSORSHIP OPPORTUNITIES

This annual event currently draws over 800 OEM engineers, automotive and plastics industry executives, and media. A variety of sponsorship packages - including tables at the banquet, networking receptions, advertising in the program book, signage at the event and more are available. Contact Teri Chouinard of Intuit Group at teri@intuitgroup.com.

For more info and to submit nominations, go to: www.speautomotive.com/innovation-awards-gala

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EXTERIOR TRIM & STRUCTURAL APPLICATIONS

SESSION CO-CHAIRS:

Mark Pilette, Magna Exteriors | Charlie Yang, LyondellBasell | Andrew Sanders, Borealis Compounds

MONDAY, 11:00 AM TO 12:05 PM



Lightweight Thermoplastic Removable Roof Panels

Rob Selle, Global Product Technical Director - Advanced Products, Magna

Rob Selle from Magna Exteriors will discuss the next generation removable roof modules made of thermoplastic

materials. The advancement of low thermal expansion plastics coupled with developing architectures in exterior plastic panels has enabled the development of lightweight roof systems with added functionality and features. This includes consumer demand for roof systems with functional value both on and off the vehicle.



High Performance Light Translucent TPO

Benny Zhao, Senior Engineering Manager, Kingfa

With the electrification of vehicles, more aesthetic elements have been introduced to the design, trending stylish while functional for both

interior and exterior applications. Many designs require the light transmitted through the parts. For example, cool light effect of front grille is achieved by laser etching on polycarbonate, but it have disadvantages such as high cost, high density and poor weathering resistance. KLUX is a series of light translucent TPO products developed by Kingfa. It has good light transmittance, high haze, high light scattering coefficient, etc. KLUX can also be tailored to meet both light and mechanical properties for different applications.

MONDAY, 1:45 PM TO 3:25 PM



Advanced Copo = Higher Robustness: Opening New Applications for Glass Fiber Reinforced Polypropylene

Sven Nietzel, PP Compound Development, LyondellBasell

Lowering carbon emissions is one of the main goals of today's society

facing global warming. The resulting implementation of EVs in the portfolio of the automotive OEMs leads to the use of a new powertrain system. Whereby the specification for plastics changed significantly to longer operation times at lower temperatures compared to previous requirements for combustion engines. This shifts PPCompounds more in focus and the competition with PA-GF has reached another level of intensity. Robust material solutions (potentially based on PP) targeting longer operation times will be an important selection criteria for materials in EVs.



Next Generation Exteriors Andrew Sanders, Sales & Marketing Manager, Borealis

The exterior of our vehicles continues to evolve. The next generation of vehicle exteriors will use a series of new technologies to achieve the demanding requirements of tomorrow's car

buyer. These materials will allow for more design freedom, better aesthetics, and a seamless integration of sensors. Some emerging new technologies are making this possible. This presentation is a glimpse into what is possible today and what we are seeing the market demand.



Plastic Body Panel: Innovation for Automotive Lightweight Solutions

Jay Yang, Product & Application Development Engineer, LyondellBasell

Global OEMs, including some newly emerging pure EV (electric vehicle)

OEMs, increase the EV development and manufacturing significantly in the recent decade. Strong lightweight demands of EV promote the use of plastics for automotive body panels. We see more and more OEMs change to use advanced PP compounds to make body panels, including tailgate outers, fenders and even engine hoods, car roof, door outer panel, etc.

PROCESS ENABLING TECHNOLOGIES

SESSION CO-CHAIRS:

Matt Sprouse, Washington Penn Plastic | Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee

MONDAY, 3:55 PM TO 4:30 PM



Processing Highly Filled Compounds on Twin Screw Extruders: Tips, Myths and Realities Charlie Martin, President.

Leistritz Extrusion

Co-rotating twin screw extruders are utilized to compound formulations with 85%+ fillers. (and fibers) The higher

the "non-polymer" percentage, the tighter the process window. In addition to the twin-screw extruder, each sub-component of the system is typically modified. Theory, tips, test results and warnings for processing highly filled PE/PP/TPO products will be presented.



Weight Reduction of Plastic Components by Using Advanced Technology

Trevor Pruden, Technical Engineering Manager, Arburg Inc.

Advanced lightweighting technologies and methods in injection molding offer

exciting ways to improve molded part performance while reducing production costs and potentially reduce the carbon footprint on the planet. We will explore interesting approaches to lightweighting and how the part designer, tool maker and molder can achieve new possibilities through heightened collaboration.

TUESDAY, 11:00 AM TO1:45 PM



Cost and Durability Benefits of Innovative Labeling Technology for Polyolefins Jason Brownel,

Director of Engineering, Polyfuze Graphics Corp.

As polymers have replaced metal as the primary material used in manufacturing during the past several decades, my

presentation will explain the cost savings and durability benefits of this innovative and sustainable labeling technology for Polyolefin plastic, why it is being used by over 1,000 companies worldwide including majors brands like Ford and General Motors, and how it is unique from all other traditional labeling methods.



Simulating the Challenges and Opportunities of Recycled TPO Materials

Anand Bora, Moldex3D

In today's world recycling of plastics has become extremely important. In this paper, we review the importance and the various types of recycled plastics,

especially polyolefins and TPOs and how to design for recycling. Due to non-homogeneity of the recycled material, there are lots of manufacturing challenges. Inconsistency in viscosity is a major one. Moldex3D is able to measure the viscosity of few recycled compositions of recycled and virgin material blends and predict the viscosity for any combinations of the two. Cost saving opportunities with the ability to predict viscosity of the various compositions of recycled and virgin materials is reviewed.

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PROCESS ENABLING TECHNOLOGIES

SESSION CO-CHAIRS:

Matt Sprouse, Washington Penn Plastic | Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee

TUESDAY, 1:45 PM TO2:50 PM



SmartChronos for Compounding Operation Dr. Arash Kiani, Founder & Chairman SmartChronos, CEO, Alterra

Compounding operation like many other continuous operations require precise control of process parameters

and fast response to processing issues. Utilizing Artificial Intelligence increases the operation efficiency. Author will discuss the SmartChronos benefits in detail. SmartChronos system investment for analog and digital compounding operation is explained in this presentation.



Gas-Assisted Push Pull: A Novel Technology to Significantly Increase Weld Lines Mechanical Performance

Dr. Giovanni Lucchetta, Associate Professor in Manufacturing Engineering, University of Padova, Italy & Founder of Smart Mold, Sirmax

Weld lines are one of the most critical structural defects in parts obtained by injection molding of fiber-reinforced thermoplastics. In this work, the novel Gas-Assisted Push Pull (GAPP) technology is proposed to increase weld lines strength in fiber-reinforced polypropylene moldings. GAPP favors the interpenetration of the weld line flow fronts in such a way as to modify the shape of the interface, promote the interdiffusion between the flow fronts and the realignment of the reinforcing fibers. During the packing phase, pressurized nitrogen is used to displace the molten thermoplastic across the weld line interface without leaving any cavity in the molded part. Experimental test showed that GAPP can increase a weld line strength by 240% for a polypropylene reinforced with 35% short glass fibers, almost reaching the compound nominal resistance. Miniaturized injectors can be installed into existing molds in the proximity of critical weld lines with no invasive mold remanufacturing.

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SUSTAINABLE MATERIALS & PARTS

SESSION CO-CHAIRS:

Mark Pilette, Magna Exteriors | Charlie Yang, LyondellBasell | Andrew Sanders, Borealis Compounds

MONDAY, 11:00 AM TO 12:05 PM



The Drive Towards Sustainability of Plastics Andy Brewer,

Associate Director of Sustainability & Materials **Plastics Industry Association**

Economic and policy trends of recent years are motivating companies in the plastics industry to adapt and focus on

the sustainable aspects of their products – either by emphasizing those that currently exist or by working to create new ones. Recent advancements in sustainable plastics manufacturing, mechanical and advanced recycling, are helping companies compete in markets that prioritize sustainability. In addition to providing insights on the current market conditions of plastics recycling and the plastics legislative landscape, this presentation will cover how the industry is working to solve the challenges that exist with new technology investments and the development of new end markets for a variety of materials.



The Recycling Commitment Dilemma Phillip Goldberg, President Columbia Recycling

The purpose of this presentation is to discuss the various unique challenges for operations associated with the waste recycling industry. Today's

recycling has become a focus for downstream users due to the immense growth plastics has undertaken which has resulted in significant amounts of waste polluting our planet. Recently many have addressed the pollution problem through long term recycled volume commitments as well as government mandates. However, most costumers as well as government bodies do not understand the everyday difficulties faced by the recycling industry whether those be innate, customer, or vendor driven. To better fulfill society's needs as well as lessen the plastic industry's global waste footprint, it is best to discuss these problems openly and honestly so practical solutions may be discovered and applied. Only through dialogue and educating ourselves on these difficulties will we be able to move forward with significant increases in recycling that will create the impact we desire to achieve.

MONDAY, 1:45 PM TO 3:25 PM



Advancing A Circular Economy for Plastics Eric Hartz, President and Co-Founder Nexus Circular

Advanced Recycling – What is it (and not), How is it making an impact on diverting the 83% of plastics headed to landfills and Why can it scale now? Hear from Nexus Circular's Eric Hartz, an

advanced recycler with commercial operations since 2018 selling to global customers. Hear directly what the team has experienced first hand, from the technology to full execution covering potential and pitfalls – and get your questions answered.



NGR "One-Step" Recycling Machines Warren Kim, Sales Manager Next Generation Recycling Machines

Next Generation Recyclingmaschinen GmbH is an Austrian manufacturer of plastics recycling machinery based on the "One-Step" process. Repelletizing of plastic scrap requires 4 main steps:

size reduction, feeding, extrusion and pelletizing. The S:GRAN repelletizing machine has an integrated shredder-feeder-extruder combination allowing the direct feeding of nearly any form of scrap materials. This means injection molded parts, sheet scrap, hard scrap and purges can be loaded directly into the machine and the output is high quality repro pellets. This presentation will review the different applications where the S:GRAN can optimize the recycling process



Automotive Shredder Residue Plastics Recycling: Working Towards Realization

Jeff Spangenberger, Materials Recycling R&D Group Lead in the Applied Materials Division Argonne National Laboratory

Much work has been done on separating, recovering and recycling plastics from auto shredder residue, the nonmetallic fraction of shredded end-of-life vehicles. Unfortunately, commercialization of these technologies have not yet been realized because of a few remaining challenges. This presentation will provide a summary of the work Argonne National Laboratory has performed in this space, followed by a request for action from stakeholders to help bring this important opportunity to fruition.

SUSTAINABLE MATERIALS & PARTS

SESSION CO-CHAIRS:

Matt Sprouse, Washington Penn Plastic | Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee

MONDAY, 3:55 PM TO 5:00 PM



Automotive Circularity: Material Selection and Product Design

Kevin Lyons, Senior Material Development Engineer Inteva Products LLC

A circular economy strives to eliminate waste & pollution and to reuse highvalue products & materials in the same

application. Selecting low-impact component materials (energy, waste, pollution) and designing a product for compatibility at end-of-life are essential for realizing circularity. Thermoplastic olefins (TPOs) and elastomers (TPEs) have many advantages over alternative materials in support of these circularity efforts. In contrast, flexible polyvinylchloride (f-PVC) is a problematic material that is still widely used in automotive interior applications. This talk will compare the value-streams of TPOs and f-PVC highlighting the benefits of TPOs. Finally, the TPO-based Inteather[™] product line is introduced followed by a review of ongoing developments focused on supporting circularity.



Sustainable Interior Surfaces - Monomaterial Concepts for Circularity

Ryan Bailey, Director TechCenter North America Continental Surface Solutions

Continental Surface Solutions has developed a Sustainability Roadmap to

support a sustainable future. To achieve sustainable automotive interiors, materials should be divided into two segments: the Biosphere, where material is circular via biodegradation, and the Technosphere, where thermomechanical or chemical recycling creates circularity. Many opportunities exist within the Technosphere for circularity, but a focus should be placed on thermomechanical recycling to minimize GWP impact. TPO Monomaterial artificial leathers when combined with appropriate sub-components, can create a finished part for simple circularity.

TUESDAY, 11:00 AM TO 12:05 PM



Sustainable PCR/PIR Materials for Automotive Components Dr. Arash Kiani, CEO at Alterra &

Saquib Toor, Managing Partner at Beaconhouse Capital Alterra

Carbon Polymer or formerly known as Buckeye Polymer has been producing

PCR PP and converting that into sustainable PP and TPE for the last 22 years. With the acquisition of Buckeye Polymer, by Beaconhouse Capital the parent company of Alterra, Carbon Polymer and Alterra are capable of offering many new sustainable PP, TPO and TPE products with green content. Few recently launched exciting automotive programs with PCR & green content PP/TPO is discussed in this presentation. Author's intent is also to address the details about the material recovery through compounding and launch at Automotive OEM. Specific challenges in every phase of operation is discussed with implemented solutions.



Developing Sustainable Material Roadmaps for Automotive

Lisa Madenjian, Principle TS&D Scientist and Application Technology Leader for Consumer Markets Dow

As automobile engineers and designers develop plans to meet their sustainable

material goals multiple options must be weighed. Developing a plan that best meets the needs of the product and society can be challenging. This presentation outlines aspects to consider when developing sustainable material plans for plastics used in automobiles. Options to both meet GHG emission reduction targets and circularity objectives will be discussed along with existing industry challenges that must be overcome to achieve success.

SUSTAINABLE MATERIALS & PARTS

SESSION CO-CHAIRS:

Mark Pilette, Magna Exteriors | Charlie Yang, Lyondell-Basell | Andrew Sanders, Borealis Compounds

TUESDAY, 1:45 PM TO 3:25 PM



Developments in Circulen Recover TPO Compounds with Recycled Feedstocks for Automotive Bumper and Exterior Trim Applications

Matt Tiza, Product and Application Development Engineer LyondellBasell

LyondellBasell developed and recently launched the CirculenRecover products, compounds derived from mechanical recycled and renewable-based materials, to combat plastic waste, protect the environment, and support the automotive OEMs sustainability efforts. This presentation will demonstrate the challenges of developing both mold-in-color (MIC) and paintable TPO materials for bumper and exterior applications as well as the novel solutions to overcome them. Strategies towards achieving on specification physical property and color consistency will be discussed. The talk will end with demonstrations of the commercial successes of a few CirculenRecover products.



Circular Economy Solutions: A Holistic Approach Michael Shoemaker, North American OEM Market and

Technology Director, Borealis The world is changing in its perception of plastics. Convenience, cost and

performance remain important but can no longer be considered without consideration of the global environment and need for CO_2 reduction. At Borealis, Circular Economy Solutions for the plastics industry means taking an integrated approach to the problem of reducing CO_2 emissions while maintaining an economically viable value chain that delivers products that can compete with virgin materials. In this paper we will discuss Borealis's wholistic approach to sustainable material solutions including mechanical, chemical, and renewable feedstock approaches.



Sustainable TPO-Based Mechanical Recycling Solutions for Automotive Applications Petya Yaneva, Senior Scientist Sabic

Demand for more sustainable solutions, including recycled materials, continues to increase. In automotive, mechanical

recycling can play an important role in closing the loop on plastic waste and contribute to a circular economy. This session will consider TPO-based mechanically-recycled solutions, with an overview of specific materials and their key properties. Insights will be shared on the importance of mechanically-recycled feedstock, their properties and their potential for use in the production of automotive structural parts.







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Bio-Based: PA56, PBT, PC, PU, TPEE

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POLYOLEFIN ELASTOMERS & VULCANIZATES

SESSION CO-CHAIRS:

Dr. Bhavesh Shah, Lion Elastomers | Dr. Dave Patel, Mitsubishi Chemical | Dr. Nadeem Bokhari, Sumitomo Chemical

MONDAY, 11:00 AM TO 12:05 PM



Optimization of Injection Molding Process Parameters for Improving Adhesion in TPE Dr. Nischay K. Shivaprakash, R&D Formulation Chemist Mitsubishi Chemical America

Injection molding (IM)process has emerged as one of the most versatile polymer processing technology to

produce parts with complex geometries. The material candidates for producing high-volume parts using IM process can include thermoplastics, thermoplastic elastomers (TPE) / thermoplastic vulcanizate (TPV), and elastomers. In this work, we investigate the impact of injection molding process parameters such as injection speed, melt temperature, mold temperature, and hold pressure on the adhesion performance of TPV-TPV and TPV-EPDM material combinations when bonded together in a butt-joint fashion. The findings from this experimental work could potentially be used to optimize adhesion performance between TPV-TPV and TPV-EPDM material butt-joint combinations to create a robust composite sealant structures.



Innovative Styrenic Block Copolymer Solutions to Enhance Sustainability in Automotive Applications

Dr. David Truong, Research Scientist Kraton Polymers

Kraton developed CirKular+ product line to support value creation for automotive

industry by enabling light-weight design and lower carbon footprint through adoption of recycled and renewable alternatives. CirKular+ additives are designed to optimize formulation and processing cost by offering improved properties at lower loadings than POE. In this presentation, we corroborate the positive contributions of CirKular+ polymers in recycling applications with data and case studies, and how these positives can be translated to automotive compounds.

MONDAY, 1:45 PM TO 2:55 PM



New Generation Thermoplastic Vulcanizate, Crosslinked SBC / TPV-S

Mithat Akan, R&D Sr. Specialist Elastron Kimya

EPDM-PP based thermoplastic vulcanizates (TPVs) are preferred in

many automotive applications; however, certain limitations exist for these types of TPVs, like slow processing and the need for predrying. Elastron has developed a new type of Crosslinked SBCbased TPV that improves these points while meeting requirements of automotive applications and having comparable heat aging properties to EPDM-based TPVs.



Sustainable Automotive Weatherseals with Santoprene TPVs Dr. Prashant Bhadane, Product Development Scientist Celanese Corporation

Products offering overall lower carbon footprint, option for end-of-life (EOL) recycling, and consciously made using post-consumer recycled (PCR)

materials are desired in today's market and right thing to do for the environment. Santoprene pioneered TPVs and is demonstrating the leadership by further extending the frontiers of performance, recyclability, and sustainability in automotive weatherseals that are made using Santoprene™ 101-80 ECO-R TPV containing PCR materials and Santoprene High Resilience (HR) 121-60E400 TPV material offering elastic recovery performance comparable to EPDM.



Novel Development of Bio-Based TPEs Christopher Engel, Advanced R&D Engineer Avient Corporation

Bio-based TPEs can help OEMs and tier suppliers incorporate a sustainable material into their component designs, reduce carbon footprint and reduce

gross energy expenditure. New bio-based TPEs have comparable performance to standard TPEs and offer a high percentage of bio-based content. These solutions can be overmolded, retain properties after aging, can be colored and formulated to a wide range of durometers.

POLYOLEFIN ELASTOMERS & VULCANIZATES

SESSION CO-CHAIRS:

Matt Sprouse, Washington Penn Plastic | Dr. Suresh Shah, SPE Fellow, Plastics "Hall of Fame" Inductee

MONDAY, 3:55 PM TO 4:55 PM



Shaping a Sustainable Future While Reducing Cost with a High-Performance Recycled Rubber Based TPV

Edgar Gonzalez, Product Manager, Synesis LLC Greg Zenner, Marketing Manager, LyondellBasell

OEMs and Tier 1s are working to increase the use of recycle content materials and reduce waste in order to achieve a more sustainable mobility. In this presentation, three application case studies are described where a recycled rubber based thermoplastic elastomer, ECO-FLEX RTPV, replaced virgin thermoset rubbers by combining the performance characteristics of rubber, such as flexibility and wear resistance, with the processing ease of conventional thermoplastic materials while delivering cost savings and increasing the sustainable content of the vehicles.



Ultra-Low Compression Set TPV for Dynamic Seal Application Michio Morita, Sr. Research Engineer

ENEOS TPV has been given a great interest as an alternative to cured EPDM on

as an alternative to cured EPDM on the ground of light weighting, saving process-energy consumption, higher

productivity, and recyclability. For wider application of TPV as dynamic seals, improvement in its sealing performance is strongly desired. Responding to this requirement, our sophisticated polymer design and compounding technology is applied to materialize a unique TPV with ultra-low compression set while maintaining injection processability.

TUESDAY, 11:00 AM TO 12:05 PM



Manufacturing of Fused Deposition Modeling Compatible Thermoplastic Elastomeric Materials

Pratiksha Awasthi, PhD Student IIT Delhi, India

Fused deposition modeling (FDM) is currently a smart manufacturing

process for thermoplastics, however there are limited number of feedstocks for FDM. In this work, a FDM compatible new TPE was manufactured using filament fabrication followed by FDM. Interestingly, printability and elastomeric properties revealed that among several developed blend compositions only 40ABS/60SEBS printable blend showed thermoplastic elastomeric properties. The developed TPE could be used for automotive applications like seals, gaskets, and interior trim parts.



Santoprene TPV in EV Cooling Hose Application Paul Zwick, Marketing Manager Celanese Corporation

This presentation covers the development of different EV cooling hoses and tubes with Santoprene TPV and compares to other incumbent or

competitive solutions and suggests what future needs or trends might be addressed with Santoprene in this application.



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MATERIALS DEVELOPMENT

SESSION CO-CHAIRS:

Mark Jablonka, Dow | Peter Glenister, LyondellBasell | Catherine Wilson, Ford Motor Company

TUESDAY, 2:55 PM TO 5:00 PM



Tiger Stripe Free TPO Compound Methodology Mark Evans,

Application Development Engineer - Mobility Borealis Compounding Inc.

For decades the challenges of the injection molding industry has been to produce Tiger-stripe free TPO

compounds. In the current atmosphere in Mobility where applications demand more features such as design creativity, light-weighting and thin walling, it is critical to be able to meet these challenges, as they all create more challenges for TPO and Tiger-stipe free results. In utilizing the Borealis methodology, the DaplenTM grades are designed to achieve Tiger-stripe free results. In this paper we will describe the steps in the process that need to be considered in order to deliver the Tiger-stripe free TPO part.



Materials for Incorporation of PCR into Molded Parts for the Automotive Industry

Timothy Dean, Senior Market Development Lead ExxonMobil Product Solutions

Across the automotive value chain, interest in and demand for solutions that deliver sustainability benefits is

growing. One effort to capture sustainability benefits, consistent with the goals of the automotive industry, is the incorporation of post-consumer recycled content (PCR) into molded plastic parts. Incorporation of PCR can present challenges. As the use of plastics and PCR in automotive parts increases, solutions to these challenges are needed. ExxonMobil provides innovative solutions to help overcome these challenges and meet customer's sustainability goals. This session will present successful case studies of the use of PCR in polyolefin compounds that can be used in molded parts. Additionally, it will introduce a portfolio of ExxonMobil product solutions that are helping customers to challenge reality and rethink what's possible in material development and design.



EMI materials for Blind Spot Detector (BSD) Brackets Ned W. Bryant

This presentation will focus specifically on RTP Company's DOE methodology and how it is being applied to develop custom compounds for BSD brackets. Future brackets will require a critical balance of

shielding absorption versus reflection when attenuating signals. The polypropylene based materials being discussed in this presentation are shielding analogs of more standard TPO compounds. After mixture DOE analysis, compounds can be developed that tailor EMC, Dk, and Tan Δ to the specific needs of modern radar systems. In addition, these compounds can be customized with respect to their physical properties, such as viscosity, impact strength, flexural modulus, etc.

RTP Company

WEDNESDAY, 11:00 AM TO 12:05 PM



PCR/PIR PP with Biobased and Glass Fiber for EV Applications Dr. Sassan Tarahomi, CEO, SmartChronos, CTO, Alterra

Electric Vehicles requires advanced materials that provide the mechanical and thermal strength as well as advanced compounding know how to provide the

optimized combination of properties for the final part. PCR/PIR Polypropylene in combination with Cellulose and Glass fiber can provide strength yet lower mass for the molded part.

MATERIALS DEVELOPMENT

SESSION CO-CHAIRS:

Mark Jablonka, Dow | Peter Glenister, LyondellBasell | Catherine Wilson, Ford Motor Company



THERMOFIL CIRCLE – Developing Reinforced Polypropylene Compounds with a Reduced Carbon Footprint without Compromise Performance

Nicolas Schlutig, Technical Manager Sumika Polymers Compounds Europe

Automotive light-weighting is a long-term trend because it reduces emissions and fuel consumption, and it increases vehicle range and performance. Carbon neutrality is a new key driver in our industry and addressing the complex challenges around sustainability will contribute to cars of the future. In anticipation of this trend, Sumika Polymer Compounds Europe developed THERMOFIL CIRCLE® high performance chemically coupled glass-fiber reinforced recycled polypropylene grades. To facilitate sustainable solutions with Thermofil CIRCLE®, Sumika Polymer Compounds, partnered with e-Xstream® Engineering part of HEXAGON group, a leader in integrated computational material engineering (DIGIMAT® Data Management System). This paper presents these developments.

WEDNESDAY, 1:45 PM TO 3:25 PM



A Cost Effective Approach to Natural Fiber Reinforced Polypropylene (NFPP)

Tom Sybrandy, Senior Project Engineer Inteva Products

As OEM's move away from ICE towards EV Technology, Lightweighting has changed from being a trend, to now

being a requirement. Today's focus is shifting from just Lightweighting to now include Sustainability, Green Technologies, and Circular Life. Natural Fiber is a material that has been used for years for Lightweighting in Automotive Trim. However, the use of NFPP has been limited due to its higher cost, and reluctancy by the industry to move away from other well understood and widely used technologies. Using Natural Fiber in a cost-effective way, while taking a hard look at sustainability and addressing some of the current concerns with NFPP are covered in this presentation.



The Effect of TALC Shape/ Fineness on PP and TPO Performances

Piergiovanni Ercoli Malacari, Product and Application Development Manager IMIFabi Spa

Talc is a natural mineral normally used to increase stiffness and modify other

properties in polymers such as PP, TPO and others. Because of its natural platyness, talc offers multiple possibilities for polymer modification, but various process conditions of the mineral can lead to different properties. For proper material design, it is of relevance to know the effect of talc fineness and shape on expected mechanical properties. A proper polymer design will enable achieving the right balance in performances, for example to face current today's market challenges in lightweighting approach. In this paper it will be illustrated the effect of talc fineness, particle shape and mineral loading on final properties in some PP and TPO formulations, to better understand the interaction between particle shape and expected performances. Also, the latest IMI Fabi solutions will be presented such as NeoFill family and HVTextra, highlighting their role in lightweighting applications in TPOs in comparison with current proposed solutions.



Altibright[™] Pyrophyllite. ANew High Brightness, High Aspect Ratio Reinforcement for High Quality TPO's John Hurley, *President & CEO* Trinity Performance Minerals

Reinforcements are a key component of TPO's, enabling formulators to achieve the modulus targets required for

automotive applications, while brightness can be a challenge. Trinity has developed a new Altibright pyrophyllite mineral that is a high brightness, high aspect ratio reinforcement and is domestically mined and produced in North America. This presentation will provide an indepth comparative study of physical performance of this new product in both polypropylene homopolymers and copolymer formulations.

MATERIALS DEVELOPMENT

SESSION CO-CHAIRS:

Mark Jablonka, Dow | Peter Glenister, LyondellBasell | Catherine Wilson, Ford Motor Company

WEDNESDAY, 3:55 PM TO 5:00 PM



Effect of Surface Modification on the mechanical performance of Ultra Fine Talcs for use into TPO Automotive Formulations Moulee Palaniappan

Magris Talc USA

The Global Automotive industry is continuously developing new composite solutions to achieve optimal balance

of mechanical properties with best cost/performance ratio and minimal environmental impact. Magris Talc is one of the world's leading talc producers, with unique ore bodies across North America and globally established technical expertise on talc processing and surface modification. This study evaluated Magris Talc specialty products of different mineral morphology (Macro vs Micro-Lamellar structure), aspect ratio, top size, and brightness to improve their performance in Thermoplastic Olefins (TPO) to the next level of Stiffness and Impact Strength by altering their surface properties with different chemistries. The study included the evaluation of 14 different Ultra fine talcs (D50 less than 2.5 microns by Sedigraph) with 3 different chemistries in 2 highly used Polypropylene resin systems. Loading level of each of the 14 talc products was fixed constant in both resin systems. An ultra-fine, highly lamellar, very tight size and top cut distribution Magris talc product widely used in the TPO compounding industry was designated as a Control to benchmark the performance on Stiffness and Impact Strength. The study concluded that 2-micron D50 Engineered talc products could achieve the next level of mechanical performance with stiffness/ impact strength improvement by optimizing their surface treatment based on talc morphology and improving mineral dispersive mixing into the polymer matrix. The study also found that scratch and mar resistance could be improved without impacting the mechanical performance with addition of a certain performance additive.



Innovative Light Weight Composite Flame Retardant Composite in Automotive Applications Tariq Syed, Jose Sales Fernandez, Petya Yaneva Technology and Innovation, Polyolefin compounds SABIC

Flammability control is a critical requirement for materials in numerous applications across various industries. This is especially the case for electric vehicle battery packs and related EV applications, in which thermal runaway and fire propagation protection are concerns. Meeting battery pack thermal runaway requirements can be challenging as such events involve high temperature and pressure levels.

This session will present a portfolio of non-halogenated short- and long-glass-fiber reinforced flame retardant (FR) polypropylene grades, with a view of their performance during various hightemperature testing environments simulating thermal runaway and bonfire situations. These tests help demonstrate the potential viability of the materials for battery pack applications. The session will also touch on additional benefits of thermoplastic materials for battery pack applications, including long-term property performance, low warpage, lower cost and weight advantages, and more.

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PERFORMANCE ADDITIVES & COLORANTS

SESSION CO-CHAIRS:

Nancy Cliff, BASF | Dr. John Mara, Amfine Chemical Corp.

TUESDAY, 3:55 PM TO 4:55 PM



Polymer Additive Technologies to Meet Recent Chemical Regulatory Trends

Yuhei Hattori, R&D Advisor Amfine Chemical Corporation

With the adoption of the Strategic Approach to International Chemicals Management (SAICM), countries

around the world have been revising and reviewing regulations related to chemicals management. Substances with high risk to health and the environment are now strictly regulated by each country. The risk of using such substances is increasing especially in the automotive industry where the voluntary Global Automotive Declarable Substance List (GADSL) is in operation, and in today's globalized supply chain, regulatory compliance is essential. This paper will describe the recent regulatory trends for polymer additives and the technologies to accommodate them, with a focus on light stabilizers for TPO automotive applications.



Review of Non-Halogen FRs Maggie Baumann Performance Polymers and Additives

Abstract

WEDNESDAY, 11:00 AM TO 12:05 PM



Improving Melt Strength of Virgin and Recycled PP Compounds with an Ionic Monomer Brett Rob.

Applications Chemist Total Cray Valley

Polypropylene is a semi-crystalline polymer with a lack of melt strength. Further, thermal degradation during

recycling greatly reduces the melt strength of polypropylene. Dymalink 9200 creates a temperature-dependent, dynamic ionic network in PP-based homopolymers, copolymers, and elastomers. This ionic network boosts the melt strength of both virgin and recycled PP-based compounds, particularly for applications where melt stretching, or drawing is critical.



New Polymer Processing Additives (PPA) for Polyolefin Production and Process Improvements Mike McCormack, Distribution Business Unit Manager SACO AEI Polymers

SACO AEI Polymers Distribution

business is offering a new product for polyolefin applications. Javachem has developed a PPA (Polymer Performance Additive) that disperses evenly and can form a stable dynamic coating on the die wall. This reduces die drool in extruded product and shark skinning in sheet extrusion versus traditional PPA, in which Fluoropolymer particles aggregate easily and cause coating dynamic discontinuity. SACO AEI Polymers won the Ringer Technology Award for this product in 2020.

PERFORMANCE ADDITIVES & COLORANTS

SESSION CO-CHAIRS:

Nancy Cliff, BASF | Dr. John Mara, Amfine Chemical Corp.

WEDNESDAY, 1:45 PM TO 3:25 PM



Additive Solutions to Enhance the Quality of Recycled Plastics Nancy Cliff, Senior Scientist Dr. Oliver Reich BASF Corporation

Mechanical recycling is an essential element for enabling the circular economy for plastics. However,

mechanically recycled plastics face challenges in processing consistency, appearance, and durability due the presence of contaminants, oxidized and low-molecular-weight polymer, and stabilizer depletion. In this presentation, we explore additive systems designed for the re-stabilization of post-consumer and postindustrial polyolefins. These systems enhance the processability, stability, and durability of recycled polymer, bringing us closer to the goal of circularity for the polyolefin industry



Management of Polyolefin VOC's using Specialist Additives Richard Marshall, CEO CAI Performance Additives

Volatile organic compounds (VOCs) can limit the use of polyolefins in automotive and other applications. VOCs must be dealt with whether due to unwanted odor

in the final parts, or by failing to meet OEM-defined instrumented standards. Special additives can remove VOCs at compounding time. Light stabilizers and coupling agents which lead to low VOCs compounds will also be discussed. Recycled polyolefins, as well as filled virgin, are shown to benefit from these approaches.



Development of Novel Intumescent System Offering High Flame Retardancy

Cui Chun, Technical Manager Flame Retardants ADEKA Corporation

Glass fiber reinforced polypropylene has been used in large plastic parts, including home appliances and automotive.

Meanwhile, these applications require flame retardancy to save lives in case of fire hazards. Intumescent flame retardants are considered one of the most promising flame retardants in GF reinforced PP. However, they contribute to inadequate melt processability due to their high loading levels. To overcome this issue, ADEKA has developed a novel intumescent FR system which will be described.

WEDNESDAY, 3:55 PM TO 4:55 PM



Measuring Uncertainties in Emission Testing Dr. Huaiyuan (Ethan) Hu Analytical Scientist Dr. Michael Holzwarth IMAT

Considering the measurement uncertainty is of central importance when assessing material test results.

Especially in the field of emission tests, however, there are still frequent irritations about missing or apparently dubious information. In this lecture we will go into some basic principles of measurement uncertainty and relate this to the specific circumstances of emission testing. We go into specific measurement uncertainties of test methods and show causes and approaches to minimization.



New Approaches to Scratch Resistance in Polypropylene and Polypropylene Compounds Jonathan McLachlan, BYK

Polypropylene still suffers lower scratch and mar resistance. The addition of talc to improve stiffness and other physical properties increases the visibility of

scratches even further. New high-performance clay products and newly developed permanent (non-blooming) additives can improve this performance. Utilization of both not only improves the scratch resistance to better meet automotive standards, but also minimizes the effect on density, taking advantage of the light weighting promised by polypropylene.

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INNOVATIONS IN AUTOMOTIVE INTERIORS

SESSION CO-CHAIRS:

Dr. Pravin Sitaram, Haartz Corporation | Austin Wagenhals, Ford Motor Co. | Hoa Pham, Sonoco Products Co.

TUESDAY, 1:45 PM TO 2:55 PM



Opportunities and Challenges for TPEs in Electric Vehicle Interiors Robert Eller.

President Robert Eller Associates LLC

The auto interior presents challenges for EVs but much more importantly there are opportunities in space management, passenger comfort/convenience,

heating/cooling, acoustics, management of a signals-intensive environment (both incoming and outgoing) and shielding. This paper will explore these challenges and opportunities for TPOs and TPEs as well as the supply chain implications.



Advances in Non-score Deployable Materials for Instrument Panels

Michael Murelli, Senior Engineer The Haartz Corporation

Non-score deployable IP TPO laminate technology has seen years of field use across a wide range of vehicle platforms,

and further advances are being done to help produce clean breaks at lower forces. This paper will focus on some of the advancements done in this area to produce constructions that are designed for easier deployment.



Soft Smart Surfaces in Automotive Trim Jeremy Husic, Senior Staff Engineer Inteva Products

Soft surfaces are underutilized for HMI applications. These surfaces can be better suited for passenger interaction because their proximity to passengers

allow for improved ergonomics. There are challenges confronting their integration into automotive interiors. Interior trim that was only decorative, now provides functionality to the passengers. These additional use cases necessitate unique trim stack-ups and material requirements. The challenges confronting their integration into automotive interiors, along with their potential is presented.

TUESDAY, 3:55 PM TO 4:55 PM



Slush Grade Thermoplastic Polyolefin for Automotive Interiors Dr. Murali Reddy Manager, R&D and Sustainability Dr. Greg Farrar CpK Interior Products

The semi-crystalline and non-polar nature of TPO are the main challenges

in obtaining good powder flow and skin-to-foam adhesion respectively for slush-molding and foam-in-place (FIP) process. CpK has developed new TPO that addresses the above two challenges by using their proprietary hydro-grinding technique and grafting chemistry. The new TPO has been trialed in multiple commercial tools and FIP processes. In this presentation, we will discuss the development of new TPO, material validation, and airbag-deployment results.



Lightweighting on the Vehicle Interior with a Focus on Seating Kevin DeGrood, Application Development Engineer Borealis Group

Recently, light weighting focus has shifted its scope to seating where seat frames and seat systems continue to use metals or engineered resins for strength

purposes. Practical usage such as the ability to stow or remove seats has also moved the industry to seek lighter weight options. Borealis has started development in this key area to optimize material performance against light weighting targets, while also focusing on strength, dimensional stability and processability.

WEDNESDAY, 11:00 AM TO 12:05 PM



New Anti-Bacterial / Viral Thermoplastic Elastomers Shinichiro Shimomura Sumitomo Chemical Co., Ltd.

Sumitomo Chemical is committed to providing the technology solutions to enhance the comfort levels and optimal safety to the automotive industry by continuously developing novel materials

through exploring new ways. We have developed novel ESPOLEX® TPEs with anti-bacterial / viral properties for the automotive interior applications.

INNOVATIONS IN AUTOMOTIVE INTERIORS

SESSION CO-CHAIRS:

Dr. Pravin Sitaram, Haartz Corporation | Austin Wagenhals, Ford Motor Co. | Hoa Pham, Sonoco Products Co.



Electrically Conductive Thermoplastic Elastomers for Liftgate Sensor Profiles

Juan Espinosa, Product Development Manager KRAIBURG TPE Corp.

Anti-pinch sensors are becoming a suitable approach to improve safety and protection for humans and animals

in applications such as powered liftgates and garage doors. Sensor profiles typically incorporate a solid wire encapsulated by an elastomeric material. KRAIGBURG-TPE developed a line of electrically conductive TPEs with a resistivity under 10 ohm.cm that can be co-extruded with any other TPE to construct the pressure-sensitive sensor replacing the wire and facilitating the manufacturing and assembly of the system.

WEDNESDAY, 1:45 PM TO 3:25 PM



Improving Sustainability Through Mold-In-Color TPO Material Solutions

Robert Mimms, Material Development Manager Advanced Composites Inc.

OEM and tier customers are setting ambitious targets for improved sustainability. The utilization of post-

consumer recyclate reduces carbon footprint and the dependence on natural resources. Vehicle weight reduction can also contribute to reduced CO_2 emissions. Advanced Composites has developed an interior material that combines the use of post-consumer recycle content with the reduction of density. This presentation compares legacy and new materials while focusing on potential applications for a sustainable future.



Pre-Applied Adhesive Technology for the Automotive Interior Industry Gregory Wilkins, Senior Account Manager Sunstar Engineering Americas

With increasing demands for efficiency in all automotive processes, the move to reduce the use of spray systems and move

to pre applied adhesives is a growing trend. Sunstar has provided pre coat adhesives for many years, but with the increased interest for improved environmentally friendly technology, Sunstar has been developing new adhesive technologies that will allow interior parts manufacturers to implement pre applied technologies into their production cells.



Cleaner, Fresher Automotive Interiors with Antimicrobial Material Solutions from Microban Dr. Mai Ha, Senior Product Development Engineer

Microban International

Automobiles are subjected to many contaminants daily. With 80% of

consumers expressing concern about stains and persistent odors inside of their vehicle combined with rapid mold growth and microbial colonization that can occur in rideshare and public transportation vehicles, it has become essential for automotive manufacturers to consider lasting treatments that will change both driver and rider experiences as well as OEM brand preference for the better.

WEDNESDAY, 3:55 PM TO 4:55 PM



Contact Angle Measurement: Easy Method to Determine Flame Treated Composite Surface Variability and Pressure Sensitive Wetting with Varying Acrylic Acid Content

Raymond Sanedrin KRŰSS Americas

Using composite materials as an

alternative to metals is of great interest to the automotive industry. With low surface free energies, these surfaces can be a challenge to bond. Dyne inks are often utilized for their ease of use, but oftentimes these inks can be problematic in accurately determining the surface free energy of a treated composite. Herein, we will show how contact angle measurements can give highly accurate and precise surface free energies for treated and non-treated surfaces.



Ecotek Lab: Science Research Organization and Student Presentation Keith Young and Ecotek Students

abstract

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