



EXTRUSION DIVISION NEWSLETTER

**SPRING 2016
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A Message From the Chair



Hello again and welcome to another edition of your Extrusion Division's Newsletter. I am sure that many of our members remember back when our newsletter was printed on actual paper and mailed. It was quite an event when we made the move to digital delivery, going from your mailbox to your inbox.

Speaking of events, ANTEC, the Society's biggest event of the year is fast approaching. This year we will be in Indianapolis May 23-25. As always, Extrusion Division will be well represented in the technical sessions, with plenty of relevant content for all attendees. More on that in a moment.

Writing about the upcoming ANTEC made me think back to all the great conferences we have been fortunate to have been a part of. I attended my first ANTEC in 1981, and it was quite impressive for this young engineer. I took a bit of time while writing this to reminisce about ANTECs past and what has changed over the past several decades. A quick trip to my bookshelf resulted in the picture above.

That stack of three very large (and rather heavy) books are ALL the technical papers from ANTEC 1993 in New Orleans. This brings new meaning to the phrase "heavy reading" especially if you had to carry those books around for a day at the conference. I still remember having sore arms during several ANTECs back in those days. Luckily, technology presses onward, and pictured in the center is a CD from ANTEC 2005 in Boston. Same amount of content as those three massive volumes; a whole lot easier to carry back home. An even more recent development is pictured to the right of the CD. ANTEC technical content is now provided to attendees via the Cloud. You get nothing to carry, but when you get back home you can download the entire conference proceedings onto your computer. Hello 21st century!

Back to this year's ANTEC. While you will not get any large books to lug around Indianapolis, you will get the heavyweight content that we all expect from our Extrusion Division. Olivier Catherine, this year's Division TPC, has put together an excellent program sure to be of interest to all (the program grid begins on p. 9). Look for sessions on Reactive and Mixing Processes, Process Modeling, Pharma Extrusion and more. The ever-popular Tutorial sessions will be back; be sure to stake out a seat early as these sessions fill up.

It is my pleasure as the Chair of your Extrusion Division to invite you to our Annual Extrusion Division Business Meeting on Tuesday May 24th, after the sessions are complete. We will be announcing this year's Award winners, as well as the students who will be receiving scholarships from Extrusion Division. The evening will be capped off with our annual Division Reception, a great place to meet your Board of Directors as well as old friends and new acquaintances.

Yes, times have changed. No more sore arms from lugging heavy books; no more CDs. The digital revolution has made light work of our technical papers, but one thing remains a constant – ANTEC is a heavyweight SPE event and one that is well worth attending. I hope to see you there.

David Anzini

SPE Extrusion Division Chair, 2015-2016

Barry Morris Among Winners of Prestigious DuPont Award



DuPont has named three outstanding scientists as 2016 Pedersen Award Medalists—including long-time Extrusion Division Board Member and SPE Fellow Barry Morris. Nathaniel (Todd) Becker and James Sweigard were also honored.

The award is named in honor of DuPont's Nobel Laureate, Charles J. Pedersen, and recognizes individuals who made outstanding technical achievements that delivered significant value for DuPont customers. "Science-based innovation is at the core of who we are at DuPont. It solves important global challenges for society, creates value for all of our stakeholders and inspires us to work together to make a difference for the future," said Douglas Muzyka, Senior Vice President and Chief Science & Technology Officer.

"Todd, Barry and Jim have made extraordinary technical contributions to DuPont and their

respective technical fields. On behalf of the company and the DuPont Fellows, it is a pleasure to recognize their outstanding achievements by honoring each of them with a 2016 Pedersen Medal."

Pedersen Medalists are selected by The DuPont Fellows, a group of the highest technical professionals in the company. The medalists' technical knowledge, skill and commitment in their respective areas have resulted in important new products for DuPont customers.

Morris, based out of Wilmington, Del., is an industry expert in polymers and an industry pioneer for polymer and process modeling. He has developed predictive models for packaging film markets, enabling customers to minimize package weight and cost while maintaining rigidity and package function through the use of multilayer structures that incorporate high-performance materials such as DuPont Surlyn ionomer resins

Becker, in Palo Alto, Calif., is a leading expert in the process technologies that help make enzymes more affordable and effective for industrial use, particularly in detergents and animal nutrition. He was a key inventor and developer of enzyme spray coating technology, and the DuPont Enzoguard and Thermo Protection Technology (TPT) formulations for enzymes, which enable enzymes to be stored, shipped and used by customers properly in a way that fits their end uses.

Sweigard, Newark, Del., is an internationally recognized expert in fungal genetics and the culture, growth and molecular biology of crop pathogens. He has developed new tools to identify and understand the underlying molecular biology of plant diseases, and ultimately, to aid us in the development of important new fungicides such as DuPont Zorvec.

The 2016 Pedersen Medalists will be recognized in award ceremonies in May.

Charles Pedersen received the 1987 Nobel Prize for his discovery of a novel class of chemical compounds called macrocyclic polyethers, which he dubbed the "crown" ethers because of their molecular shape. The structure of these compounds enables them to coordinate to certain metallic ions such as sodium or potassium which bind to the center of the "crown," much like a key fits in a lock. This specific lock-and-key feature of the crown ethers mimics the very complicated functions of biological materials such as enzymes and substrates in a relatively uncomplicated way, and thus researchers have found a number of important applications in the chemical and biological sciences.



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TECH TIPS

Auditing Your Extruder

By Tim Womer

From time to time it is necessary to do a complete audit on the condition of an extruder to make sure that it is operating in top condition for maximum effectiveness and efficiency. Following is some general information that should be considered to accomplish a good audit:

1. Evaluate the condition of the gearbox output shaft bearings with lift check.
 - a. Check and record the front quill I.D. for wear and proper fit with the shank of the screw.
 - b. Inspect and replace any shaft seals that may show leakage
 - c. Drain gear box lubricant and wash any residue and metal shavings in the bottom of the gearbox
 - d. Change lubricant oil filter
 - e. Check out gear box cooling system, primarily the heat exchanger if the extruder is fitted with one.
2. Check the front barrel support for proper thermal expansion, lubricate slide points with high temperature silicone grease.
3. Evaluate the effects of overhung loads which are produces for screenchangers, melt pumps and dies.
4. Measure and record the Feed Throat bore dimensions and inspect for excessive wear or water leakage from the cooling cavity of the cast housing.
5. Measure the barrel and screw for wear, envelope or complete profile.
6. Check extruder base to floor stability.
7. Evaluate heating and cooling system if required.
 - a. Flow test cooling tubes.
 - b. Use a clamp-type ammeter or a multi-meter test check the resistance of the heaters.

Tim Womer is a recognized authority in plastics processing and machinery with a career spanning 40 years. He has designed thousands of screws for all types of single-screw plasticating. He now runs his own consulting company, TWWomer & Associates LLC.

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ANOTHER REASON TO ATTEND ANTEC® 2016!

Our Plenary Speakers!

MONDAY

Tim Caffrey, BSME
Senior Consultant, Wohlers Associates, Inc.
*Topic: Additive Manufacturing and
3D Printing: State of the Industry.*



TUESDAY



Panel Discussion: Guest Editors
Jim Callari, Susan Flynn, Clare Goldsberry,
Don Loepp, Mike Tolinski, Don Rosato.
*Topic: The State of the Plastics Industry:
Outlook for 2016 & Beyond*

WEDNESDAY

Antony Dodworth
Chief Technology & Manufacturing Officer,
Bright Lite Structures.
*Topic: A Platform for Novel Lightweight
Automotive Composite Structural Design*



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SPE Mourns Passing Of Ananda Chatterjee



Long-time SPE member and Fellow Ananda Chatterjee passed away suddenly last month as the age of 69.

Having been born in Agra and raised in Kolkata, Ananda completed a significant portion of his education in India at the Presidency College, where he received his B.Sc., and at the Science College, where he received his MTech. Ananda first immigrated to Canada, where he attended the University of Waterloo in Ontario, receiving his MS in Chemical Engineering. He then completed a PhD in Polymer Science & Engineering at the University of Massachusetts.

In his professional life, he had been a true pioneer in the field of polymer engineering. Having been the author of 26 U.S. patents, two European patents, and 31 other publications on polymer technology, Ananda was in the process of publishing a book and corresponding with several authors. While Ananda strived towards excellence in his field, he had been awarded with many honors. In addition to being named an SPE fellow, he received Shell Chemical's

highest Quality award: the Champion of Quality, Outstanding Service Award from TAM; the Team Excellence Award from Shell Development Company; Six Sigma Green Belt certified by Dow Chemical Co.; and the Honored Service Award from SPE. For many year Ananda served as associate editor of *The Journal of Plastic Film & Sheeting*.

In his recreational time, Ananda enjoyed going on long walks with his wife as well as watching movies with his children. He also enjoyed traveling all over the world; visiting Switzerland, Belgium, Germany, France, Italy, Denmark, Spain, Norway, Sweden, the Netherlands, and many more. Ananda was also a fan of music and art, especially taking his family to the Houston Symphony. One of Ananda's most cherished personal achievements was serving as a founding member of the Houston Durgabari Society. From the inception of the temple in 2001, he was extremely involved with the formation of the Constitution and passionate about making sure the temple was functioning smoothly.

Ananda is survived by his wife, Ajanta, of 39 years, his two children, Ovinandan and Totini, and his two brothers, Ananta and Ashok.



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REGISTER YOUR TEAM TODAY!
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ANTEC Extrusion Program

Forming Technologies I				
Monday Morning		Session Moderator: Karen Xiao		
		Location: Grand Ballroom 8		
8:30		invited	Michail Doglovskij	EXTRUSION THERMOFORMING of EVOH
9:00			Kenny Saul, Martin Spitz, Gregor Hiesgen	TROUBLESHOOTING EXTRUSION USING CHILLWARE COMPUTER SIMULATION FOR SAGGING AND COLLAPSING OF PIPE ENDS
9:30			Christian Hopmann and Sven Hendriks	IMPROVEMENT OF THE EXTRUSION FOAMING PROPERTIES OF EXTERNALLY PLASTICIZED CELLULOSE ACETATE BY REACTIVE MELT MIXING USING A MULTIFUNCTIONAL REACTIVE OLIGOMER
10:00			Philip J. Brunner; Mark A. Tapsak; Mike Janse	COMMERCIALIZATION OF SOLID-STATE SHEAR PULVERIZATION: A NOVEL POLYMER PROCESSING TECHNOLOGY
10:30			Christian Hopmann and Jonathan Martens	CYCLE TIME REDUCTION BY WATER SPRAY COOLING IN THERMOFORMING

Reactive and Mixing Processes I				
Monday Morning		Session Moderator: Dr. David Bigio		
		Location: Grand Ballroom 7		
8:30		Invited	María del Pilar Noriega	TRENDS IN SINGLE AND TWIN SCREW EXTRUSION FOR INDUSTRIAL AND PHARMACEUTICAL APPLICATIONS
9:00			Karnik Tarverdi, Socrates Ioannou and Jack Silver	USING CO-ROTATING TWIN SCREW EXTRUDER FOR FIBRE REINFORCED INORGANICS EXTRUSION
9:30			Eungkyu. Kim, Mark A. Barger, Hyunwoo Kim, Daniel A. Beaudoin, Jun Kakizaki, Daigo Saga	MELT DEVOLATILIZATION EXTRUSION PROCESS FOR BROMINATED POLYMERIC FLAME RETARDANT
10:00			Song Zhao, Baiping Xu, Huiwen Yu, Liang He, Meigui Wang	THE MIXING OF FLAME RETARDANT POLYMER MATERIALS IN A NOVEL CO-ROTATING NON-TWIN SCREW EXTRUDER
10:30			Michael W. Batton, Thomas J. Malzahn	THE PLANETARY EXTRUDER: PVC DIRECT EXTRUSION

		Process Modeling I			
Monday Afternoon		Session Moderator:		Dr. Deep Samanta	
		Location: Grand Ballroom 7			
1:30	Keynote	P. David		OVERVIEW OF NUMERICAL ENGINEERING CONTRIBUTIONS ON EXTRUSION PROCESSES OPTIMISATION	
2:00					
2:30		Paul Andersen; Frank Lechner		SIMULATION OF CO-ROTATING FULLY INTERMESHING TWIN-SCREW COMPOUNDING EXTRUDERS: ALTERNATIVES FOR PROCESS DESIGN	
3:00		Tao Chen, Hua Lin, Tingting Shan, Haili Zhao, Xin Chen, Jin Sha, Linsheng Xie, Yulu Ma		MODELING AND VALIDATION FOR AVERAGE EQUIVALENT DIAMETER PREDICTION OF AGGLOMERATES	
3:30		Martin Zatloukal and Tomas Barborik		EFFECT OF EXTENSIONAL VISCOSITY, ELASTICITY AND DIE EXIT STRESS STATE ON NECK-IN PHENOMENON DURING EXTRUSION FILM CASTING: THEORETICAL STUDY	
4:00		Sam Iuliano and Andrew Svenningsen		THE EFFECT OF FLOW CHANNEL ASPECT RATIO ON LAYER UNIFORMITY IN FLAT EXTRUSION DIES	
4:30		Mahesh Gupta		AUTOMATIC OPTIMIZATION OF EXTRUSION DIES	
5:00		Hyunwoo Kim, Laura Dietsche, Patrick C. Lee, Joseph Dooley		EFFECTS OF VISCOELASTICITY ON FILM DIE FLOW UNIFORMITY	

		Pharmaceutical Extrusion			
Monday Afternoon		Session Moderator:		Dr. Michael Thompson	
		Location: Grand Ballroom 8			
1:30	Keynote	Graciela Terife		POLYMERS AND POLYMER PROCESSING AS ENABLERS OF DRUG DELIVERY	
2:00					
2:30		Fengyuan Yang and Chad D. Brown		RHEOLOGY OPTIMIZED PROCESSING TEMPERATURE FOR PREPARATION OF AMORPHOUS SOLID DISPERSIONS VIA HOT MELT EXTRUSION (HME)	
3:00		Francis Flanagan, Erin Hein, Rachel Choi, Fengyuan Yang, Michael McQuade, Colleen Neu, Joe Phillips, Chad Brown		MEASUREMENT OF HOT MELT EXTRUSION THERMAL RESIDENCE DISTRIBUTIONS	
3:30		Laura Restrepo-Uribe and María del Pilar Noriega		STUDY OF KETOPROFEN'S DISSOLUTION IN POLYETHYLENE OXIDE FORMULATIONS PREPARED BY HOT MELT EXTRUSION	

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on Sunday May 22nd! The Race will be on Monday May 23.

More info: 4spe.org/tpr



Tuesday Morning		Process Modeling II		
		Session Moderator:	Dr. Mahesh Gupta	
		Location: Grand Ballroom 8		
8:00		Miriam Haerst, Nicholas C. Ecke and Erich Wintermantel		INNOVATIVE EXTRUSION PROCESS FOR LIQUID SILICONE RUBBER: CALCULATION VERSUS EXPERIMENT
8:30		Gregor Hiesgen, Kenny Saul, Martin Spitz		TOWARDS THE SIMULATION BASED DETERMINATION OF THE CRYSTALLINITY DISTRIBUTION IN POLYMER PIPES
9:00		Benedikt Neubert, Johannes Wortberg		SIMULATION OF AN INDUSTRIAL HIGH CAPACITY BLOWN FILM EXTRUSION PROCESS
9:30		Tyler Schneider, João Maia		STUDYING LAYER ALIGNMENT IN FLOWS OF MULTI-LAYERED SYSTEMS THROUGH DIES WITH A GEOMETRIC TRANSITION
10:00		Stephan Eilbracht, Ruth Jackowiak, Michel Renaud		TOWARDS THE PREDICTION OF THE WALL THICKNESS FOR TECHNICAL PARTS MANUFACTURED IN EXTRUSION BLOW MOLDING
10:30		Jesse L. Gadley and João Maia,		THE IMPORTANCE OF INFLOW CONDITIONS ON THE SIMULATION OF EXTRUSION OF THERMALLY SENSITIVE MATERIAL

Tuesday Morning		Reactive and Mixing Processes II		
		Session Moderator:	Dr. Joe Golba	
		Location: Grand Ballroom 7		
8:00	Keynote	João M. Maia		EXTENSIONAL MIXING ELEMENTS FOR TWIN-SCREW EXTRUSION: COMPUTATIONAL AND EXPERIMENTAL VALIDATION FOR LIQUID-LIQUID AND LIQUID-SOLID SYSTEMS
8:30				
9:00		Jin Wang et al.		PRELIMINARY STUDY OF CHANGEOVER TIME IN A TWIN-SCREW EXTRUDER
9:30		Gregory A. Campbell, Michael E. Zak, Jayaprakash. S. Radhakrishnan, Mark D. Wetzel,		DEVELOPMENT OF A PREDICTIVE POWER LAW RELATIONSHIP FOR CONCENTRATED SLURRIES, PART 1: THEORY
10:00		Mark D. Wetzel, D. Ray Pettitt, Jr, Gregory A. Campbell		DEVELOPMENT OF A PREDICTIVE POWER LAW RELATIONSHIP FOR CONCENTRATED SLURRIES, PART 2: EXPERIMENT AND PROCESSING IMPLICATIONS
10:30		Sidney O. Carson and João M. Maia		EXTENSIONAL MIXING ELEMENTS FOR TWIN-SCREW EXTRUSION: EFFECTIVENESS IN DISPERSIVE MIXING OPERATIONS IN COMPOSITES

Tuesday Afternoon		Forming Technology II		
		Session Moderator:		Olivier Catherine
		Location: Grand Ballroom 8		
1:30 PM	Keynote	Pr. Hopmann		KEYNOTE: ENHANCING PRODUCTIVITY OF EXTRUSION PROCESSES BY INTEGRATIVE RESEARCH
2:00 PM				
2:30 PM			D.O. Kazmer, T. Coogan, J. Mead, C. Barry, S. Johnston, R. Malloy, M. Sobkowicz-Kline, J. Vangness, P. Casey, D. Rondeau, A. Moshe	A PROTOCOL FOR FILAMENT PRODUCTION AND USE IN FUSED DEPOSITION MODELING
3:00 PM			Christian Schäfer, Florian Ammon, Vanessa Araujo Rivas and Tim A. Osswald	MICROPELLETIZATION AND THEIR APPLICATION TO MANUFACTURE POROUS PLASTIC PARTS
3:30 PM			Hyunwoo Kim, Kurt A. Koppi, and Robert Wrisley; Joseph Dooley	THE EFFECT OF VISCOUS ENCAPSULATION ON LAYER UNIFORMITY AND RHEOLOGY IN MULTILAYER COEXTRUSION
4:00 PM			K.A. Koppi and H.M. Ma	ROOT CAUSE ANALYSIS AND FIXING OF COEXTRUDED POLYOLEFIN BLOWN FILM DEFECTS
4:30 PM			Christian Hopmann and Sven Hendriks	INCREASED THROUGHPUTS IN BLOWN FILM EXTRUSION BY USING A CONTACT COOLING SLEEVE
5:00 PM			Ravi Ayyar, Michael Ponting, Jian Wang, and Eric Baer	NONWOVEN MICROFILTERS PRODUCED BY A NOVEL MELT COEXTRUSION PROCESS
5:30 PM	EXTRUSION DIVISION AWARDS CEREMONY			

Tuesday Afternoon		Single Screw Extrusion		
		Session Moderator:		Kevin Slusarz
		Location: Grand Ballroom 7		
1:30	Keynote	Gregory Campbell		FIFTY YEARS ADDRESSING A RANGE OF INDUSTRIALLY RELEVANT PROBLEMS THROUGH RESEARCH FUNDAMENTALS
2:00				
2:30			Mark A. Spalding, Qian Gou, and Xiaofei Sun	THE INCUMBENT RESIN EFFECT FOR THE SINGLE-SCREW EXTRUSION OF POLYETHYLENE RESINS
3:00			Zhijun Jiang, Yi Yang, Shengyong Mo, Furong Gao	PRODUCT QUALITY CONTROL FOR SINGLE SCREW EXTRUSION PROCESS
3:30			Qingping Guo and Andrew Kenny; Shahid Ahmed and Ghaus Rizvi	MEASUREMENT OF THERMOPLASTIC POLYURETHANE (TPU) VISCOSITY WITH SLIT DIE RHEOMETER
4:00			Xiaofei Sun, Qian Gou, and Mark A. Spalding; Timothy W. Womer; Ned Uzelac	OPTIMIZATION OF MADDOCK-STYLE MIXERS FOR SINGLE-SCREW EXTRUSION
4:30			D.O. Kazmer	SINGLE PELLETT EXTRUSION
5:00	Set-up for RECEPTION			
6:30	ANNUAL EXTRUSION DIVISION RECEPTION			

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Wednesday Morning	W	Tutorial Session		
		Session Moderator:	Adam Dreiblatt	
		Location:	Grand Ballroom 7	
8:00		Adam Dreiblatt		SPECIFICATION OF TWIN-SCREW EXTRUDERS FOR COMPOUNDING APPLICATIONS
8:30		Paul Anderson/Greg Campbell		MELTING MECHANISMS: TWIN VS. SINGLE SCREW EXTRUSION
9:00		Paul Anderson/ Greg Campbell		MELTING MECHANISMS: TWIN VS. SINGLE SCREW EXTRUSION
9:30		Joe Golba		SPECIFIC MECHANICAL ENERGY AS A PARAMETER FOR CORRELATING PROCESS CHARACTERISTICS AND MATERIAL RESPONSE IN MELT COMPOUNDING AND REACTIVE EXTRUSION OPERATIONS
10:00		Costas Tzoganakis		REACTIVE EXTRUSION
10:30		Jane Spikowski		APPLYING LUDOVIC 1D TWIN SCREW EXTRUSION SIMULATION FOR THE ANALYSIS AND SCALE-UP OF MELT COMPOUNDING AND REACTIVE EXTRUSION PROCESSES

Wednesday Morning	W	Tutorial Session		
		Session Moderator:	Jim Callari	
		Location:	Grand Ballroom 8	
8:00		Olivier Catherine		MELT RHEOLOGY PRINCIPLES FOR EXTRUSION
8:30		Mahesh Gupta		OPTIMIZATION OF EXTRUSION DIES
9:00		Karen Xiao and Robert Nark		UNDERSTANDING MATERIALS AND EQUIPMENT AS A FILM PROCESSOR
9:30		Phippe David		COMPOUNDING PROCESS 3D SIMULATION TUTORIAL
10:00		Steve Schick		PROFILE DIE DESIGN
10:30		Eldridge Mount		MULTILAYER COEXTRUSION TROUBLESHOOTING

Wednesday Afternoon		Reactive and Mixing Processes III		
		Session Moderator:	Jane Spikowski	
		Location: Grand Ballroom 7		
1:30		Shouliang Nie; Costas Tzoganakis		PRODUCTION OF CONTROLLED RHEOLOGY POLYPROPYLENES FROM METALLOCENE AND ZIEGLER-NATTA RESINS
2:00		Ali Goger, Michael R. Thompson, J.L. Pawlak, D.J.W. Lawton		DYNAMIC RHEOLOGICAL MEASUREMENTS OF AQUEOUS POLYESTER DISPERSION IN BATCH REACTOR AND TWIN SCREW EXTRUDER
2:30		Volker Schöppner, Kim Jacqueline Scharr, Tobias Westhues		MELTING PHENOMENA AND SAMPLE PREPARATION METHOD WITHIN A PARTLY FILLED MELTING ZONE OF CO-ROTATING TWIN SCREW EXTRUDERS
3:00		Mamoru Sakagami, Masanori Tatsumi, Takashi Kibou		SUPER-GENERATION SELF-WIPING COROTATING TWIN SCREW
3:30		Gonzalo Marulanda Paz, Brian Fritz, Alan Malott		SCALE UP OF ABRASSIVE WEAR IN TECHNICAL COMPOUNDING
4:00		Praphulla Tiwary, Hua Gui, Pedro Luiz Ferreira, Marianna Kontopoulou		ENHANCEMENTS IN THE CRYSTALLINE STRUCTURE AND MECHANICAL PROPERTIES OF REACTIVELY MODIFIED POLYPROPYLENE
4:30		Gonzalo Marulanda Paz, Brian Fritz		FEED MECHANISM FOR IMPROVEMENT IN SCALE UP FROM SMALL LABORATORY RECIPROCATING KNEADERS
5:00				

TECH TIPS

A Film Processor's Guide to Understanding Materials & Equipment

By Karen Xiao and Robert Nark, Celgard LLC

Film extrusion is used in widely varied applications, ranging from agriculture, geomembrane, and construction to medical and food packaging, to name a few. Depending on the end use, film-quality requirements can also vary. In food packaging, for instance, gels or defects of any kind must be avoided, as they can be mistaken by consumers to be food spoilage or bugs in the food. In construction films, where in recent years a thin EVOH layer has been incorporated for radon barrier, thickness uniformity of the EVOH layer becomes very important.

In general, though, there are some attributes that are important for any type of film-processing operation:

Thickness uniformity. The film needs to be as flat and uniform as possible to enable smooth operations of any downstream processing.

Material flexibility. The line will need to have as much flexibility as possible to handle a variety of different resins, ranging from different types of polyethylenes (LDPE, LLDPE, mLLDPE, HDPE, MDPE) to different types of polypropylene, and in some extreme cases, different engineering resins as well (nylon, EVOH, PET).

Often, the line will need to be able to produce films of various thicknesses, ranging from 20 to 200 microns. Not only is the material selection important in these cases to target certain physical properties, but so are cooling and winding capabilities of the line.

Length of run. For extrusion processors, it would be ideal that the line will never be cleaned, to minimize maintenance and scrap costs. In the real world, that is unrealistic. It is not only important to select extrusion equipment that will help reduce hang-up spots and prevent degradation, but how processors run the line is equally important.

This article was published in the February 2016 issue of *Plastics Technology*. [Click here](#) to read it in its entirety.

SPE to Honor New Fellows At Antec



Long-time Extrusion Division Board Member and former chair Karen Xiao is among those who will be honored this month as an SPE Fellow. Fellows of the Society are members who have made outstanding contributions in plastics science, engineering, or management.

Candidates for the Fellows honor must be sponsored by an SPE Division or Special Interest Group. The SPE Fellows Election Committee considers eligible candidates on the basis of a personal history as well as written sponsorships from two SPE members. Only 321 members, counting the newest inductees, have been elected Fellows since the honor was established in 1984.

Karen is currently the Extrusion Technology Leader with Celgard, LLC responsible for product and process development and improvement in microporous membrane applications. Prior to this, she was the R&D director for an equipment manufacturing company responsible for the design and development of multilayer blown film dies and screws. Dr. Xiao currently serves on the board of the directors of the Extrusion Division of SPE; she was Extrusion Division Chair for 2014-2015. Karen received her Bachelor's degree in Chemical Engineering from the University of Toronto, and her Master's and PhD from the University of Waterloo in Ontario, Canada.

[Click here](#) for the full list of newly honored SPE Fellows.

Extrusion Division Board of Directors

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