

**67th Annual Technical Conference  
of the Society of Plastics  
Engineers 2009**

**(ANTEC 2009)**

**Chicago, Illinois, USA  
22 – 24 June 2009**

**Volume 1 of 5**

**ISBN: 978-1-61567-327-8**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2009) by the Society of Plastics Engineers  
All rights reserved.

Printed by Curran Associates, Inc. (2009)

For permission requests, please contact the Society of Plastics Engineers  
at the address below.

Society of Plastics Engineers  
14 Fairfield Drive  
P. O. Box 403  
Brookfield, CT 06804-0403 USA

Phone: (203) 775-0471  
Fax: (203) 775-8490

[info@4spe.org](mailto:info@4spe.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## Volume 1

### **SIG013- APPLIED RHEOLOGY** **RHEOLOGY-STRUCTURE RELATIONSHIPS**

<b>Anomalous Rheological Properties For Binary Blends Of Linear Polyethylene And Long-Chain Branched Polyethylene</b> .....	1
<i>Mieda, Naoya; Okamoto, Kenzo; Yamaguchi, Masayuki</i>	
<b>Rheological Properties Of Long Chain Branched Polyethylene Melts At High Shear Rate</b> .....	4
<i>Kim, Dong Hak; Son, Younggon</i>	
<b>Melt Fracture Of Linear Polyethylenes: Molecular Structure And Die Geometry Effects</b> .....	9
<i>Ansari, Mahmoud; Hatzikiriakos, Savvas; Rohlfing, David; Sukhadia, Ashish</i>	
<b>A GPC-M<sub>w</sub> Approach Of Improving Rheology-Mwd Prediction For Polypropylene</b> .....	14
<i>Cong, Rongjuan; Gillespie, David; Huang, Joe; Wang, Jian; Yau, Wallace</i>	
<b>Linear Viscoelastic Properties Of N-Hexadecane Under Oscillatory Shear Via Non-Molecular Dynamics Simulations</b> .....	19
<i>Chang, Rong-Yeu; Tseng, Huan-Chang; Wu, Jiann-Shing</i>	
<b>Rheological Characterization Of Ethylene Vinyl Acetate</b> .....	24
<i>Alothman, Othman</i>	

### **SIG028-BIOPLASTICS** **PROPERTIES OF PLA, PLA FOAM AND PLA COMPOSITE MATERIALS**

<b>Crystallinity Development In Cellular Poly(Lactic Acid) In The Presence Of Supercritical Carbon Dioxide</b> .....	31
<i>Favis, Basil; Huneault, Michel; Mihai, Mihaela</i>	
<b>Impact Of Molecular Branching On The Microcellular Foaming Of Polylactic Acid</b> .....	36
<i>Park, Chul; Wang, Jing; Zhu, Wenli</i>	
<b>Effects Of Chain Branching On The Foamability Of Polylactide</b> .....	41
<i>Park, Chul; Pop-Iliev, Remon; Randall, Jed; Wang, Jing; Zhu, Wenli</i>	
<b>Effect Of Citrate Plasticizer On The Thermal And Rheological Properties Of Polylactic Acid</b> .....	46
<i>Cardona, Elkin; Noriega, Maria; Ospina, Silvio; Sierra, Juan</i>	
<b>Corn (Sugars) Based Polymer Chemistries For The Polymer And Cosmetics Industries</b> .....	51
<i>Collins, George; East, Anthony; Feng, Xianhong; Friedhoff, Paul; Hammond, Willis; Jaffe, Michael; Ophir, Zohar</i>	

### **BLOW MOLDING-D30** **INNOVATIONS IN BLOW MOLDING**

<b>Structural Strength Of Blow Moulded PET Bottle Using Microwave Pre-Heated Preforms</b> .....	55
<i>Erbulut, Deniz; Masood, Syed; Vasa, Siddharth</i>	
<b>A Novel 3-D Blow Molding Method And Its Part Thickness Control Strategy</b> .....	60
<i>Huang, Geng-Qun; Huang, Han-Xiong</i>	
<b>Next Generation HDPE For Blow Molding Applications</b> .....	65
<i>Kapur, Mridula (Babli)</i>	

### **COMPOSITES-D39** **NANOCOMPOSITES- CLAY REINFORCEMENT I**

<b>The Effect Of Functionalization On Polymer Intercalation And Properties Of Polystyrene/Clay Nanocomposites</b> .....	70
<i>Calderon, Jorge Uribe; Kamal, Musa</i>	

<b>Processing Of PET Nanocomposites With Different Percentage Of Surfactant Using Twin Screw Extrusion Technology</b> .....	75
<i>Sontikaew, Somchoke; Tarverdi, Karnik</i>	
<b>Evaluation Of Dispersion Characteristics Of Polymer-Clay Nanocomposites By X-Ray Diffraction Measurement And Microscopy</b> .....	80
<i>Berdel, Klaus; Carmele, Dagnar; Elas, Athanassios; Klemradt, Uwe; Michaeli, Walter</i>	
<b>Extensional Flow Mixing Provides Flexural And Tensile Modulus Improvements From Untreated Nanoclay Composites</b> .....	85
<i>Frauenpreis, Carl; Hicks, Thomas; Samoylova, Tatyana; Sinani, Vladimir; Stall, Alan</i>	
<b>Stiff, Highly Damping Thermoplastic Polyurethane Nanocomposites Via Simple, Scalable Processing</b> .....	92
<i>Dunkerley, Erik; Schmidt, Daniel</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26**

### **MEMBRANES**

<b>Water And Ion Transport Through Sulfonated Styrenic Pentablock Copolymer Membranes For Reverse Osmosis Applications</b> .....	97
<i>Freeman, Benny; Geise, Geoffrey; Paul, Donald</i>	
<b>Water Vapor Transport Properties Of Shape Memory Polyurethane Nanocomposites</b> .....	102
<i>Cao, Feina; Gunes, I. Sedat; Jana, Sadhan</i>	
<b>Sulfonated Styrenic Pentablock Copolymer Membranes for High Water Transport Rate Applications</b> .....	107
<i>Bening, Robert; Dubois, Donn; Flood, John; Willis, Carl</i>	
<b>Morphology Of Sulfonated Styrenic Pentablock Copolymer Solutions And Membranes</b> .....	113
<i>Kota, Arun; Winey, Karen</i>	

### **NANOCOMPOSITES I**

<b>Thermal Conductivity Of Epoxy/Expanded Graphite Composites</b> .....	117
<i>Du, Ling; Jana, Sadhan</i>	
<b>Morphology And Properties Of Exfoliated Graphite/Thermoplastic Polyurethane Nanocomposites</b> .....	122
<i>Kim, Hyunwoo; Kim, Hyunwoo; Macosko, Christopher; Macosko, Christopher</i>	
<b>POSS/PP Nanocomposites: Characterization And Properties</b> .....	126
<i>Jana, Sadhan; Lee, Byoung Jo; Roy, Sayantan</i>	
<b>PET/Clay Nanocomposites By Melt Compounding</b> .....	131
<i>Carreau, Pierre; Ghasemi, Hesam; Kamal, Musa</i>	

### **EXTRUSION-D22**

#### **SINGLE-SCREW I**

<b>Bulk Resin Density And Plasticity For PET And LDPE</b> .....	136
<i>Derezinski, Stephen</i>	
<b>Cohesion-Driven Recirculation Of A Polymer Solids Bed In A Screw Simulator</b> .....	142
<i>Alotaibi, Abdullah; Rahim, Shahed; Thompson, Michael</i>	
<b>An Alternative Analysis Of Single-Screw Melting</b> .....	147
<i>Campbell, Gregory; Spalding, Mark</i>	
<b>An Extrusion Study: Examination Of The Improved Processing Characteristics Of A PLA Impact Modified Blend</b> .....	155
<i>Baird, Jason; Christiano, John; Morris, Barry</i>	
<b>Single Screw Extrusion Of Biobased And Biodegradable Poly (Hydroxy Butanoic Acid) Copolymers</b> .....	161
<i>Krishnaswamy, Rajendra</i>	

#### **TWIN-SCREW I**

<b>Polyamide 6-Nanocompounds Made Via In-Situ Polymerisation From Clay And Caprolactam In A Twin Screw Extruder</b> .....	167
<i>Michaeli, Walter; Rothe, Bernd</i>	

<b>3D Simulations Of A Reactive Flow In Screw Elements Of Closely-Intermeshing Twin Screw Extruders: A Scale-Up Analysis</b> .....	171
<i>Ortiz-Rodriguez, Estanislao; Tzoganakis, Costas</i>	
<b>Special Intake Elements To Overcome Feed Limitation In Co-Rotating Twin-Screw Extruders - Design Features And Experimental Results</b> .....	176
<i>Jayanth, Chetan; Padmanabhan, Babu</i>	
<b>Shear Uniformity In Co-Rotating Twin-Screw Extruder - A Geometrical Study Of Shear Rates In A Fully Filled Zone</b> .....	182
<i>Jayanth, Chetan; Padmanabhan, Babu</i>	
<b>Model-Based Inferential Sensing Of Melt Flow Rate In Compounding Operations</b> .....	187
<i>Duever, Tom; Noeei, Vahid; Pop-Iliev, Remon; Tzoganakis, Costas; Zhu, Shihan</i>	

## **SIG002-FAILURE ANALYSIS AND PREVENTION**

### **PLASTIC FAILURE ANALYSIS**

<b>Using DSC To Determine The Quality Of PVC</b> .....	192
<i>Cruz, Javier; Gramann, Paul; Ralston, Brian</i>	
<b>Environmental Stress Cracking Of CPVC Pipe By Mixed Glycols</b> .....	198
<i>Hauser, Ray</i>	
<b>Blistering Of Polyester Products</b> .....	203
<i>Spoormaker, Jan</i>	
<b>Failure Of Human Biopolymers</b> .....	208
<i>Ezrin, Myer</i>	

## **FLEXIBLE PACKAGING-D44**

### **FLEXIBLE PACKAGING- BARRIER FILM**

<b>Statistical Model Predicting Water Vapor Transmission Rates Of High-Barrier-Coated Papers</b> .....	220
<i>Kuusipalo, Jurkka; Lahtinen, Kimmo</i>	
<b>Influence Of Moisture On The Mechanical And Barrier Properties Of Multilayer Aromatic Polyamide Nanocomposite Films</b> .....	225
<i>Ratto, JoAnn; Thellen, Christopher</i>	
<b>The Interplay Between Polymer Polydispersity And Film Gauge In HDPE Barrier Films: How Polydispersity Controls The Gauge Dependence Of Film Barrier Properties</b> .....	231
<i>Borke, Jeff; Haley, Jeffrey</i>	
<b>Development Of Antimicrobial PLA Nanocomposites With Silver Containing Layered Nanoclays For Packaging And Coating Applications</b> .....	236
<i>Busolo, Maria; Lagaron, Jose</i>	
<b>Metallizer Conditions Impact On Lamination Bond Strength</b> .....	240
<i>Mount, Eldridge</i>	

## **INJECTION MOLDING- D23**

### **COMPUTER SIMULATION I**

<b>Development Of Fast 3D Filling Analysis Technology In Injection Molding</b> .....	244
<i>Moon, Jongsin; Ryim, Won-Gil</i>	
<b>A Three-Dimensional CAE Molding Of Microchip Encapsulation</b> .....	247
<i>Chen, Chun-Yi; Chiu, Hsien-Sen; Chou, Ya-Yuen; Yeh, Han-Po; Yu, Chau-Kai</i>	
<b>Simulations And Verifications Of True 3D Optical Parts By Injection Molding Process</b> .....	253
<i>Chang, Yuan-Jung; Chiu, Hsien-Sen; Lai, Huai En; Wang, Pei Jen; Yang, Wen-Hsien; Yu, Chau-Kai</i>	
<b>Challenge Stable Molding Processes, With Confidence!</b> .....	259
<i>Thornagel, Marco</i>	
<b>Benefits Of An Energy Usage Indicator For Injection Molding Simulation</b> .....	264
<i>Brincat, Paul; Speight, Russell</i>	
<b>Melt Memory And Core Deflection</b> .....	269
<i>Chang, Yuan-Jung; Chen, Chun-Yi; Chou, Ya-Yuen; Giacomini, Alan</i>	

## **MULTI-CAVITY MOLD BALANCING**

<b>Utilizing Advanced Simulation And Melt Management Technologies To Redefine The Industry Standard</b> .....	274
<i>Bowersox, Eric</i>	
<b>Development Of Melt-Modulation Technology For Enhanced Injection Molding</b> .....	281
<i>Coulter, John</i>	
<b>Numerical Simulation Of Enhanced Melt Modulation Applied To Injection Molding</b> .....	286
<i>Coulter, John; Tantrapiwat, Akapot</i>	
<b>Complex Thermal Hot-Runner Balancing – A Method To Optimize Filling Pattern And Product Quality</b> .....	291
<i>Manek, Kaushik; Petzold, Florian; Thornagel, Marco</i>	

## **SIG012- JOINING OF PLASTICS AND COMPOSITES ADHESIVES AND ULTRASONIC AND VIBRATION WELDING**

<b>Instrumental Investigations Of Physical Gumminess Of A Medical Grade Epoxy-Amine Adhesive After Curing</b> .....	296
<i>Guo, Xiaoping</i>	
<b>Functionalized Polyolefins That Deliver Room Temperature Adhesion To Polyurethanes</b> .....	301
<i>Ansems, Patricia; Batra, Ashish; Mergenhausen, Laura; Rego, Manu; Weaver, Laura</i>	
<b>Weldability Of Polylactic Acid Sheets And Films</b> .....	306
<i>Grewell, David; Haubrich, Kyle; Srinivasan, Gowrishankar; Vogel, Julius</i>	
<b>Experiments In Vibration Welding Of PC And PMMA To Metallization Coated PC</b> .....	311
<i>Benatar, Avraham; Mokhtarzadeh, Abbass; Wu, Chung</i>	
<b>Vibration Welding Polypropylene – Effect Of MFI On Weld Strength And Microstructure</b> .....	317
<i>Bates, Phil; Kontopoulou, Marianna; Powell, Andrew</i>	

## **MARKETING AND MANAGEMENT- D37 MARKETING AND MANAGEMENT IN TODAY’S COMPETITIVE ENVIRONMENT**

<b>An Economic Overview Of Environmental Alternatives As Viewed By A Plastics Industry Economist</b> .....	323
<i>Jones, Roger</i>	
<b>The Business Case For Sustainability</b> .....	329
<i>Baumann, Margaret</i>	
<b>Looking Beyond The Invention Of New Technology Or A New Product</b> .....	335
<i>Peregrim, Jack</i>	

## **POLYMER ANALYSIS- D33 BIO AND SHAPED FIBERS**

<b>In-Situ Reinforced Thermoset Composites Using Crystallizable Solvents</b> .....	337
<i>Lesser, Alan; Yordem, Onur Sinan</i>	
<b>Modeling Three-Dimensional Viscoelastic Flow Around A Closely-Spaced Linear Periodic Array Of Cylinders</b> .....	342
<i>Adrian, David; Armstrong, Robert; Phillips, Scott</i>	

## **NANOTECHNOLOGY**

<b>Creating Polymer-Carbon Nanotubes Nanocomposites By Cryomilling</b> .....	349
<i>Narh, Kwabena</i>	
<b>Polymer Dynamics In Single-Walled Carbon Nanotube Composites</b> .....	354
<i>Ford, Warren; Grady, Brian; Paul, Abhijit</i>	
<b>Recent Improvements In Mechanical Properties Measurements At The Nanoscale</b> .....	358
<i>Moeller, Gunter</i>	

## **PRODUCT DESIGN AND DEVELOPMENT-D41**

### **PRODUCT DESIGN AND DEVELOPMENT**

<b>The Acoustic Behavior Of Thermoplastic Tribological Pairings</b> .....	364
<i>Feulner, Robert; Hülder, Gerrit; Kobes, Michael; Krippner, Sebastian; Osswald, Tim</i>	
<b>Simple Optimizing Of Plastic Products: The Design Stage</b> .....	369
<i>Spoormaker, Jan</i>	
<b>Safety Factors In Plastic Parts Using Linear Analysis.</b> .....	374
<i>Bohórquez, Joel; Fuenmayor, Jesús</i>	
<b>Novel Design Methodology For Plastic Gears</b> .....	378
<i>McNamara, Thomas</i>	

## **THERMOPLASTIC MATERIALS AND FOAMS-D29**

### **ADVANCES IN FOAMING TECHNOLOGY**

<b>A New Electromagnetic Dynamic Microcellular Foaming Technology For PP/HDPE Blends</b> .....	385
<i>Wang, Mingyi; Wen, Shengping; Zhang, Ping; Zhou, Nanqiao; Zhu, Wenli</i>	
<b>A Novel Batch Foaming Visualization System With Extensional Stress-Inducing Ability</b> .....	392
<i>Chu, Raymond; Leung, Siu Ning; Park, Chul; Wong, Anson; Zong, Jin Ho</i>	
<b>Thin Nanocellular Plastic Sheet With Patterned Foaming</b> .....	397
<i>Jinno, Fumio; Kojima, Junya; Nishikori, Yoshiharu; Tachibana, Hiroyasu; Takada, Tomoyuki</i>	
<b>Photo-Induced Foaming Of A Polymer With CO2 By Adding UV Curing Monomer</b> .....	401
<i>Kajii, Akiyoshi; Okumura, Shuhei; Taki, Kentaro</i>	
<b>Polymer Foams Produced Under A Temperature Gradient</b> .....	408
<i>Barzegari, Mohamad Reza; Lepage, Sophie; Rodrigue, Denis; Yao, Jiaolian</i>	

## **ADVANCES IN POLYOLEFIN TECHNOLOGY**

<b>A One-Step Extrusion Process For Preparing Polyolefin/Clay Nanocomposites Using Sodium Montmorillonite</b> .....	413
<i>Ports, Benjamin; Weiss, Robert</i>	
<b>Adhesion Of Propylene-Ethylene Copolymers To Polyolefin's</b> .....	418
<i>Baer, Eric; Hiltner, Anne; Kamdar, Akshay; Lin, Yijian; Poon, Ben</i>	
<b>Miscibility Of Statistical And Block Ethylene-Octene Copolymer Blends</b> .....	423
<i>Baer, Eric; Hiltner, Anne; Khariwala, Devang; Marchand, Gary; Taha, Angela; Wang, Haopeng</i>	
<b>Effect of Tie-Layer Thickness on the Adhesion of Ethylene Based Copolymers to Polyolefins</b> .....	428
<i>Ayyer, Ravi; Baer, Eric; Chen, Hongyu; Dias, Peter; Hiltner, Anne; Kamdar, Akshay; Lin, Yijian; Poon, Ben</i>	
<b>Nanolayering As An Enabling Technology For Studying Fractionated Crystallization Of Polypropylene</b> .....	433
<i>Baer, Eric; Hiltner, Anne; Langhe, Deepak</i>	

## **VINYL PLASTICS JOINT WITH POLYMER MODIFIERS AND ADDITIVES**

### **NANO ADDITIVES IN VINYL AND THERMOPLASTICS**

<b>A New Class Of PVC Magnetic Nanocomposite Prepared From Plastisols</b> .....	438
<i>Betancourt-Galindo, Rebeca; Castellanos, Fabiola; Rodríguez-Fernández, Oliverio; Yáñez-Flores, Isaura</i>	
<b>Effect of Nano-Calcium Carbonate on Impact and Accelerated Weatherability of Rigid PVC/Acrylic Impact Modifier</b> .....	442
<i>Chetanachan, Wilaiporn; Chomcheuy, Wanya; Sutthitavil, Wannee</i>	
<b>A Comparison Of Layered Nanofillers In Flexible PVC</b> .....	448
<i>Dorairaju, Gowri; Mahajan, Vaibhav; Schmidt, Daniel; Shah, Prashant</i>	
<b>Conventional Processing And Rheology Of Nanocomposites ABS/Montmorillonite</b> .....	453
<i>Córdoba, Lucina; Córdoba, Lucina; Ibarra, Rigoberto; Ibarra, Rigoberto; Sanchez, Saul; Sanchez, Saul; Solis, Francisco; Solis, Francisco</i>	
<b>Elastomer Particle Morphology In Rubber Toughened Amorphous Polyamide Nanocomposites</b> .....	460
<i>Paul, Donald; Paul, Donald; Yoo, Youngjae; Yoo, Youngjae</i>	

**SIG013-APPLIED RHEOLOGY**  
**RHEOLOGY OF COMPOSITES AND RHEOLOGY-PROCESSING**  
**RELATIONSHIPS**

<b>How Can Polymer Rheology Be Useful To Guide Processing</b> .....	464
<i>Wang, Shi-Qing</i>	
<b>Effect Of Blowing Agent On The Flow Properties In Extrusion And Injection Molding</b> .....	466
<i>Chen, Nan; Kuboki, Takashi; Li, Yao Gai; Park, Chul; Wang, Jing</i>	
<b>Measurement On Viscosity Of Polystyrene Melts Dissolved With Supercritical Nitrogen Fluid During Microcellular Injection Molding</b> .....	472
<i>Chen, Shia-Chung; Hsu, Cheng Li; Hsu, Ping; Lin, Yu</i>	
<b>Modification Of The Flow Behavior Of Polypropylene Composite Using LMW &amp; HMW Flow Promoters</b> .....	477
<i>Baruah, Abhijit; Dutta, Santanu; Singh, Neelam; Singh, Priyanka; Vasudeo, Yatish</i>	
<b>Shear And Extensional Rheology Of Carbon Nanofiber / Polystyrene Melt Composites</b> .....	483
<i>Bechtel, Stephen; Kagarise, Christopher; Koelling, Kurt; Mahboob, Monon; Miyazono, Koki</i>	
<b>Study On The Shear Viscosity Of HDPE-Wood Composites/Supercritical CO2 Solution</b> .....	490
<i>Huang, Han-Xiong; Park, Chul; Rizvi, Ghaus; Wang, Jing; Zhang, Jingjing</i>	
<b>Relationship Between Structure And Rheological Properties In Polymer/Layered Silicate Nanocomposites</b> .....	495
<i>Bousmina, Mosto; Eslami, Hassan; Grmela, Miroslav</i>	

**SIG028-BIOPLASTICS**  
**SYNTHESIS AND PROPERTIES OF THERMOPLASTIC STARCH AND OTHER**  
**BIOPLASTICS**

<b>Effect Of Nano Fillers In Hybrid Biodegradable Thermoplastic Cornstarch Materials</b> .....	500
<i>Kim, Bok; Kim, Spencer</i>	
<b>Hydrophobic-Modified Cellulose Fibers And Cellulose Microfi-Bril As Reinforcements For Biocomposites</b> .....	504
<i>Chanklin, Wilailak; Li, Shuzhap; Xiao, Huining</i>	
<b>Synthesis, Characterization, And Degradation Of Bioplastics From Renewable Polyfunctional Monomers</b> .....	508
<i>Rowe, Mathew; Walters, Keisha</i>	
<b>Adhesion Of Biodegradable Plastics With Bone: A Comparative Study Using Commercially Available Screw / Plate System And Biodegradable Polymer Melt Adhesives</b> .....	513
<i>McCarthy, Stephen; Shrivastava, Anshuman; Weinzweig, Jeffrey</i>	
<b>Characterization Of Biodegradable Acrylic Acid Grafted Poly(Caprolactone)/Chitosan Blends</b> .....	518
<i>Wang, Yeh; Yang, Jiang</i>	
<b>Hydrogel Multistructure Swelling Kinetics By Light Polarized Microscopy</b> .....	524
<i>Bautista, Fernando; Hernandez, Elena; Jimenez, Rosa; Reyes, Ignacio; Velazquez, Eduardo</i>	

**COMPOSITES-D39**  
**NANOCOMPOSITES- CARBON NANOTUBES**

<b>Carbon Nanotube Mat Biocomposite For Enzymatic Glucose/O<sub>2</sub> Biofuel Cell</b> .....	530
<i>Hahn, H. Thomas; Lashmore, David; Ryu, Jongeun; Saotome, Tsuyoshi</i>	
<b>Increased Electrical Conductivity From Reduced Carbon Nanotube Concentrations Using Extensional Flow Mixing</b> .....	535
<i>Frauenpreis, Carl; Hicks, Thomas; Samoylova, Tatyana; Sinani, Vladimir; Stall, Alan</i>	
<b>The Manufacture Of Carbon Nanotube Composite Materials Using Supercritical Carbon Dioxide</b> .....	542
<i>Baird, Donald; Bortner, Michael; Chen, Chen</i>	
<b>Polymer-Graphite And Polymer-Carbon Nanotube Nanocomposites With Excellent Dispersion And Major Property Enhancements: Processing Via Solid-State Shear Pulverization</b> .....	547
<i>Brunner, Philip; Masuda, Jun'ichi; Torkelson, John; Wakabayashi, Katsuyuki</i>	
<b>Effect Of Crystalline Structure On Morphology And Properties Of MWCNT Nanocomposites</b> .....	552
<i>Abbasi, Samaneh; Carreau, Pierre; Derdouri, Abdelsalim</i>	
<b>Interphase CNT Transfer Using Laminated Polymer Sheets</b> .....	557
<i>Okamoto, Kenzo; Umishita, Kazunori; Yamaguchi, Masayuki; Yoon, Howon</i>	

<b>Liquid Sensing Properties Of Fibers Prepared By Melt Spinning From Poly(Lactic Acid) Containing Multiwalled Carbon Nanotubes</b> .....	561
<i>Andres, Timo; Brünig, Harald; Fischer, Dieter; Häussler, Liane; Kobashi, Kazufumi; Pötschke, Petra; Villmow, Tobias</i>	

## **GLASS AND CARBON FIBER COMPOSITES**

<b>Fiber Jamming And Fiber-Matrix Separation During Knitline Formation On Fiber Reinforced Composites</b> .....	567
<i>Londono-Hurtado, Alejandro; Marks, Lena; Osswald, Tim; Ziegmann, Gerhard</i>	
<b>An Estimate Of Long Service Term For GRP Products</b> .....	573
<i>Makarov, Valeriy; Sinelnikova, Rakhil</i>	
<b>Damage Progression And Degradation Analysis Of Polymer Matrix Composite Materials By Using Acoustic Emission Technique</b> .....	576
<i>Cauich-Cupul, Javier; Rios-Soberanis, Carlos; Rodriguez-Laviada, Jose</i>	
<b>Dual AE Transducer Methodology For Fracture Process Monitoring In Short Fiber Reinforced Composites</b> .....	580
<i>Fujita, Tohru; Hamada, Hiroyuki; Morii, Tohru</i>	
<b>Long Glass Fiber Orientation In Thermoplastic Composites Using A Model That Accounts For The Flexibility Of The Fibers</b> .....	585
<i>Argawal, Neeraj; Baird, Donald; Eberle, Aaron; Ortman, Kevin; Velez, Gregorio; Wapperom, Peter</i>	

## **ELECTRICAL AND ELECTRONIC-D24 MATERIALS AND APPLICATIONS**

<b>Conjugated Polymer Photovoltaic Solar Cells - Manufacturing, Troubleshooting And Morphology</b> .....	590
<i>Ahmed, Irfan; James, Grant; Khazaal, Abdullah; Osswald, Tim; Petzold, Sean; Wang, Chuan</i>	
<b>Time Dependent Piezoresistive Behavior Of Polyvinylidene Fluoride/Carbon Nanotubes Conductive Composite</b> .....	597
<i>Chung, Jaycee; D'Souza, Nandika; Vidhate, Shailesh</i>	
<b>Effect Of Wet/Dry Cycles On The Properties Of Polymer Electrolyte Membranes</b> .....	601
<i>Baird, Donald; Huang, Jianhua; McGrath, James</i>	
<b>Effects Of Solvent-Casting Conditions On The Morphology And Properties Of Highly Fluorinated Poly (Arylene Ether Sulfone) Copolymer Films For Polymer Electrolyte Membranes</b> .....	606
<i>Baird, Donald; Heinzer, Michael; Lane, Ozma; Lee, Myoungbae; McGrath, James; VanHouten, Rachel</i>	
<b>Polyphenylene Ether Macromonomers. II. Property Enhancements In Cyanate Ester Resins</b> .....	611
<i>Peters, Edward</i>	
<b>Rising To The Halogen Challenge In Flame-Retardant Engineering Plastics</b> .....	615
<i>Hassink, William; Kozielski, Gary</i>	

## **Volume 2**

<b>Effects of Molding Parameters Control on Fiber Orientation and Distribution Leading to High Electrical Conductivities of Injection Molded Bipolar Plates</b> .....	619
<i>Chen, Shia-Chung; Huang, J.S.; Lee, P.H.; Lin, Y.H.; Shih, Ming-Yi; Wang, S.H.</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26 ENVIRONMENTAL MATERIALS**

<b>Photodegradation Of Alpha-Nucleated Polypropylene</b> .....	624
<i>Cermak, Roman; Navratilova, Jana; Vasek, Leos</i>	
<b>In Situ Production Of Slightly Branched Poly(Ethylene Terephthalate) By Solid-State Shear Pulverization: A Potential Solution To Improved Recyclability And Sustainability</b> .....	629
<i>Pierre, Cynthia; Torkelson, John</i>	
<b>Study Of Ultrasonic Wave Effect On Polypropylene In Solution</b> .....	633
<i>Martínez, Juan</i>	
<b>Novel "Eco-FR" Styrenic Polymers</b> .....	636
<i>Agarwal, Sushant; Al-Mulla, Adam; Gaggar, Satish; Gupta, Rakesh; Liu, Tze</i>	

<b>Devulcanization Of Recycled Tire Rubber Crumb With Supercritical CO<sub>2</sub>: Curing Behavior, Mechanical Properties And Degree Of Devulcanization</b> .....	640
<i>Meysami, Mohammad; Tzoganakis, Costas</i>	

## **MATERIALS CHARACTERIZATION**

<b>Characterization Of Properties Of WPC With Glass Fibre Reinforcements</b> .....	645
<i>Rizvi, Ghaus; Semeralul, Hamid</i>	
<b>Melt Rheology And X-Ray Analysis Of Gradient Copolymers: Sequence Design For Processibility</b> .....	649
<i>Burghardt, Wesley; Ellison, Christopher; Kim, Soyoung; Mok, Michelle; Torkelson, John</i>	
<b>Birefringence In Gas-Assisted Injection Moldings: Contribution Of Thermal Birefringence</b> .....	654
<i>Carrillo, Antonio; Isayev, Avraam</i>	
<b>Silica Aerogels Crosslinked By Flexible Polyurethanes: Effects Of Silane Precursors On Structure-Property Relationships</b> .....	659
<i>Jana, Sadhan; Meador, Mary Ann; Randall, Jason</i>	

## **SIG002-FAILURE ANALYSIS AND PREVENTION**

### **FAILURE ANALYSIS OF PLASTIC PARTS AND OPEN PANEL SESSION**

<b>Fracture Of Plastic Parts In Water Service</b> .....	664
<i>Ezrin, Myer</i>	

## **FUNDAMENTALS FORUM AND FELLOWS TASK FORCE**

### **INNOVATION AND INVENTION IN POLYMERS AND POLYMER PROCESSING**

<b>Breakthrough Inventions In Polymer Extrusion</b> .....	668
<i>Andersen, Paul; Shih, Chi-Kai; Spalding, Mark; Wetzel, Mark; Womer, Timothy</i>	
<b>Instrumentation And Controls Inventions And Innovations Impacting The Polymer Processing Industry</b> .....	678
<i>Wetzel, Mark</i>	
<b>Breakthrough Inventions And Innovations In Die Design For Polymer Processing</b> .....	684
<i>Dooley, Joseph; Oliver, Gary; Xiao, Karen</i>	

## **INJECTION MOLDING-D23**

### **MULTI-COMPONENT & COINJECTION**

<b>Development Of Alternative Process Technology For Multi-Component Injection Molding</b> .....	691
<i>Kleeschulte, Rainer; Potente, Helmut</i>	
<b>Simulations And Experimental Studies Of Interface Distribution And Birefringence In The Sequential Co-Injection Molding Of Amorphous Polymers</b> .....	699
<i>Isayev, Avraam; Kim, Nam Hyung</i>	
<b>A Study On Material Distribution And Mechanical Properties In Co-Injection Molding</b> .....	704
<i>Castro, Jose; Miller, Robert; Mulyana, Rachmat; Srithep, Yottha; Villarreal, Maria</i>	
<b>Multi-Component Technique: Hybrid Primary Forming Of Plastics Parts With Electrically Conductive Tracks</b> .....	709
<i>Michaeli, Walter; Neuf, Andreas</i>	
<b>The Investigation Of Warpage Behavior By Considering The Process-Induced Property Variation In Sequential Overmolding</b> .....	714
<i>Chiu, Hsien-Sen; Chiu, Yan-Chen; Lin, Chih-Jen; Liu, Cheng-Yung; Wang, Hung-Chou; Wei, Jing</i>	
<b>Sandwich Structure Of Reinforced Material Prepared By Injection-Press Molding</b> .....	718
<i>Hamada, Hiroyuki; Segawa, Osamu</i>	
<b>New Functions Of Thermoplastic Elastomer Based Sandwich Injection Moldings</b> .....	723
<i>Goto, Akihiro; Hamada, Hiroyuki; Leong, Yew Wei; Nishi, Ichiro</i>	

## **AUTOMATION AND OPTICAL COMBINED SESSION**

<b>An Assessment On Optical Quality Of Molded Backlite Compared To Thermoformed Backlite</b> .....	727
<i>Li, Chengtao</i>	
<b>Quality Analysis Of Injection-Compression Moulded Optical Lenses</b> .....	732
<i>Hessner, Sebastian; Klaiber, Fritz; Michaeli, Walter</i>	
<b>Effects Of Aperture Structure On Residual Stress Of Precision Injection Molded Microlens Arrays</b> .....	737
<i>Lee, W.B.; To, Suet; Weng, Can</i>	

## **SIG012-JOINING OF PLASTICS AND COMPOSITES**

<b>Effect Of Molecular Structure On Heat Seal Properties For High Density Polyethylene Film</b> .....	741
<i>Katsuno, Keiji; Koda, Tomonori; Miyata, Ken; Murasawa, Go; Nishioka, Akihiro; Ozama, Taku</i>	
<b>In-Line Process Optimization Of Hot-Plate Welding Using An Innovative Actuation Concept</b> .....	745
<i>Goevert, Stefan; Hoffschlag, Reinhild; Potente, Helmut; Schnieders, Joachim; Schoepner, Volker</i>	
<b>Influence Of Processing Parameters On Microstructure And Properties Of A Polyetherimide Joined By Fricriveting; Investigation Of Rotational Speed</b> .....	750
<i>Dos Santos, Jorge; Filho, Sergio Amancio</i>	
<b>Prediction Of Residual Stress Formation In Polycarbonate Welded Samples Using Finite Element Analysis</b> .....	757
<i>Benatar, Avraham; Sojiphan, Kittichai</i>	
<b>Experimental Study Of Hot Plate Welding Of Polycarbonate Using Displacement Versus Pressure Control</b> .....	762
<i>Benatar, Avraham; Mokhtarzadeh, Abbass</i>	
<b>Evaluation of Impulse Heat Staking Method</b> .....	767
<i>Benatar, Avraham; Mokhtarzadeh, Abbass</i>	

## **MARKETING AND MANAGEMENT-D37** **INNOVATION IN TODAY'S COMPETITIVE ENVIRONMENT**

<b>The Building Blocks Of Innovation: Delivering Competitive Advantage Through Creative People</b> .....	771
<i>Bachman, Bonnie; Bozzone, Stephen</i>	
<b>Modeling The Future: Managing The Tools That Enable Innovation</b> .....	774
<i>Spanoudis, Steve</i>	
<b>The Map Is Not The Territory: An Exploration of Radical Innovation</b> .....	778
<i>Bachman, Bonnie</i>	
<b>Designnovation™: The Systematic Application Of Innovation Within A Design For Six Sigma (Dfss) Structure</b> .....	781
<i>Kiemele, Mark</i>	
<b>Lean Six Sigma And Innovation Can Synergistically Fit Within Product Development</b> .....	786
<i>Fowler, Norman E.</i>	
<b>Voice Of The Customer: Its Impact On Innovation And Commercial Success</b> .....	792
<i>Mayfield, Philip</i>	

## **POLYMER ANALYSIS-D33**

### **FILM**

<b>Gradient Multilayer Films By Forced Assembly Coextrusion</b> .....	796
<i>Baer, Eric; Hiltner, Anne; Ponting, Michael</i>	
<b>Effects Of Free Surfaces And Substrate Interactions On The Distributions Of Glass Transition Temperature In Nanoconfined Polymers</b> .....	801
<i>Deng, Hui; Torkelson, John</i>	
<b>Relation Between Bubble Stability In The Film Blowing Process, MFI And Relaxation Modulus</b> .....	805
<i>Bonilla Ríos, Jaime; Palacios Aguilar, Erika; Rodríguez, Leonardo Cortés</i>	
<b>Film Insert Molding Based On Polyoxymethylene And Poly(Lactic Acid): Morphological Characteristics And Interfacial Adhesion Properties</b> .....	808
<i>Hamada, Hiroyuki; Leong, Yew Wei; Nagai, Satoshi; Okamura, Akira; Yamada, Kazushi</i>	

## **THERMOFORMING-D25**

### **THERMOFORMING TECHNOLOGY**

<b>Plug Materials For Thermoforming: The Effects Of Non-Isothermal Plug Contact .....</b>	<b>812</b>
<i>Martin, Peter</i>	
<b>The Dependence Of Wall Thickness On Changes In Material And Process Conditions In Plug Assist Thermoforming .....</b>	<b>817</b>
<i>Fritz, Hans-Gerhard; Härter, Christina; Kouba, Karel; Tessier, Noel</i>	
<b>Investigation Into The Effect Of Extrusion And Thermoforming Parameters On The Properties Of Polypropylene Containers .....</b>	<b>822</b>
<i>Harkin-Jones, Eileen; Martin, Peter; McConville, Eileen</i>	
<b>Polypropylene - Cup Conversion From Injection Molding To Thermoforming .....</b>	<b>829</b>
<i>De Cleir, Piaras</i>	
<b>Ultrasonic Sealing And Cutting In Thermoforming .....</b>	<b>834</b>
<i>Engelmann, Sven</i>	
<b>Effect Of Polydimethylsiloxane On Copolymer-Polypropylene Foams In Batch And Extrusion Processing .....</b>	<b>837</b>
<i>Wu, Qingfeng</i>	
<b>Dynamics Of Plug- Assisted Thermoforming Processes .....</b>	<b>844</b>
<i>Berdyshev, Boris; Hosseini, Hossein; Kromskaya, Ekaterina</i>	

## **SIG006-THERMOPLASTIC ELASTOMERS**

### **THERMOPLASTIC ELASTOMERS**

<b>Preparation Of Microcellular Poly(Ethylene-Co-Octene) Rubber Foam Using Supercritical CO<sub>2</sub> Technology .....</b>	<b>849</b>
<i>Naguib, Hani; Park, Chul; Zhai, Wentao; Zhu, Wenli</i>	
<b>Highly Oil Extended Olefin Block Copolymers .....</b>	<b>855</b>
<i>Batra, Ashish; Jones, Jacob; Liang, Wenbin; Madenjian, Lisa; Marchand, Gary; Moldovan, Dan</i>	
<b>Complex Melting Behavior Of A Poly(Ether-Block-Amide) Copolymer Induced By Thermal Annealing .....</b>	<b>860</b>
<i>Guo, Xiaoping</i>	
<b>Soft Thermoplastic Polyurethanes .....</b>	<b>866</b>
<i>Meltzer, Donald</i>	
<b>Thermo-Mechanical Studies Of Double Network Elastomeric System .....</b>	<b>868</b>
<i>Lesser, Alan; Singh, Naveen</i>	
<b>Developments On Propylene-Ethylene Copolymers Blends With Styrene Block Copolymers .....</b>	<b>874</b>
<i>Bulhões, Carolina; Domingues, Nei</i>	

## **THERMOPLASTIC MATERIALS AND FOAMS-D29**

### **POLYOLEFINS AND ENGINEERING PLASTICS**

<b>Structure-Property Relationships Of Polyolefin Based Elastic Fibers .....</b>	<b>878</b>
<i>Chiu, Debbie; Hu, Yushan; Rego, Manu</i>	
<b>Thermal Conductivity Of Polymers Filled With Non-Isometric Fillers: A Process Dependent, Anisotropic Property .....</b>	<b>883</b>
<i>Brocka, Zaneta; Ehrenstein, Gottfried; Heinle, Christoph; Hülder, Gerrit; Osswald, Tim</i>	
<b>Scratch-Resistant, Transparent Polycarbonates With Eco-Compliant Flame Properties .....</b>	<b>890</b>
<i>Lens, Jan Pleun; Pai-Paranjape, Vandita; Shen, Dake; Van Zyl, Andre</i>	
<b>Color Stability Of Transparent High Heat Polycarbonate In Automobile Lens Applications .....</b>	<b>897</b>
<i>Di, Jianbo; Leenders, Chiel; Loehr, Todd; Mediratta, Gaurav; Siripurapu, Srinivas; Volkers, Andre</i>	
<b>Polycarbonate Hydrolysis .....</b>	<b>903</b>
<i>Gallucci, Robert</i>	
<b>Abrasion Resistance Measurement Of Thermoplastic Olefins .....</b>	<b>908</b>
<i>Browning, Robert; Fujiwara, Mikihiro; Gasbarro, Anthony; Ito, Motoko; Jiang, Han; Song, Yishu; Sue, Hung-Jue</i>	

## **ADVANCES IN MATERIALS FOR FOAMING**

<b>Thermally-Expandable Microcapsule For Polymer Foaming - Its Expandability And Viscoelasticity .....</b>	<b>914</b>
<i>Kawaguchi, Yasuhiro; Ohshima, Masahiro</i>	

<b>Challenging The Paradigm Of Microcellular Foams: Mechanical Properties Of Low-Density Cyclo-Olefin Copolymer Foams</b> .....	920
<i>Bureau, Martin; Gendron, Richard</i>	
<b>Comparison Of Extrusion Foaming Behavior Of Random And Block Polypropylene Copolymers</b> .....	925
<i>Jung, Peter; Lee, Eung Kee; Lee, Kyungmin; Naguib, Hani; Park, Chul</i>	
<b>Foaming Behavior Of Melt Blended Polylactide-Chitin Composites</b> .....	932
<i>Cochrane, Brendan; Naguib, Hani; Rizvi, Reza</i>	
<b>Foaming Of LDPE/Nanosilica Nanocomposites: Improving The Cellular Structure And Mechanical Properties</b> .....	939
<i>Antonio de Saja Saez, Jose; Arevalo, Juan; García de Acilu y Laa, Paz; Rodriguez-Perez, Miguel Angel; Saiz-Arroyo, Cristina; Solorzano, Esuebio</i>	
<b>Influence Of The Injection Moulding Processing Parameters To The Mechanical Properties Of Microcellular Foamed Polycarbonate</b> .....	944
<i>Bledzki, Andrzej; Kirschling, Hendrik; Rohleder, Martin</i>	
<b>Influence of the Microstructure on the Foaming Behavior of an Immiscible Blend</b> .....	950
<i>Altstädt, Volker; Bangaru Sampath, D.S.; Gutmann, Peter; Müller, Axel H.E.; Ruckdaschel, Holger; Schmalz, Holger</i>	

## **VINYL PLASTICS-D27**

### **ADVANCES IN VINYL**

<b>Smoke Suppression Of PVC By Metal-Exchanged Clay And Zeolite Additives</b> .....	955
<i>Grinnell, Cole; Pike, Robert; Starnes, Jr., William; Vinh, Long; Zestos, Alex</i>	
<b>Continuous Extrusion Production Of Microcellular Rigid PVC</b> .....	961
<i>Diaz, Carlos; Matuana, Laurent</i>	
<b>Novel Single Screw For RPVC Powder That Compounds</b> .....	969
<i>Lorenc, David; Luker, Keith</i>	
<b>Exploring The Preparation Of Poly(1,2-Dichloroethylene) Through Ring-Opening Metathesis Polymerization (Romp) And Chlorination</b> .....	974
<i>Ge, Xianlong; Starnes, William</i>	
<b>Influence Of Luminescent Compound Derivate Of Aldol Condensation In PVC Degradation</b> .....	979
<i>Arias-Marin, Eduardo; Benavides-Cantú, Roberto; Gonzalez-Gonzalez, Virgilio; Moggio, Ivana; Vazquez-Rodriguez, Sofia</i>	

## **SIG010- ALLOYS AND BLENDS**

### **DESIGN, PERFORMANCE AND CHARACTERIZATION OF ADVANCED ENGINEERING POLYMER BLENDS**

<b>Flame Retardancy Of Polycarbonate-PDMS Copolymer Compositions</b> .....	982
<i>Cojocariu, Cristina; Maruvada, Krishna; Rosenquist, Niles</i>	
<b>Flame Retardant PC/ABS Blends For Novel Low Gloss Medical Applications</b> .....	989
<i>Agarwal, Parminder; Kulkarni, Amit; Loehr, Todd; MK, Pooja; Parthipan, B.</i>	
<b>Low Smoke Polyphenylene Ether Blends</b> .....	994
<i>Namjoshi, Abhijit; Sangaj, Nivedita</i>	
<b>New Low Gloss Polycarbonate Blends For Automotive Applications</b> .....	1002
<i>Rogunova, Marina</i>	
<b>Improved Weathering Performance In Flame Resistant Pc/Abs Blends Via Addition Of Tailored Silicone Copolymers</b> .....	1007
<i>Loehr, Todd</i>	
<b>Blends Of INFUSE Olefin Block Copolymers For Adhesion To Polar Substrates</b> .....	1012
<i>Batra, Ashish; Lakrout, Hamed; Madenjian, Lisa; Rego, Manu; Weaver, Laura</i>	

## **SIG013-APPLIED RHEOLOGY**

### **NOVEL RHEOLOGY TECHNIQUES**

<b>Development And Testing Of Novel Orifice Die Design For Extensional Viscosity Measurements</b> .....	1017
<i>Musil, Jan; Zatloukal, Martin</i>	
<b>An In Situ Structuring Rheometer Based On Chaotic Advection</b> .....	1022
<i>Harrison, Graham; Subrahmanian, Ramaswami; Zumbrennen, David</i>	

## **AUTOMOTIVE-D31**

### **MATERIALS DEVELOPMENTS**

<b>Abs+Pa Innovation For Automotive Interiors</b> .....	1027
<i>Blinzler, Marko; Hooker, Robert; Kapila, Vineet</i>	
<b>Weathering Performance Advantages Of Mold-In-Color Pmma Acrylic Versus Coated Plastics For Exterior Trim Applications</b> .....	1032
<i>Banyay, Reid</i>	
<b>Breakthrough Material For Low Gloss And Abrasion Resistance With Molded-In-Color Automotive Interior Components</b> .....	1037
<i>Rogers, Steve; Traugott, Tom; Van Dun, Jozef; Van Riel, Norwin; Walia, Parvinder</i>	
<b>Surface Enhancement Of TPO Polymer With Improved Flow And Scratch Properties</b> .....	1042
<i>Lynch, Jennifer; Lynch, Jennifer; Sharma, Ashutosh; Sharma, Ashutosh</i>	
<b>High Flow PP/EPR Blends For The Automotive Industry: Basic Correlations Between EPR Composition And Application Properties</b> .....	1054
<i>Grein, Christelle; Grestenberger, Georg; Machl, Doris</i>	
<b>Integrating Thin Wall Bumper Moulding Into Resin Properties: Effect Of Impact-Stiffness-Tensile Balance</b> .....	1058
<i>Baruah, Abhijit; Dutta, Santanu; Singh, Neelam; Singh, Priyanka; Vasudeo, Yatish</i>	

## **COLOR AND APPEARANCE-D21**

### **COLOR AND APPEARANCE**

<b>Evaluation Of Titanium Dioxide Pigments In A Renewably Resourced Polymer</b> .....	1064
<i>Granger, Scott; Niedenzu, Philipp; Reid, Austin; Sedar, William</i>	
<b>Understanding The ASTM Method For Heat Build-Up</b> .....	1069
<i>Goldstein, Steven</i>	
<b>Strategies For The Replacement Of Lead- And Chrome-Based Pigments In Synthetic Turf</b> .....	1073
<i>Finnegan, Tad</i>	
<b>Realistic Appearance Of Wood Grains Formed With Smart Blenders On Surfaces And Inside Extruded Plastics</b> .....	1078
<i>Zumbrunnen, David; Zumbrunnen, Mike</i>	
<b>Measuring Distinctness Of Image Of High Gloss Surfaces</b> .....	1081
<i>Buder-Stroissnigg, Michael; Gruber, Dieter; Jandel, Lothar; Strauß, Bernhard; Wallner, Gernot</i>	

## **COMPOSITES-D39**

### **NANOCOMPOSITES-CLAY REINFORCEMENT II**

<b>Nanocomposite Hierarchical Structures In Blast Mitigation</b> .....	1085
<i>Ibeh, Christopher</i>	
<b>Mode I And II Interlaminar Fracture Toughness Of Nanoclay-Reinforced Epoxy/GF Composites</b> .....	1091
<i>Bureau, Martin; Cole, Kenneth; Ton-That, Minh-Tan</i>	
<b>Polyolefin/Clay Nanocomposites: Comparison Of Different Types Fillers And Use Of Mathematics Models For Tensile Strength</b> .....	1096
<i>Kubisova, Hana; Merinska, Dagmar</i>	
<b>Properties Of Melt Strength On Blends Of Polypropylene /Polyamide-6/Organoclay Nanocomposites</b> .....	1101
<i>Huang, Guowang; Peng, Xiang-Fang; Xia, Hua-Xin; Xie, Xiao-Li</i>	
<b>Effect Of Organoclay On The Mechanical Properties And Crystallization Behaviors Of Injection-Molded PP/ABS/ Montmorillonite Nanocomposites</b> .....	1105
<i>Peng, Jun; Peng, Xiang-Fang; Turng, Lih-Sheng; Xie, Xiao-Li</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26**

### **MECHANICAL PROPERTIES**

<b>Evaluation Of Environmental Stress Cracking Resistance In Polyethylenes: Bent Strip Vs. Constant-Tensile-Load Methods</b> .....	1109
<i>De Jesus, Delia; Guastaferrro Preda, Franco; Sanchez, Johan</i>	

<b>A Phenomenological Constitutive Model For Strain Softening Prediction In Semi-Crystalline Polymers</b> .....	1115
<i>Bohórquez, Joel; Pineda, Mariajosé; Torres, Agustin</i>	
<b>Analysis Of Results Variations At High Deformations In Tensile Tests Of PE Films</b> .....	1120
<i>Bohórquez, Joel; Noriega, Wiilian; Torres, Agustin</i>	
<b>Sensitivity Of Mechanical Properties Of Polyamide-Imide To Lot-To-Lot Variability</b> .....	1125
<i>Harris, Barbara; Kasner, Alan; Murray, Patrick</i>	

## **NANOCOMPOSITES II**

<b>Ultrasound Assisted Melt Processing Of LCP/CNF Nanocomposites</b> .....	1131
<i>Isayev, Avraam; Kumar, Rishi</i>	
<b>Polyactic Acid Composites Based On Ionic Liquid Modified Cationic And Anionic Clays</b> .....	1136
<i>Ha, Jin; Xanthos, Marino</i>	
<b>Design And Performance Criteria For Multi-Functional Shape Memory Polymer Nanocomposites</b> .....	1142
<i>Cao, Feina; Gunes, I. Sedat; Jana, Sadhan; Jimenez, Guillermo</i>	

## **EXTRUSION-D22**

### **EXTRUSION GENERAL**

<b>Polytetrafluoroethylene (PTFE) Paste Extrusion: Experiments And Flow Simulations</b> .....	1147
<i>Hatzikiriakos, Savvas; Mitsoulis, Evan; Stamboulides, Christos</i>	
<b>An Experimental Investigation Into Melt Pump Performance</b> .....	1152
<i>Miller, Luke; Smith, Walter; Womer, Timothy</i>	
<b>Reducing Electrical Energy Costs for Extrusion Processes</b> .....	1157
<i>Barlow, Scott</i>	
<b>Characteristics Of Conveying Research Of Polymer Vane Extruder</b> .....	1163
<i>He, Hezhi; Qu, Jinping; Yin, Xiaochun; Zhang, Guizhen</i>	
<b>Research On The Micro-Extrusion Characteristic Of Mini-Screw In The Screw Extruding Spray Head</b> .....	1168
<i>Feng, Yanhong; Huang, Xingxing; Liu, Bin; Xie, Yi</i>	

## **SINGLE-SCREW II**

<b>An Engineering Approach To Designing Plasticating Screws For Single-Screw Extruders</b> .....	1174
<i>Spalding, Mark</i>	
<b>3D FEM Analysis Of A Wave Type Screw Channel</b> .....	1180
<i>Perdikoulis, John</i>	
<b>Closed Loop Quality Control Of The Processing Of Undried Polycondensates Using Melt Degassing Single Screw Extrusion</b> .....	1188
<i>Michaeli, Walter; Seidel, Henning</i>	
<b>Performance Of Helibar<sup>®</sup> Extruder With Grooved Barrel</b> .....	1192
<i>Choi, MoonKi; Chung, Chan; Gruenschloss, Eberhard; Lee, Gunning; Yoon, DaeSoon</i>	
<b>Investigation Into Melting And Mixing Within The Spiral Fluted Elongational Mixer Screw</b> .....	1197
<i>Cunningham, Thomas; Luker, Keith</i>	

## **FLEXIBLE PACKAGING JOINT WITH BIOPLASTICS**

### **SUSTAINABILITY IN FLEXIBLE PACKAGING-I**

<b>Processing Cost And Environmental Impact Of Bio-Plastics</b> .....	1205
<i>Anex, Robert; Grewell, David; Vogel, Julius</i>	
<b>Resin Life Cycle Estimation To Help Guide Sustainability Choices</b> .....	1210
<i>Casarino, Carol; Morris, Barry; Veith, Susanne</i>	
<b>Towards Quality Products From Bio-Based Plastics</b> .....	1216
<i>Koster, Rolf</i>	
<b>Screw Design Considerations For Biobased Polymers</b> .....	1222
<i>Steward, Edward</i>	

## **INJECTION MOLDING-D23** **IN-MOLD LABELING & DECORATION**

<b>Study On The Mold Temperature Variation During In Mold Decoration Process</b> .....	1228
<i>Chang, Yeon-Pun; Chen, Hui-Li; Chen, Shia-Chung; Wang, Yi-Chao; Wang, Ying-Chieh</i>	
<b>Injection Molding Of High-Performance Hybrid Composites In Series-Production</b> .....	1233
<i>Kuehnert, Ines; Müller, Thomas; Osswald, Tim</i>	

### **Volume 3**

<b>Impact Resistance Of Poly(Ethylene Terephthalate) Textile Insert Molding</b> .....	1238
<i>Hamada, Hiroyuki; Leong, Yew Wei</i>	
<b>3D Forming Of Genuine Wood Veneer And In-Mold Lamination With Wood-Plastic-Composites (WPC) In One Injection Molding Cycle</b> .....	1242
<i>Flasche, Thomas; Funke, Cathrin; Potente, Helmut; Schoeppner, Volker; Schulte, Matthias; Wolf, Thomas</i>	

## **FIBER-FILLED MATERIAL**

<b>Localized Reinforcement Of Injection Molded Parts Using Continuous Length Glass Fibers</b> .....	1247
<i>Jaarsma, Frank</i>	
<b>PLA Composites Reinforced By Wheat And Rye Husk</b> .....	1253
<i>Mamun, Abdullah</i>	
<b>Fracture Behavior Of Jute/PP, Jute/Glass Fiber/PP Injection Moldings</b> .....	1260
<i>Hamada, Hiroyuki; Leong, Yew Wei; Morii, Tohru; Ohta, Tomoko</i>	
<b>Melt Processable, Fiberglass Reinforced, High Heat Thermoplastic Polyimides</b> .....	1264
<i>Lowery, Daniel</i>	

## **SIG012-JOINING OF PLASTICS AND COMPOSITES** **LASER WELDING**

<b>Closed Loop Control in Laser Welding of Plastic Components</b> .....	1268
<i>Davis, Richard</i>	
<b>Laser Welding Of Thermoplastic Urethane Films</b> .....	1273
<i>Cawley, William; Klein, Rolf; Marsico, Ryan</i>	
<b>Optical Properties Characterization Of Thermoplastics Used In Laser Transmission Welding: Part I. Transmittance And Reflectance</b> .....	1278
<i>Bates, P.J.; Wang, C.Y.</i>	
<b>CO<sub>2</sub> Laser Welding Of The PFA Disk Top On A Circular Tube Assisted By A Transparent Solid Heat Sink</b> .....	1283
<i>Kurosaki, Yasuo</i>	
<b>Laser Welding Of Nylon Tubes To Plates Using Conical Mirror</b> .....	1289
<i>Bates, Phil; Kritskiy, Anton; Zak, Gene</i>	
<b>Laser Transmission Welding Of Glass Fibre Reinforced Nylon 6 – Finite Element Thermal Modeling And Microstructural Validation</b> .....	1295
<i>Al-Wohhoush, Mohammad; Bates, Phil; Chen, Mingliang; Kamal, Musa; Zak, Gene</i>	

## **SIG023-NANO/MICRO MOLDING** **NANO/MICRO MOLDING**

<b>Evaluation Of Replication Properties On Molded Surface By Ultrasonic Injection Molding System</b> .....	1301
<i>Ito, Hiroshi; Koyama, Kiyohito; Sakaguchi, Hiroki; Sato, Atsushi</i>	
<b>Efficiency Evaluation Of Gas-Assisted Heating And Its Application To Dynamic Mold Temperature Control To Improve Micro-Featured Molding</b> .....	1306
<i>Chang, Yaw-Jen; Chen, Shia-Chung; Huang, Sung-Wei; Yang, Je-Wei</i>	
<b>Micro Injection Molding Of LCP-Modified PA66</b> .....	1311
<i>Gava, Alberto; Lucchetta, Giovanni</i>	

<b>Enhancement Of Surface Replication By Micro-Gas-Assist-Injection Molding</b> .....	1316
<i>Barry, Carol; Cha, Nam-Goo; Lee, Kye-Hwan; Mead, Joey; Palanisamy, Prabhu; Yoon, Sung-Hwan</i>	
<b>The Morphology Of Micro-Injection Molded Polyoxymethylene</b> .....	1323
<i>Chu, Jingsong; Derdouri, Abdelsalim; Hrymak, Andy; Kamal, Musa</i>	
<b>Process Induced Properties Of Micro-Injection Molded Parts – New Aspects</b> .....	1328
<i>Ehrenstein, Gottfried; Jungmeier, Ariane; Kuehnert, Ines; Osswald, Tim</i>	

## **POLYMER MODIFIERS AND ADDITIVES-D38**

### **IMPACT MODIFIERS AND TOUGHENING AGENTS**

<b>Epoxy Polymers Toughened By Triblock Copolymers</b> .....	1333
<i>Bacigalupo, Lauren; Liang, Yi-Ling; Marouf, Bahereh; Oldak, Robert; Pearson, Ray</i>	
<b>Nanostrength® Block Copolymers For Epoxy Toughening</b> .....	1337
<i>Barsotti, Robert</i>	
<b>Toughening Of Epoxy Using Pep-Peo Block Copolymer Nanoparticles</b> .....	1342
<i>Liu, Jia (Daniel); Sue, Hung-Jue</i>	
<b>Epoxy Thermosets Toughened With Amphiphilic Block Copolymers</b> .....	1346
<i>Detloff, Marv; Hunter, Gary; Jacob, George; Lesko, Jack; O'Connell, Carol; Pham, Ha; Theophanis, Theophanous; Turakhia, Rajesh; Verghese, Nikhil</i>	
<b>Silicone Based Flame Retardant For Polycarbonate</b> .....	1351
<i>Abele, Wolfgang; Chiba, Takeshi; Ozaki, Yukihito; Saegusa, Kazunori</i>	

## **PRODUCT DESIGN AND DEVELOPMENT-D41**

### **PRODUCT DESIGN AND DEVELOPMENT**

<b>Melt Flow Analysis Of ABS In Fused Deposition Modelling Process</b> .....	1355
<i>Masood, Syed; Nikzad, Mostafa; Patel, Vishal</i>	
<b>Dynamic Mold Surface Temperature Control For Molding High Gloss, Painting Free, Part Surface Achieving Cycle Time And Cost Reduction</b> .....	1360
<i>Chang, Jen-An; Chen, Shia-Chung; Cin, Jin-Chuan</i>	
<b>Investigation Of The Heat Hesitation In The In Mold Decoration Processing With The Film</b> .....	1365
<i>Chen, Shia-Chung; Chiu, Yan-Chen; Tarn, Shih-Hsien; Tsai, Cheng-Han</i>	

## **ROTATIONAL MOLDING-D42**

### **ROTATIONAL MOLDING I**

<b>Modified Polyethylene For Improved Adhesion Properties In Rotationally Molded Parts</b> .....	1371
<i>Morita, Alfredo</i>	
<b>Mixing Of Polymer Powders Of Different Particle Sizes In A Rotating Mold</b> .....	1376
<i>Aissa, Amara Ait; Cousineau-Pelletier, Myriam; Duchesne, Carl; Gosselin, Ryan; Rodrigue, Denis</i>	
<b>Processing Integral-Skin Polypropylene Foams Utilizing Extrusion-Assisted Direct-Foaming Rotational Molding</b> .....	1382
<i>Abdalla, Emad; Pop-Iliev, Remon</i>	
<b>Study Into The Densification Behaviour Of Polyethylenes For Rotational Moulding</b> .....	1387
<i>Hanna, Paul; Kearns, Mark; Maziers, Eric</i>	

## **THERMOPLASTIC MATERIALS AND FOAMS-D29**

### **FUNDAMENTALS IN FOAM PROCESSING**

<b>Cell Structure Of Injection Molded Thermoplastic Olefin Foams</b> .....	1391
<i>Carreau, Pierre; Heuzey, Marie-Claude; Khemache, Omar; Maani, Amirhossein</i>	
<b>A New Interpretation of The Talc-Enhanced Polymeric Foaming Process</b> .....	1397
<i>Leung, Siu Ning; Park, Chul; Wong, Anson</i>	
<b>Numerical Simulation Of Pressure Distribution Around A Heterogeneous Nucleation Site</b> .....	1403
<i>Bussmann, Markus; Leung, Siu Ning; Park, Chul; Wang, Lilac Cuiling</i>	

<b>Effect of Blending Modification With Polyethylene on Cell Morphology of Polycarbonate Foam .....</b>	<b>1410</b>
<i>Jin, Gang; Wang, Mingyi; Wen, Shen Ping; Zhou, Nanqiao</i>	
<b>Determination Of The Solubility Of Blowing Agent In Polymer Without Using Any Equation Of State .....</b>	<b>1414</b>
<i>Hasan, Mohammad Monirul; Li, Yao Gai; Park, Chul</i>	

## **SIG010-ALLOYS AND BLENDS**

### **MORPHOLOGICAL, RHEOLOGICAL AND PROCESSING STUDIES OF DIVERSE POLYMER BLEND SYSTEMS**

<b>Core Morphology Of Pbs Alloys And Properties Of PP-Based Sandwich Injection Moldings .....</b>	<b>1421</b>
<i>Aoki, Naoya; Fujita, Yuji; Kotaki, Masaya; Sano, Hironari; Yoshida, Toshihiro</i>	
<b>The Development Of Microfibrillar-Phase Morphology In PB-1/PP Blends .....</b>	<b>1425</b>
<i>Benicek, Lubomir; Cermak, Roman; Hnidáková, Dana; Navrátilová, Jana; Vaysse, Matthieu</i>	
<b>Effect Of Hygrothermal Treatment On Rheological And Mechanical Properties Of Recycled Poly(Ethylene Terephthalate)/ Recycled Polypropylene Blends .....</b>	<b>1430</b>
<i>Aminuddin, Siti Fatimah; Hamada, Hiroyuki; Leong, Yew Wei</i>	
<b>Morphology Development In The Pellet During Compounding Of Recycled Poly(Ethylene Terephthalate) (RPET)/Polypropylene (PP) Blends.....</b>	<b>1434</b>
<i>Hamada, Hiroyuki; Inoya, Hiroyuki; Leong, Yew Wei; Thitithanasarn, Smith; Thumsorn, Suphaporn</i>	
<b>Phase Behavior Of Blends Containing Poly(Resorcinol Phthalate-Block-Carbonate) And Poly(Ethylene Terephthalate).....</b>	<b>1438</b>
<i>Chakravarti, Shreyas; Kim, Sung; Tian, Jun</i>	

## **AUTOMOTIVE-D31**

### **AUTOMOTIVE APPLICATIONS DEVELOPMENT**

<b>INSPIRE™ At-Press TPO Technology.....</b>	<b>1443</b>
<i>Walia, Parvinder</i>	
<b>Most Critical Steps For Replacing Metal With High Performance Engineering Polymers For Under-Hood Applications.....</b>	<b>1448</b>
<i>Desai, Kirit</i>	
<b>SMC Replacement with Engineering Thermoplastics in Heavy Commercial Vehicle Body Panels Market Space.....</b>	<b>1453</b>
<i>N, Venkatesha</i>	
<b>Laser Marking Day/Night Plastics.....</b>	<b>1459</b>
<i>Wieloch, Jake</i>	

## **COLOR AND APPEARANCE-D21**

### **COLOR AND APPEARANCE SESSION 2**

<b>(N)IR Radiation Management Part IV - Integrated Solar Energy Management For Construction And Automotive.....</b>	<b>1463</b>
<i>Goldstein, Steven</i>	
<b>Improved Color Mixing For Shear And Thermally Sensitive Pigments .....</b>	<b>1465</b>
<i>Frauenpreis, Carl; Hicks, Thomas; Samoylova, Tatyana; Sinani, Vladimir; Stall, Alan</i>	
<b>Process Improvements For Plastic Processors Resulting From A Modified Form Of Titanium Dioxide.....</b>	<b>1473</b>
<i>Giubardo, Carlo; Noble, Brian; Swain, Lisa; Wright, Scott</i>	
<b>Cost Effective TiO<sub>2</sub> Extension In White Color Concentrates Using Anhydrous Calcium Sulfate .....</b>	<b>1477</b>
<i>Dichter, Susan; Hollendonner, John</i>	
<b>Applications And Uses Of Byk-Gardner Haze-Gard Plus.....</b>	<b>1484</b>
<i>Gogoel, Michael; Roberts, James</i>	

## **COLOR AND APPEARANCE-D21**

### **SPECIAL TOPICS INTERACTIVE SESSION**

<b>Development of Novel Anchored Lubricants: A Case History.....</b>	<b>1488</b>
<i>Blasius, William; Hoffman, Rebecca</i>	

## **COMPOSITES JOINT WITH PLASTICS IN BUILDING AND CONSTRUCTION**

### **COMPOSITES IN BUILDING AND CONSTRUCTION**

<b>Analysis Of In-Die Cavitation During The Die Drawing Of Composite Materials</b> .....	1494
<i>Caton-Rose, Fin; Coates, Phil; Thompson, Glen; Ward, Ian</i>	
<b>Polymer Orientation In Polypropylene-Talc Composites Stretched Below The Melting Temperature</b> .....	1499
<i>Bieler, Thomas; Jayaraman, Krishnamurthy; Mazor, Michael; Nichols, Kevin; Rane, Rahul</i>	
<b>Effect Of Polymer Film Permeability On Retarding Or Preventing Corrosion And Mold</b> .....	1504
<i>Chen, John; Urtz, Bruce; Visioli, Donna; Zhang, Shi Hua</i>	
<b>Bright Future – Single Ply Thermoplastic Polyolefin Roofing</b> .....	1509
<i>Taylor, Thomas; Xing, Linlin; Yang, Tammy</i>	
<b>New Structural Polymer For Metal Replacement Applications</b> .....	1514
<i>Boisjoly, Rick; Lee, Chris; Paszkowski, Eric; Ward, Dan; Zimmerman, Mike</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26**

### **THERMOPLASTICS**

<b>Tritan™ Copolyesters</b> .....	1519
<i>Crawford, Emmett</i>	
<b>Properties And Thermoforming Of Tritan™ Copolyester For Signs</b> .....	1523
<i>Boone, Gary; McWilliams, Doug; Shih, Wayne</i>	
<b>Eastman Tritan™ Copolyester For Housewares Applications</b> .....	1528
<i>Porter, David</i>	
<b>A History Of Copolyester Development At Eastman Chemical Company</b> .....	1534
<i>Moskala, Eric</i>	
<b>A Unified Morphological Description Of Ionomers</b> .....	1539
<i>Grady, Brian</i>	

## **EXTRUSION-D22**

### **DIE DESIGN AND PERFORMANCE**

<b>Die Design For Layer Thickness Uniformity In Multilayer Coextrusion</b> .....	1542
<i>Lee, Patrick; Macosko, Christopher</i>	
<b>Fluoropolymer Process Aids: The Effect Of Processing Conditions</b> .....	1547
<i>Bigio, David</i>	
<b>Profile Extrusion Cooling Process Optimization Via Simulation</b> .....	1557
<i>Vlcek, Jiri</i>	
<b>A New Non-Conventional Concept For Design Of Sheet Extrusion Dies</b> .....	1561
<i>Gupta, Mahesh</i>	
<b>A Method To Obtain Balanced Flow In Profile Extrusion Dies</b> .....	1566
<i>Kirkkopru, Kadir; Yilmaz, Oktay</i>	
<b>Understanding And Quantification Of Die Drool Phenomenon During Polypropylene Extrusion Process</b> .....	1572
<i>Libotte, Annick; Sambaer, Wannes; Zatloukal, Martin</i>	

## **EXTRUSION JOINT WITH FLEXIBLE PACKAGING**

### **FILM PROCESSING**

<b>Variothermal Heating Concepts For Extrusion Embossing Of Microstructured Films</b> .....	1578
<i>Michaeli, Walter; Scharf, Micha</i>	
<b>Relationship Between Film Structure Development And Extruded Film Width In T-Die Extruding Of High Density Polyethylene</b> .....	1583
<i>Ichikawa, Yuuki; Katsuno, Keiji; Koda, Tomonori; Miyata, Ken; Murasawa, Go; Nishioka, Akihiro</i>	
<b>Non-Isothermal Film Blowing Process Stability Analysis By Using Variational Principles</b> .....	1587
<i>Kolarik, Roman; Zatloukal, Martin</i>	

<b>A New Blown Film Die For Controllably Forming And Extruding Micro-Layers, Polymer Blends And Composites</b> .....	1596
<i>Zumbrunnen, David</i>	
<b>The Effect Of Post Die Processing Time On Adhesion In Coextrusion Blown And Cast Film</b> .....	1601
<i>Morris, Barry</i>	
<b>Improving Blown Film Yield by Reduction of Resin Used to Cover Process Shortcomings</b> .....	1608
<i>Joseph, Daniel</i>	

## **FLEXIBLE PACKAGING JOINT WITH BIOPLASTICS** **SUSTAINABILITY IN FLEXIBLE PACKAGING-II**

<b>Improved Dimensional Stability Of Thermoformed Polylactic Acid Articles</b> .....	1612
<i>Uradnisheck, Julius</i>	
<b>Poly lactide Toughening Using Impact Modifiers</b> .....	1616
<i>Hirt, Douglas; Rasal, Rahul; Zhu, Siqiang</i>	
<b>Comparison Of Sorbitol And Glycerol As Plasticizers For Thermoplastic Starch In TPS/PLA Blends</b> .....	1621
<i>Huneault, Michel; Li, Hongbo</i>	
<b>Effect of Environmental Exposure on Materials Based on Blends of Plasticized Starch and Polypropylene</b> .....	1626
<i>Deleo, Candice; Forbes, Michael; Goetz, James; Velankar, Sachin; Young, Brian</i>	
<b>Melt Extruded Water-Soluble Starch-Based Films</b> .....	1631
<i>Chapleau, Nathalie; Huneault, Michel; Li, Hongbo</i>	
<b>Thermal And Rheological Properties Of PHB Synthesized With Various Hydroxyvalerate Content For Potential Use In Food Packaging</b> .....	1636
<i>Modi, Sunny</i>	
<b>PLA Property Improvement: Improving The Practical Heat Resistance Of Polylactic Acid (PLA)</b> .....	1641
<i>Avakian, Roger; Zhu, Shixiong</i>	

## **INJECTION MOLDING-D23** **FOAM & MICROCELLULAR**

<b>Morphology Study For Microcellular Injection Molding</b> .....	1646
<i>Xu, Jingyi</i>	
<b>Effect Of Clay On The Mechanical / Thermal Properties Of Microcellular Injection Molded Low Density Polyethylene Nanocomposites</b> .....	1652
<i>Hsu, Peming; Hwang, Shyh-Shin; Yang, Ray-Bin</i>	
<b>Effect Of Organoclay On The Mechanical / Thermal Properties Of Microcellular Injection Molded PBT-Clay Nanocomposites</b> .....	1657
<i>Hsu, Peming; Hwang, Shyh-Shin; Sung, Hon-Jen</i>	
<b>Improvement In Surface Quality Of Microcellular Injection Molded Parts</b> .....	1662
<i>Lee, Jungjoo; Turng, Lih-Sheng</i>	
<b>Foam Injection Molding Of Cellulose Fiber Reinforced Polypropylene Composites</b> .....	1667
<i>Kuboki, Takashi; Lee, John; Park, Chul; Sain, Mohini</i>	
<b>Effects Of Processing Parameters Of Injection Foam Molding On Glass-Fiber Reinforced Polypropylene</b> .....	1672
<i>Jung, Peter; Lee, John; Moon, Yongrak; Park, Chul</i>	
<b>Comparison of the Predicted and Actual Cell Densities in Structural Foam Molding</b> .....	1678
<i>Jung, Peter; Lee, John; Moon, Yongrak; Park, Chul</i>	

## **PROCESS CONTROL I**

<b>Development Of Dielectrostrictive Sensors For On-Line Shear Stress Measurement During The Injection Molding Process</b> .....	1684
<i>Li, Haimei; Peng, Yiyang; Turng, Lih-Sheng</i>	
<b>Research On Residual Stresses Of Injection Molded PC Parts</b> .....	1689
<i>Li, Haimei; Peng, Yiyang; Turng, Lih-Sheng; Wang, Xin</i>	
<b>A Comparison Of Velocity To Pressure Transfer Control Strategies For Injection Molding</b> .....	1694
<i>Schubert, Arthur</i>	
<b>Demolding Forces And Coefficients Of Friction In Injection Molding. A New Practical Measurement Apparatus</b> .....	1699
<i>Berger, Gerald; Friesenbichler, Walter</i>	

<b>Advanced Process Control For Injection Molding Based On Cavity Pressure</b> .....	1704
<i>Michaeli, Walter; Schreiber, Andreas</i>	
<b>Experimental Determination Of The Aesthetic, Dimensional And Control Process Windows Using The Technique Of Design Of Experiments In Injection Molding</b> .....	1709
<i>Kulkarni, Suhas</i>	

**SIG012-JOINING OF PLASTICS AND COMPOSITES**  
**INDUSTRIAL PANEL: ADVANCES IN PLASTIC JOINING TECHNOLOGIES FOR MEDICAL APPLICATIONS**

<b>Comparison of Servo-driven Ultrasonic Welder to Standard Pneumatic Ultrasonic Welder</b> .....	1714
<i>Golko, Paul; Klinstein, Leo; Lester, Steve; Marcus, Miranda</i>	
<b>Advances In Plastics Joining Technologies For The Assembly Of Medical Devices</b> .....	1720
<i>Phadnis, Nitin</i>	
<b>Infrastake - Staking At The Speed Of Light</b> .....	1723
<i>Beute, Scott</i>	
<b>Quasi-Simultaneous Laser Beam Welding Of Polymers In Closed Loop</b> .....	1728
<i>Horn, Wolfgang</i>	
<b>Maximize Ultrasonic Welding Efficiency And Safety By Minimizing Non-Productive Time And Energy Consumption</b> .....	1732
<i>Naumovski, Vasko</i>	

**SPECIAL TOPICS INTERACTIVE SESSION**

<b>CO<sub>2</sub> Laser Welding of the PFA Disk Top on a Circular Tube Assisted by a Transparent Solid Heat Sink</b> .....	1735
<i>Koyanagi, Hiroshi; Kurosaki, Yasuo; Miyahara, Hitoshi; Satoh, Kimitoshi</i>	

**MOLD MAKING AND MOLD DESIGN-D35**  
**MOLD MAKING AND THE ART OF COMPUTER SIMULATION**

<b>Mold Cost Price Calculations</b> .....	1741
<i>Spoormaker, Jan</i>	
<b>Using Knowledge-Based Management Technology For An Integrated Mold-Design Process</b> .....	1745
<i>Chen, Shia-Chung; Jeng, Ming-Chang; Lin, Hsuan-Liang</i>	
<b>Calculation And Analysis Of Mold Cost For Injection Molding Via A Mold Design Navigation System</b> .....	1750
<i>Chen, Shia-Chung; Shiu, Jeng-Li; Tseng, Chia-Yen</i>	
<b>Automatic Mold Design With Knowledge Management</b> .....	1755
<i>Chen, Shia-Chung; Jong, Wen-Ren; Lai, Po-Jung; Li, Ming-Yan; Li, Tai-Chih; Shih, Chun-Jen; Wu, Chun-Hsien</i>	

**MOLD MAKING AND MOLD DESIGN INTERACTIVE SESSION**

<b>Advantages Of The Use of Removable Plates In Order To Improve The Functionality Of Standard Injection Molds</b> .....	1761
<i>Apaza, Elizabeth; Candal, Maria; Morales, Rosa</i>	
<b>Design And Evaluation Of An Interbody Fusion Cage Mold</b> .....	1766
<i>Candal, Maria; Matos, Mireya; Müller-Karger, Carmen; Nicola, H; Picon, Vanessa</i>	
<b>Improve Mold Designs with Corrective Action Analyses</b> .....	1771
<i>Johnson, Steven</i>	
<b>Integration Of Mold Design And Mold Manufacturing</b> .....	1775
<i>Jong, Wen-Ren; Lai, Po-Jung; Li, Ming-Yan; Li, Tai-Chih; Lin, Tzu-Chun; Wu, Chun-Hsien</i>	

## **SIG023-NANO/MICRO MOLDING** **MODELING NANO/MICROMOLDING**

<b>Experimental Validation Of Viscous And Viscoelastic Simulations Of Micro Injection Molding Process</b> .....	1781
<i>Gava, Alberto; Hansen, Hans; Lucchetta, Giovanni; Reinecke, Holger; Schoth, Andreas; Tosello, Guido</i>	
<b>Influence Of Different Process Settings Conditions On The Accuracy Of Micro Injection Molding Simulations: An Experimental Validation</b> .....	1787
<i>Gava, Alberto; Hansen, Hans; Lucchetta, Giovanni; Reinecke, Holger; Schoth, Andreas; Tosello, Guido</i>	
<b>Computer Simulation For Flow Behavior On Micro- And Nano-Molding</b> .....	1794
<i>Tada, Kazumi</i>	
<b>Modelling Of Micromoulding</b> .....	1799
<i>Coates, Phil; Olley, Pete; Spares, Robert; Whiteside, Ben</i>	
<b>Rheo-Optical Measurements In Micromoulding</b> .....	1803
<i>Coates, Phil; Spares, Robert; Whiteside, Ben</i>	
<b>High Strain Rate Rheometry Of Polymer Melts Relevant To Micromoulding And Thin Walled Injection Moulding</b> .....	1811
<i>Coates, Phil; Gough, Tim; Kelly, Adrian; Whiteside, Ben</i>	
<b>Microfluidics for Rapid Personalized Diagnostics – Are Thermoplastics the Ultimate Solution?</b> .....	1816
<i>Dumoulin, M.; Geissler, M.; Roy, E.; Veres, T.</i>	

## **NEW TECHNOLOGY FORUM**

<b>Plastic Microfluidics: Transformative Technology for Tomorrow</b> .....	1819
<i>Lee, L. James</i>	
<b>A Study on LIGA Nanofabrication for Sub-wavelength optic</b> .....	1826
<i>Lu, Chun-Ting; Tseng, Shi-Chang</i>	

## **POLYMER ANALYSIS-D33** **APPLICATION DRIVEN POLYMER ANALYSIS**

<b>Measurement Of The Abrasion Capacity Of Flexible Foams For Finishing Crude Pottery</b> .....	1831
<i>Jaramillo, Juan; Vélez, Andrés; Zapata, Nora Restrepo</i>	
<b>Thermal And Rheological Stabilities Of PE And PP Due To Repeated Processing</b> .....	1835
<i>Alzahrani, Saeed; Elleithy, Rabeh; Gajendran, Babu</i>	
<b>Microfluidic Mixer For Polymer Melts</b> .....	1838
<i>Migler, Kalman; Moon, Doyoung</i>	
<b>Applications of Hyphenated Dsc-raman Spectroscopy to Polymers</b> .....	1841
<i>Menard, Kevin; Salamon, Andrew; Spragg, Richard</i>	

## **PROCESS AND MEASUREMENTS**

<b>Effects Of Confinement On The T<sub>g</sub> Of Free-Standing Polymer Films: Novel Fluorescence Studies</b> .....	1845
<i>Kim, Soyoun; Roth, Connie; Torkelson, John</i>	
<b>Microstructural Study Of Graphite Filled Polyethylene Terephthalate Nanocomposites</b> .....	1850
<i>Douglas, Paula</i>	

### **Volume 4**

<b>Thermal Aging Of Crosslinked Ethylene-Vinyl Silane Copolymers</b> .....	1855
<i>Cermak, Roman; Navratilova, Jana; Obadal, Martin; Pastorek, Miroslav</i>	
<b>Thermal Analysis And Rheological Studies On Thermoplastic Urethanes</b> .....	1860
<i>Woo, Lecon</i>	
<b>The Effect Of Uv Irradiation on Melting and Crystallization Behavior of Poly(1-butene)</b> .....	1864
<i>Benicek, Lubomir; Cermak, Roman; Commereuc, Sophie; Obadal, Martin; Verney, Vincent</i>	

## **SPECIAL TOPICS INTERACTIVE SESSION**

<b>Correlation of Film Casting Behavior with Non-Linear Rheology for a Series of HDPE's with Different Degrees of Sparse Long Chain Branching</b> .....	1869
<i>Baird, Donald</i>	

## **POLYMER MODIFIERS AND ADDITIVES-D38**

### **ADVANCES IN ADDITIVES**

<b>Contribution Of Different Additives To The Yellowness Index Of Clarified Polypropylene</b> .....	1874
<i>Maier, Ralph D.</i>	
<b>The Use Of Beta Nucleation To Improve The Impact Strength And Reduce The Warpage Of Polypropylene Caps &amp; Closures</b> .....	1879
<i>Jacoby, Philip</i>	
<b>Talc-TPO Formulations For Low Temperature Impact Ductility</b> .....	1884
<i>Crepin-Leblond, Jerome; Jouffret, Frederic; Kochesfahani, Saied; Noel, Oscar</i>	
<b>Thermoplastic Modification of Semi-Crystalline Thermoplastic Polymers Using Poly-Functional Additives</b> .....	1892
<i>Austin, Jeremy</i>	
<b>POSS Dispersants And Flow Aids For High Temperature Thermoplastics</b> .....	1897
<i>DeArmitt, Chris; Wheeler, Paul</i>	
<b>Polymer Modification With Specialty Hydrocarbon Fluids</b> .....	1900
<i>Dunaway, David; Harrington, Bruce; Lin, Charlie</i>	

## **SIG016-PROCESS MONITORING & CONTROL**

### **PROCESS MONITORING & CONTROL**

<b>Multivariate Robustness Measurement</b> .....	1908
<i>Hazen, Dan; Johnston, Stephen; Kazmer, David; VanDerwalker, Darin</i>	
<b>On-Line Optical Monitoring Of Nanocomposite Compounding</b> .....	1912
<i>Chang, Wai Chow; McAfee, Marion</i>	
<b>Quality Control Of Polymer Products Through Spectral Imaging And Chemometrics Methods</b> .....	1919
<i>Duchesne, Carl; Gonzalez-Nunez, Ruben; Gosselin, Ryan; Rodrigue, Denis</i>	
<b>In-Mold Shrinkage Monitoring Sensor For Injection Molding</b> .....	1925
<i>Kazmer, David; Panchal, Rahul</i>	
<b>Real-Time Monitoring Of Injection Moulding For Part Mass Determination</b> .....	1930
<i>Bakhariev, Alex; Brincat, Paul; Coates, Phil; Mulvaney-Johnson, Leigh; Speight, Russell; Umar, Mohammad</i>	
<b>Ultrasonic Diagnosis Of The Vibration Behavior Of Screws In A Single Screw Extruder</b> .....	1935
<i>Sun, Zhigang; Utracki, Leszek</i>	
<b>Saving Money Using Intelligent Process Optimization Software</b> .....	1939
<i>Fischer, Gunter; Haag, Guenter; Lambing, Jeff; Liedl, Philipp</i>	
<b>Advanced On-Line Gauging Solutions For Continuous Process Monitoring And Control</b> .....	1944
<i>Srinivasan, Tan</i>	

## **ROTATIONAL MOLDING-D42**

### **ROTOMOLDING II**

<b>Soft Tip Abrasion Resistant Pry Bar for Rotational Molding</b> .....	1949
<i>Vakharia, Yogesh</i>	
<b>The Effects Of Water Droplet Size And Velocity On Spray Cooling Of Polymers During Rotational Moulding</b> .....	1951
<i>Hanna, Paul; Hornsby, Peter; Keams, Mark; McAfee, Marion; McCourt, Mark; Tan, Swee Boon</i>	
<b>Extrusion-Assisted Direct-Foaming Rotational Molding Process</b> .....	1956
<i>Abdalla, Emad; Christian, Kimberly; Eberle, Gregory; Pop-Iliev, Remon</i>	
<b>The Development Of Internal Water Cooling Techniques For The Rotational Moulding Process</b> .....	1961
<i>Kearns, Mark; McCourt, Mark</i>	

## **THERMOPLASTIC MATERIALS AND FOAMS-D29**

### **FOAM APPLICATIONS**

<b>Open-Celled Thermoplastic Foam For Aqueous-Based Fluid Absorption</b> .....	1966
<i>Chu, Raymond; Park, Chul</i>	
<b>Analysis And Fabrication Of Foam Dielectric Antenna Spacers</b> .....	1971
<i>Blandin, Christopher; Colton, Jonathan</i>	
<b>Effect Of Crosslinking On The Solubility Of N<sub>2</sub> In Ethylene-Vinyl Acetate (EVA)</b> .....	1976
<i>Chen, Nan; Hasan, Mohammad Monirul; Kuboki, Takashi; Park, Chul</i>	

## **COMPOSITES-D39**

### **COMPOSITES INTERACTIVE SESSION**

<b>AE Characteristics Of Short And Long Fiber Reinforced PP Injection Moldings</b> .....	1981
<i>Hamada, Hiroyuki; Jumonji, Nobuyuki; Morii, Tohru</i>	
<b>Study On Dispersibility Of Carbon Nanotubes In Chitosan Composites</b> .....	1986
<i>Shieh, Yeong-Tarnng; Wu, Hong-Mao</i>	
<b>Nanocomposites Of Thermotropic Liquid Crystal Polymer With Carboxylated Multi-Wall Carbon Nanotube</b> .....	1993
<i>Kim, Seong Hun</i>	
<b>Fatigue Properties Of Jute Fabric Reinforced Sheet Molding Compound (SMC) Molding</b> .....	1997
<i>Hamada, Hiroyuki; Hidekuma, Yuya; Morii, Tohru; Nakai, Asami; Nishiura, Masaharu; Odawara, Akiko; Okano, Masanori; Sarata, Makoto</i>	
<b>Structural Composites From Recycled Hdpe And Calcium Sulfite Crystallites</b> .....	2001
<i>Botha, Francois; Malhotra, Vivak; Markevicius, Gediminas; Miller, Charles; Stoll, Joshua</i>	
<b>High Performance Polymer Nanocomposite Blends Of PEI And PEEK</b> .....	2006
<i>Patel, Pritesh</i>	
<b>Study Of The Morphology And Properties Of PP/Epoxy Blends</b> .....	2011
<i>Xueliang, Jiang</i>	
<b>Reinforcement Of Polypropylene Composite Systems: Effect Of Fillers And Compatibilizers</b> .....	2016
<i>Baruah, Abhijit; Dutta, Santanu; Singh, Neelam; Singh, Priyanka; Vasudeo, Yatish</i>	
<b>Fracture Behavior Of Glass Fiber/Unsaturated Polyester Resin Laminate By Dual AE Transducer Monitoring System</b> .....	2022
<i>Hamada, Hiroyuki; Horie, Takahiro; Morii, Tohru</i>	
<b>The Role Of Grafting Degree In The Dispersion Of Guava-Like Silica/Polyacrylate Nanocomposite Particles Into Polyacrylate Matrix</b> .....	2026
<i>Cai, Zhiqi; Lei, Lin; Lin, Heming; Qi, Dongming; Yuan, Yan</i>	
<b>Effect of OMMT Characteristics on Scratch Deformation Behavior of Polypropylene Ternary Nanocomposites</b> .....	2031
<i>Angaji, Mahmood Torabi; Asl, Hossein Dibaei; Monemian, Seyed Ali; Taranejoo, Shahrouz</i>	
<b>Control Of Density And Modulus In Die Drawn PP Composites</b> .....	2036
<i>Birchmeier, Brett; Caton-Rose, Fin; Coates, Phil; Nichols, Kevin; Thompson, Glen; Ward, Ian</i>	

## **FLEXIBLE PACKAGING-D44**

### **FLEXIBLE PACKAGING INTERACTIVE SESSION**

<b>Investigation of EVOH/Kaolinite Nanocomposite Films</b> .....	2040
<i>Bernasconi, Matthew; Froio, Danielle; Ratto, JoAnn; Schirmer, Sarah; Thellen, Christopher; Winroth, Scott</i>	
<b>Influence of Different Surface Treatments Over Resolution of Printed Silver Traces</b> .....	2046
<i>Bonadiman, Renato; Marques, Marco; Reinikainen, Tommi; Salazar, Marta; Silva, Ocildeide</i>	

## **INJECTION MOLDING-D23**

### **INJECTION MOLDING INTERACTIVE SESSION**

<b>Reducing Residual Stress of Polycarbonate Products by Heat Treatment</b> .....	2051
<i>Hsu, Ray Quen; Tsai, Yu Pin; Wei, Jen Kuan</i>	

<b>Experimental and Numerical Analysis of the Flow Fronts Advancing in Micro Injection Molding Weld Line Developing Process</b> .....	2056
<i>Xie, Lei; Ziegmann, Gerhard</i>	
<b>Effects Of Processing Conditions On Part Moldability Of In-Mold Decoration Nylon6 Nanocomposites Molding</b> .....	2064
<i>Peng, Hsin-Shu; Su, Pao-Lin</i>	
<b>Interfacial Strength and Scratch Resistance of Metallocene PE Film Inserted PP Injection Molded Parts</b> .....	2069
<i>Hamada, Hiroyuki; Kitano, Katsuhisa; Kitayama, Takeo; Kotaki, Masaya</i>	
<b>Visualization Study on the Filling Process of PS/SC-CO<sub>2</sub> During Microcellular Injection Molding</b> .....	2073
<i>JianKang, Wang</i>	
<b>Development of an Automated Runner-Valve System for the Filling Balance in Multi-Cavity Molds</b> .....	2078
<i>Cha, Baeg-Soon; Lee, Eun-Jin; Lee, Young-Joo; Park, Hyung-Pil; Rhee, Byung-Ohk</i>	
<b>Cycle Time Optimization and Part Quality Improvement Using Novel Cooling Channels in Plastic Injection Moulding</b> .....	2083
<i>Masood, Syed; Saifullah, Abul; Sbarski, Igor</i>	
<b>Compression Induced Solidification (CIS) – an injection molding strategy for high precision parts</b> .....	2087
<i>Ehrenstein, Gottfried; Kuehnert, Ines; Rudolph, Natalie</i>	
<b>Simulation and Analysis of Injection Molded Bipolar Plates for Fuel Cell</b> .....	2092
<i>Huang, Durn-Yuan; Hwang, Sheng-Jye; Lee, Huei-Huang; Lin, Yin-Jiun</i>	
<b>Effect Of Molding Parameters And Orientation On The Properties And Skin-Core Structure Of Polypropylene Plaques</b> .....	2098
<i>Morales, Rosa; Sanchez-Soto, Miguel; Villarroel, Sobeida</i>	
<b>Verification and Simulation of Melt Flow Behavior in Ultra High-Speed Injection Molding</b> .....	2103
<i>Chen, Shia-Chung; Lin, Yi-Chang; Tseng, Hsien-Hsun</i>	
<b>Study of Processing Parameters on Part Warpage of In-Mold Roller Injection Molding</b> .....	2108
<i>Chen, Hui-Li; Chen, Shia-Chung; Hsu, Peming; Peng, Hsin-Shu; Wang, Yi-Chao</i>	
<b>Application of Ultra High Speed Injection Molding to Secure Digital (SD) Card Housing</b> .....	2113
<i>Chen, Shia-Chung; Hsu, Peming; Peng, Hsin-Shu; Su, Pao-Lin; Tseng, Hsien-Hsun</i>	
<b>Research On Dynamic Injection Molding For Metal Powder Green Part</b> .....	2118
<i>Feng, Yanhong; Liu, Bin; Liu, Qinghui; Qu, Jinping</i>	
<b>Enzymatically and Chemically Modified Abaca Fibre for PP Composites</b> .....	2126
<i>Mamun, Abdullah</i>	
<b>Flow Front Analysis Of TIR LENS Of LEDS With Injection Molding</b> .....	2131
<i>CHEN, Chao-Chang; Lee, Feng-Chi</i>	
<b>Standard for Energy Rating with Resin Dryers and Classification of Dry Air Quality</b> .....	2135
<i>Morneault, Sonny</i>	
<b>Enhanced Resin for Metal Insert Molding Applications</b> .....	2140
<i>Li, XY; Sunderland, Nicolas; Thorne, William</i>	
<b>Improvement of Impact Properties of Recycled Poly(Ethylene Terephthalate) (pet) Injection Moldings</b> .....	2145
<i>Hamada, Hiroyuki; Kumimune, Noriaki; Leong, Yew Wei; Makata, Yuki; Nagasawa, Tugio; Tamada, Syuhei</i>	
<b>Development of Rapid Mold Heating/Cooling Technology to Improve the Surface Defects of Injection Molded Parts</b> .....	2149
<i>Cha, Baeg-Soon; Kim, Ok-Rae; Lee, Sang-Yong; Lee, SW; Park, Hyung-Pil; Rhee, Byung-Ohk</i>	
<b>Insert Film Injection Molding Technology For Automotive Plastic Part With Multi-Cavity Mold System</b> .....	2154
<i>Ko, Youngbae; Lee, Jongwon; Lee, Sunghee</i>	
<b>Improved Fault Detection Approach for Injection Molding</b> .....	2159
<i>Hazen, Dan</i>	

## **SIG021-PLASTIC PIPE & FITTINGS**

### **PLASTIC PIPE AND FITTINGS INTERACTIVE SESSION**

<b>Numerical Simulation of the Failure Behavior of PE Pressure Pipes with Additional Loads</b> .....	2163
<i>Frank, Andreas; Hutar, Pavel; Mitev, Ivaylo; Nahlik, Lubos; Pinter, Gerald; Sevcik, Martin</i>	
<b>Lifetime Prediction Of Polyethylene Pipes Based On An Accelerated Extrapolation Concept For Creep Crack Growth With Fatigue Tests On Cracked Round Bar Specimens</b> .....	2169
<i>Frank, Andreas; Frank, Andreas; Lang, Reinhold; Lang, Reinhold; Pinter, Gerald; Pinter, Gerald</i>	
<b>The Effects of Residual Stress and Crystallinity on RCP Resistance in PE-100 Polyethylenes</b> .....	2175
<i>Argyarakis, Christos; LeEVERS, Patrick</i>	

## **POLYMER MODIFIERS AND ADDITIVES-D38**

### **POLYMER MODIFIERS AND ADDITIVES INTERACTIVE SESSION**

<b>Anomalous Mechanical Anisotropy Of Beta-Form Polypropylene Obtained By T-Die Processing</b> .....	2180
<i>Iwasaki, Shohei; Okamoto, Kenzo; Uchiyama, Yohei; Ueoka, Chiaki; Yamaguchi, Masayuki</i>	
<b>A New Mechanism For Flame Retarded, Non-Halogen Wire And Cable Compounds</b> .....	2184
<i>Lin, Julie; Zhu, Feng</i>	
<b>A Comparison Of Blown And Cast HDPE Film Using Expandable Microsphere Technology</b> .....	2187
<i>Ratto, JoAnn; Schirmer, Sarah; Thellen, Christopher</i>	

## **THERMOFORMING-D25**

### **THERMOFORMING INTERACTIVE SESSION**

<b>Plug Material And Sheet Temperature Effect Over The Force Penetration Curves Under Biaxial Deformation</b> .....	2194
<i>Candal, Maria; Morales, Rosa</i>	

## **THERMOPLASTIC MATERIALS AND FOAMS-D29**

### **THERMOPLASTIC MATERIALS AND FOAMS INTERACTIVE SESSION**

<b>The Effect Of Vibration On Cell Morphology Of PC Foam</b> .....	2200
<i>Jin, Gang; Wang, Mingyi; Wen, Shen Ping; Zhou, Nanqiao</i>	

## **SIG010-ALLOYS AND BLENDS**

### **CHARACTERIZATION OF PERFORMANCE ENHANCEMENT IN VARIOUS POLYMER BLENDS**

<b>Mechanical Properties Of Modified Starch Filled Poly(L-Lactic Acid)</b> .....	2204
<i>Wang, Jiwen; Zheng, Wenge</i>	
<b>Preparation And Properties Of Dynamically Cured Pp/Mah-G-Sebs/Epoxy Blend s</b> .....	2209
<i>Xueliang, Jiang; Yinxi, Zhang</i>	
<b>Characterization Of Polyethylene Blends In Consideration Of Epe Foaming</b> .....	2215
<i>Behravesi, Amir Hossein; Park, Chul</i>	
<b>A Novel Miniature Mixing Device Polymeric Blends and Compounds</b> .....	2220
<i>Hatzikiriakos, Savvas; Sentmanat, Martin; Stamboulides, Christos</i>	

## **PLASTICS IN BUILDING AND CONSTRUCTION JOINT WITH**

### **THERMOPLASTIC MATERIALS AND FOAMS**

### **RECENT FOAMS DEVELOPMENTS FOR BUILDING AND CONSTRUCTION**

<b>Batch Foaming Of Glass Fiber Reinforced Wood Plastic Composites</b> .....	2225
<i>Islam, Mohammad Rubyet; Rizvi, Ghaus; Semeralul, Hamid</i>	
<b>Foaming Process And Damping Capacity Of Bell Structure</b> .....	2229
<i>Koshida, Shirei; Misawa, Akihiro; Shimbo, Minoru</i>	
<b>Comparison of Different Methods of Introducing Water as a Co-Blowing Agent in the Carbon Dioxide Extrusion</b>	
<b>Foaming Process for Polystyrene Thermal Insulation Foams</b> .....	2233
<i>Chiou, Nan-Rong; Daniel, Thomas; Lee, L. James; Yang, Jintao; Yeh, Shu-Kai</i>	
<b>PS Foams Blown From Hfc-134a/Hfc-32 Blends: Processing Behavior</b> .....	2239
<i>Champagne, Michel; Gendron, Richard; Tatibouet, Jacques; Van Horn, Brett</i>	
<b>Trends In Research On Polymer Foams</b> .....	2244
<i>Hahn, Klaus; Hingmann, Roland; Ruckdaschel, Holger; Sandler, Jan; Wassner, Erik</i>	

## **COMPOSITES-D39**

### **COMPOSITE APPLICATIONS**

<b>Use Of Composite Materials In A Hydrofoil On A High-Speed, Ultra Low-Wake Passenger Ferry</b> .....	2248
<i>Larson, Nikki; Petersen, Wesley</i>	
<b>CFRP Liner Quality Control for Repair of Prestressed Concrete Cylinder Pipe (PCCP)</b> .....	2253
<i>Allan, Adam</i>	
<b>Heat Transfer Studies On Epoxy Based Sandwich Structural Composites For Wind Blade</b> .....	2259
<i>Cai, Zhi-Qi; Castro, Jose; Guerra, Dante; Hioe, Yunior; Lee, James; Movva, Siva; Wang, Weixiong; Yang, Jintao</i>	
<b>Rapid Prototyping And Tooling Techniques For Pultrusion</b> .....	2264
<i>DePolo, Wade; Moffitt, Ron; Mutnuri, Bhyrav; Vennam, Sandeep</i>	
<b>Influence Of Polypyrrole On Electrical Conductivity Of Injection-Thermoplastic-Composite Bipolar Plates</b> .....	2270
<i>Yeetsorn, Rungsima</i>	
<b>Advanced Aerospace Composites Using An Aromatic Thermosetting Copolyester Matrix – Improved Thermal Fatigue</b> .....	2276
<i>Abdul Samad, Zeba Farheen; Economy, James</i>	

## **NANOCOMPOSITES-OTHER**

<b>Effect Of Carbon Nano Fibers On The Permeability Of Fiber Reinforced Polymeric Nanocomposites</b> .....	2281
<i>Cai, Zhi-Qi; Castro, Jose; Guerra, Dante; Hioe, Yunior; Lee, James; Movva, Siva</i>	
<b>Effect Of Alumina Nanoparticles On The Properties Of Low-Viscosity Cyanate Ester Adhesives For Composite Repair</b> .....	2286
<i>Akinc, Mufit; Kessler, Michael; Lawler, Katherine; Lio, Wilber; Sheng, Xia</i>	
<b>Bisphenol E Cyanate Ester Nanocomposites With Low Coefficient Of Thermal Expansion</b> .....	2291
<i>Badrinarayanan, Prashanth; Kessler, Michael</i>	
<b>Impact Resistance And Raman Characterization Of Al<sub>2</sub>O<sub>3</sub>/ZnO Poly(Methyl Methacrylate) Nanocomposites</b> .....	2296
<i>Lehman, Richard; Viratyaporn, Wantinee</i>	
<b>Novel Methods Of Incorporating Nanoparticles Into Fiber Preforms</b> .....	2301
<i>Cabrera, Eusebio; Cai, Zhi-Qi; Castro, Jose; Guerra, Dante; Hioe, Yunior; Lee, L. James; Movva, Siva</i>	
<b>Structure and Properties Of Melt-Spun PET/MWCNT Nanocomposite Fibers</b> .....	2306
<i>Ajji, Abdellah; Dubois, Charles; Mazinani, Saeedeh</i>	

## **DECORATING AND ASSEMBLY-D34**

### **DECORATION AND ASSEMBLY**

<b>Optical Coating Applications For Consumer And Industrial Polymer Displays</b> .....	2312
<i>Fiore, Dan; Wilson, Brian</i>	
<b>Beyond The Bling: The Development of Decorative PVD/UV Coating Systems</b> .....	2317
<i>Mills, Paul</i>	
<b>Laser Welding Using Infrared Absorbing Films</b> .....	2323
<i>Cawley, William; Klein, Rolf; Marsico, Ryan</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE JOINT WITH FLEXIBLE PACKAGING**

### **FLEXIBLE PACKAGING**

<b>Structure And Properties Of MDO Stretched Films Of A Random Co-Polypropylene And Linear Polypropylene Blend</b> .....	2328
<i>Ajji, Abdellah; Carreau, Pierre; Sadeghi, Farhad; Tabatabaei, Hesam</i>	
<b>High-Performance-Tie-Layer Resins In Flexible Packaging Applications: Structure–Performance Relationships</b> .....	2332
<i>Lee, Chun</i>	
<b>Effect Of Process Conditions On The Crystal Structure And Properties Of Polypropylene Cast Films</b> .....	2337
<i>Ajji, Abdellah; Carreau, Pierre; Tabatabaei, Seyed Hesamoddin</i>	
<b>Effect Of Machine Direction Orientation Conditions On Structure And Properties Of Hdpe Films</b> .....	2342
<i>Ajji, Abdellah; Carreau, Pierre; Cigana, Patrick; Parent, Luc</i>	

<b>The Effects Of Comonomer Distribution Profile On The Blown Film Properties Of Single Site Catalyzed Polyethylenes</b> .....	2345
<i>Wang, Alan (XiaoChuan)</i>	

## **EXTRUSION-D22**

### **EXTRUSION MODELING**

<b>Estimation Of Temperature Increase In ZSK-90 Co-Rotating Twin-Screw Extruder Using Mesh Partitioning Technique</b> .....	2350
<i>Gupta, Mahesh; Kuhn, Ralf; Rohatgi, Vivek</i>	
<b>A Full 3D Simulation for Twin Screw Extrusion Based on an Immersion Domain Method. Application to Mixing Elements</b> .....	2356
<i>Coupez, Thierry; David, Chantal; Durin, Audrey; Valette, Rudy; Vergnes, Bruno</i>	
<b>Modelling Of Coupling Between Specific Energy And Viscosity During Twin Screw Extrusion Of Starchy Products</b> .....	2361
<i>Berzin, Francoise; David, Chantal; Tara, Ahmed; Vergnes, Bruno</i>	
<b>Rheological Performance Of Viscoelastic Polymeric Melts In Cylindrical Channels Of Extruders</b> .....	2365
<i>Berdyshev, Boris; Hosseini, Hossein; Kromskaya, Ekaterina</i>	

## **NEW EXTRUSION TECHNOLOGY AND APPLICATIONS**

<b>Review Paper: Processing Aspects Of Hot Melt Extrusion In Pharmaceutical Applications</b> .....	2370
<i>Gogos, Costas; Liu, Huiju; Wang, Peng; Xanthos, Marino; Zhu, Linjie</i>	
<b>Prediction Of Mass Transport Of Solvent / Polymer Systems In High Volume Kneader Reactors At Finite Solvent Concentrations</b> .....	2376
<i>Witte, Daniel</i>	
<b>Koax-S-Truder – A New Flexible And High Efficient Plasticizing Concept</b> .....	2383
<i>Grossmann, Marcel</i>	
<b>Effect Of Layer Sequencing On The Interfacial Stability Of Coextruded Multilayered Films Incorporating Ballistic Resistant Materials</b> .....	2387
<i>DePolo, Wade; Moffitt, Ron</i>	
<b>Experimental Analysis Of The Underwater Pelletizing System For Producing Pellets</b> .....	2392
<i>Chen, Chia-Hsun; Kuan, Chen-Feng; Kuan, Hsu-Chiang; Lin, Kun-Chang; Peng, Sin-Jhih</i>	

## **SIG002- FAILURE ANALYSIS AND PREVENTION**

### **PLASTIC FAILURE ANALYSIS 2**

<b>Using Melt Flow Index To Characterize Some Rheological Properties Of Polyethylenes And Polypropylenes, A Sequel</b> .....	2397
<i>AlDeyab, Salem; AlMundarij, Fahd; Elleithy, Rabeh</i>	
<b>Stress Analysis Of 2-D And 3-D Pin-Joined Composite Laminate Plates Using Radial Basis Functions Method</b> .....	2403
<i>Lopez, Ivan; Orozco, Rodrigo; Osswald, Tim; Rowlands, Robert</i>	
<b>Failure Analysis Of A Plastic Slide Valve Assembly</b> .....	2409
<i>Shabeer, Ahamed</i>	
<b>Effect Of Annealing On Failure Behavior Of A Transparent Nylon Under High Speed Impact</b> .....	2413
<i>Paulson, Roy; Song, John; Tsantinis, Nicholas</i>	
<b>Designing For Diverse Loading Conditions And Predictable Failure In A Composite Hydrofoil</b> .....	2419
<i>Larson, Nikki; Petersen, Wesley</i>	

## **INJECTION MOLDING-D23**

### **COMPUTER SIMULATION II**

<b>A Study Of Thermally And Flow Induced Residual Stresses In Injection Molding</b> .....	2424
<i>Chang, Yuan-Jung; Chen, Meng-Chih; Huang, Chao-Tsai; Liao, Yu-Te; Tseng, Shi-Chang</i>	
<b>Warp Management Using Three-Dimensional Thickness Control Method In Injection Molding</b> .....	2429
<i>Chang, Yung; Chen, Meng-Chih; Chen, Shia-Chung; Huang, Chao-Tsai; Huang, Shih-Tsun; Huang, Sung-Wei; Yang, Wen-Hsien</i>	

<b>CAE Simulation And Experimental Investigation On Warp Of An Injection Moded Part</b> .....	2436
<i>Ni, Shijun</i>	
<b>Evaluation Of Gate Geometry And Processing Variables Effects On Gate Freezing Time By CFD Method</b> .....	2441
<i>Mehranpour, Milad; Movahednia, Vahid; Nazokdast, Hossein</i>	
<b>A Quantitative Comparison And Validation Of Computer Aided Engineering Softwares (CAE) Simulating The Injection Molding Process</b> .....	2447
<i>Zarechian, Brendan</i>	
<b>Modelling The Non-Linear Viscoelastic And Locally Distributed Material Behaviour Of Semi-Crystalline Thermoplastics</b> .....	2454
<i>Brinkmann, Markus; Michaeli, Walter</i>	

## **CLEAN ROOM MOLDING AND INJECTION SCREW CONSIDERATIONS**

<b>Electrification Of Hot Runner Systems</b> .....	2459
<i>Babin, Denis; Kaushal, Hitesh</i>	
<b>Elimination Of Defects From Injection Molded Polystyrene Parts Via Screw Modifications</b> .....	2463
<i>Powers, Joseph; Spalding, Mark</i>	
<b>The Effect Of Screw Design On The Quality Of Injection Molding Products</b> .....	2468
<i>Kenig, Samuel</i>	

## **Volume 5**

<b>An Evaluation Of Different Injection Molding Screw Designs And Their Effect On Mixing Quality Using An In-Line Melt Camera (I.M.C.)</b> .....	2473
<i>Miller, Luke; Smith, Walter; Womer, Timothy</i>	
<b>Simulation Of Screws For Injection Molding</b> .....	2478
<i>Vlcek, Jiri</i>	

## **MOLD TEMPERATURE CONTROL**

<b>Investigation Of Laser-Assisted Moulding Of Micro- And Nanostructures</b> .....	2482
<i>Klaiber, Fritz; Michaeli, Walter</i>	
<b>Establishment And Analyses Of Rapid Mold Surface Temperature Control Using Gas-Assisted Heating</b> .....	2486
<i>Chang, Jen-An; Chen, Shia-Chung; Huang, Sung-Wei; Tsai, R.</i>	
<b>Thermal Feature Of Variotherm Mold In Injection Molding Processes</b> .....	2491
<i>Chiu, Hsien-Sen; Chiu, Yan-Chen; Wang, Hung-Chou; Yang, Wen-Hsien; Yu, Chau-Kai</i>	
<b>Improve Cooling Effect Of Injection Molding By Pulsed-Cooling Method</b> .....	2496
<i>Chen, Shia-Chung; Chiu, Yan-Chen; Hsieh, I-Sheng; Son, Pham</i>	
<b>Predicting The Cycle Time In Injection Molding As A Function Of The Frozen Layer Thickness</b> .....	2501
<i>Castro, Jose; Chang, Keh-Chyou; Hioe, Yunior; Villarreal, Maria</i>	
<b>Effect Of Copper Alloy Mold Tooling On Cycle Time And Product Quality</b> .....	2506
<i>Coates, Phil; Kelly, Adrian; Mulvaney-Johnson, Leigh</i>	

## **MEDICAL PLASTICS-D36**

## **MEASUREMENTS, MANUFACTURING, MEDICAL PLASTICS**

<b>Validation Of Crystallinity Measurements Of Medical Grade Peek Using Specular Reflectance FTIR-Microscopy</b> .....	2511
<i>Jaekel, David; Kurtz, Steven; Medel, Francisco</i>	
<b>Non-Isothermal Crystallization Of PLLA/SWCNT Composites</b> .....	2517
<i>Gonzlaez, J.; Landa, P.; Lizundia, E.; Sarasua, Jose-Ramon</i>	
<b>A New Flexible Manufacturing Process For Tailoring Release Rates In Controlled Release Drug Delivery Systems</b> .....	2521
<i>Balasubramanian, Aishwarya; Jin, Xing; Yam, Kit; Zumbrennen, David</i>	
<b>Simulation Driven Medical Package Development</b> .....	2526
<i>Merwally, Hossam</i>	
<b>Medical Molding Per the FDA's ISO 13485 and ISO 14971 Requirements</b> .....	2531
<i>Tuszynski, Steve</i>	

**MOLD MAKING AND MOLD DESIGN-D35**  
**NEW ADVANCES IN MOLD MAKING**

**Reducing Cycle Times & Costs by Simplifying Mold Designs Using Collapsible Core & Expandable Cavity Technology** ..... 2539  
*Hickok, Alan*

**Uniform Mold Cavity Venting Is Far More Critical To Balance Fill Of Multi-Cavity Molds Than Any Other Single Item** ..... 2547  
*Schwenk, Terry*

**New Patented Device For Checking Injection Mold Vents**..... 2551  
*Schwenk, Terry*

**Improving Mold Designs With Corrective Action Analyses**..... 2556  
*Johnson, Steven*

**Take Press Settings Out Of Mold-Making** ..... 2560  
*Tuszynski, Steve*

**SIG023-NANO/MICRO MOLDING**  
**PROCESS CONTROL AND MONITORING IN NANO/MICRO INJECTION MOLDING**

**Ultrasonic Monitoring Of Micromoulding** ..... 2564  
*Brown, Elaine; Coates, Phil; Spares, Robert; Whiteside, Ben*

**High Speed Thermal Imaging Of Micromoulding**..... 2570  
*Coates, Phil; Spares, Robert; Whiteside, Ben*

**An Inline Measurement System For Micro-Features And Structured Surfaces**..... 2574  
*Coates, Phil; Spares, Robert; Whiteside, Ben*

**Detailed Characterisation Of Micromoulded Products** ..... 2580  
*Coates, Phil; Gough, Tim; Whiteside, Ben*

**Process Validation Of The Injection Molding Of Polymer Microfluidic Systems** ..... 2584  
*Hansen, Hans; Marinello, Francesco; Tosello, Guido*

**The Effects of Metal Particle Size and Distributions on Dimensional Accuracy for Micro Parts in Micro Metal Injection Molding** ..... 2591  
*Okubo, Kenji*

**SIG018-PLASTICS EDUCATORS**  
**PLASTICS EDUCATORS**

**Intuitive Thermal Analysis Software Is Intuitive And Easy To Use In An Academic Setting**..... 2598  
*Menard, Kevin; Salamon, Andrew; Ye, Peng*

**Teaching Mold Design: From Concept To Creation** ..... 2602  
*Johnston, Stephen; Kazmer, David*

**Rebuilding A Plastic Engineering Career In Your Fourth Decade** ..... 2606  
*Gavin, James*

**PLASTICS ENVIRONMENTAL-D40**  
**ENVIRONMENTAL PLASTICS, ADVANCES IN POLYMER PROCESSING AND RECYCLING OF POLYMERS**

**Investigation Of Processability Of Zein Based Plastics And Composites** ..... 2610  
*Grewell, David; Srinivasan, Gowrishankar*

**Characterization Of Virgin-RPET Composites** ..... 2615  
*Brown, Wyatt; Curtzwiler, Greg; Singh, Jay; Vorst, Keith*

**X-Ray Fluorescence Spectroscopy (XRF) As A Public Health Screening Tool For The Presence Of Hazardous Chemicals In Plastics**..... 2621  
*Gearhart, Jeff; Posselt, Hans*

<b>Postconsumer HDPE/AGAVE Fibre Composites Coated With Chitosan Used For Removal Of Heavy Metals</b> .....	2627
<i>Alberto, Herrera-Gomez; Cesar, Gomez; Gabriel, Luna-Barcenas; Gonzalez-Nunez, Ruben; Milton, Vazquez; Salazar-Gomez, Sergio</i>	
<b>Mechanical Properties of Recycled Post-Consumer Product with Complex Construction</b> .....	2632
<i>Donovan, Andrew; Moriarty, Mary</i>	

## **POLYMER ANALYSIS-D33**

### **NANOTECHNOLOGY II**

<b>Flame Retardance Of Acrylonitrile Butadiene Styrene-Layer Double Hydroxide Nanocomposites</b> .....	2638
<i>D'Souza, Nandika; Kosuri, Divya; Ogbomo, Sunny</i>	
<b>Studies Of The Melting Behaviour Of Polypropylene Nanocomposites Using X-Ray Diffraction</b> .....	2642
<i>Feuchter, Michael; Kracalik, Milan; Langecker, Günter; Laske, Stefan; Maier, Günther; Pinter, Gerald</i>	

## **SIG010-ALLOYS AND BLENDS**

<b>Improving Compatibility of Blends of Polystyrene and Poly(methyl Methacrylate) by Organically Modified Layered-silicates</b> .....	2647
<i>Atallah, Ayman; Ha, Mai; Krishnamoorti, Ramanan</i>	
<b>Why Gradient Copolymers Make Better Compatibilizers Of Immiscible Polymer Blends Than Block Copolymers: Determining Critical Micelle Concentrations Of Copolymer In Homopolymer</b> .....	2651
<i>Doroudian, Golnar; Kim, Jungki; Roth, Connie; Sandoval, Robert; Torkelson, John; Williams, Daniel; Wong, Christopher</i>	
<b>Effect Of Compatibilization On Crystallization Of RPET/RPP/CaCO<sub>3</sub> Blend</b> .....	2657
<i>Hamada, Hiroyuki; Leong, Yew Wei; Thumsorn, Supharn</i>	
<b>Selective Localization And Migration Of Multiwalled Carbon Nanotubes In Blends Of Polycarbonate And Poly-Styrene-Acrylonitrile</b> .....	2662
<i>Gödel, Andreas; Kasaliwal, Gaurav; Pötschke, Petra</i>	
<b>Mechanical Properties Of PCL/TPS Blown Films</b> .....	2670
<i>Danie, Ramirez-Arreola; Gonzalez-Nunez, Ruben; Martin, Arellano; Rodrigue, Denis</i>	
<b>Enhanced Copolymerization Of PEN/PET Blends During Ultrasonically-Aided Extrusion</b> .....	2675
<i>Gunes, Kaan; Isayev, Avraam</i>	

## **COMPOSITES-D39**

### **NATURAL COMPOSITES**

<b>"Green Composites" from a Conjugated Soybean Oil Resin Using Corn Stover as a Natural Fiber Reinforcement</b> .....	2680
<i>Larock, Richard; Pfister, Daniel</i>	
<b>Effects Of Hannebachite Additive On The Mechanical Behavior Of Phenolic-Natural Fiber Composites</b> .....	2686
<i>Botha, Francois; Hofer, Stephen; Malhotra, Vivak; Markevicius, Gediminas; Miller, Charles</i>	
<b>Studies On The Use Of Polybutene As A Matrix For Wood Plastic Composite</b> .....	2691
<i>Afrifah, Kojo; Matuana, Laurent</i>	
<b>The Influence Of Moisture Content On The Mechanical Properties Of Wood And Natural Fibre Reinforced Composites</b> .....	2697
<i>Burgstaller, Christoph; Stadlbauer, Wolfgang</i>	
<b>Modification And Characterizations Of Cellulose Microfibril By Atom Transfer Radical Polymerization For Biocomposites</b> .....	2702
<i>Chanklin, Wilailak; Li, Shuzhap; Xiao, Huining; Xiao, Miaomiao</i>	
<b>Processing And Mechanical Properties Of Jute Fabric Reinforced SMC Moldings</b> .....	2706
<i>Hamada, Hiroyuki; Hidekuma, Yuya; Nakai, Asami; Nishiura, Masaharu; Okano, Masanori; Sarata, Makoto</i>	
<b>Durability Of Natural Fiber Sheet Molding Compound (Eco-SMC)</b> .....	2710
<i>Hamada, Hiroyuki; Hidekuma, Yuya; Nakai, Asami; Nishiura, Masaharu; Okano, Masanori; Sarata, Makoto</i>	

## **DECORATING AND ASSEMBLY-D34**

### **DECORATING AND ASSEMBLY**

<b>Considerations For Producing High Quality Plated Plastic Components .....</b>	<b>2714</b>
<i>Barnstead, Mike; Wagner, Frank</i>	
<b>Surface Modification Of Inks, Coatings And Adhesives – The Interfacial Effects .....</b>	<b>2722</b>
<i>Wolf, Rory</i>	
<b>Join The Jet Set — Developments In The Use Of Uv Ink Jet For Industrial Decorating .....</b>	<b>2727</b>
<i>Ellison, Matthew</i>	
<b>Impact Of Flexible Automation On In-Mold Labeling .....</b>	<b>2731</b>
<i>Gould, Mike; Liberg, Anna; Sutch, Marcus</i>	
<b>Innovative PVD Technology - Sustainable Metallization Processing With Advanced Functionalities For Plastic Surfaces.....</b>	<b>2733</b>
<i>Schaefer, Ruediger</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26**

### **CRYSTALLINE POLYMERS**

<b>Hyperelastic Modeling Of Enhanced Mechanical Properties Of Electrospun Poly(<math>\epsilon</math>-Caprolactone) Fibers.....</b>	<b>2737</b>
<i>Baji, Avinash; Wei, Xiaofan</i>	
<b>Effects Of Property Modifiers On The Degradation Characteristics Of Polylactic Acid .....</b>	<b>2742</b>
<i>Park, Kuil; Xanthos, Marino; Zhou, Qu Yuan</i>	
<b>Study Of Take-Up Velocity In Enhancing Tensile Properties Of Aligned Electrospun Nylon 6 Fibers .....</b>	<b>2747</b>
<i>Najem, John</i>	
<b>A Study Of Crystallization Kinetics Of Poly (3-Hydroxybutyrate-Co-3-Hydroxyvalerate)/Zn-Al Layered Double Hydroxide (LDH) Stearate Nanocomposites .....</b>	<b>2757</b>
<i>Chen, Hua; Dagnon, Koffi; D'Souza, Nandika; Robinson, Clark</i>	
<b>Enhancing The Gas Barrier Properties Of Polylactic Acid By Means Of Electrospun Ultrathin Zein Fibers .....</b>	<b>2763</b>
<i>Lagaron, Jose</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE JOINT WITH ALLOYS AND BLENDS**

<b>Mechanical Properties Of Injection Molded PCL/TPS Nanocomposite Blends .....</b>	<b>2768</b>
<i>Cesar, Gomez; Danie, Ramirez-Arreola; Gonzalez-Nunez, Ruben; Martin, Arellano; Rodrigue, Denis</i>	
<b>Elastic Recovery Behavior Of Three Layer Film Structures Comprised Of Tpo And Various Ethylene Copolymers.....</b>	<b>2775</b>
<i>Kokel, Nicolas; Shelley, Christopher</i>	
<b>Impact Modified High Modulus PC/ABS Blends: Automotive And Non-Automotive Applications .....</b>	<b>2781</b>
<i>Agarwal, Parminder; DeRudder, Jim; Kulkarni, Amit; Li, Ying; Van de Wetering, Karin; Zhang, Jenny</i>	
<b>Crash Worthiness Analysis Of Polypropylene Composite Used For Designing Automotive Bumpers.....</b>	<b>2787</b>
<i>Baruah, Abhijit; Dutta, Santanu; Singh, Neelam; Singh, Priyanka; Vasudeo, Yatish</i>	
<b>The Morphology And Mechanical Properties Of Tpu/Pp Tpe From Extruded And Injection-Molded Samples.....</b>	<b>2792</b>
<i>Tzoganakis, Costas; Zhu, Shui-Han</i>	
<b>Ultrasonically-Aided Extrusion Of PEN/LCP Blends .....</b>	<b>2797</b>
<i>Gunes, Kaan; Isayev, Avraam</i>	
<b>A Thermally Mendable "Bricks And Mortar" Thermoplastic/Thermoset Blend .....</b>	<b>2802</b>
<i>Eberly, Daniel; Luo, Xiaofan; Mather, Patrick; Oiu, Runqing; Singhal, Amit; Viratyaporn, Wantinee</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE JOINT WITH FLEXIBLE PACKAGING**

### **FLEXIBLE PACKAGING II**

<b>The Relationship Between Tubular Low-Density Polyethylene (LDPE) Blown-Film Optics And Molecular Structure.....</b>	<b>2806</b>
<i>Demirors, Mehmet; Doelder, Jaap Den; Karjala, Teresa</i>	

<b>The Use of Antistatic Agents in Internal Layers of Multilayer Film Structures</b> .....	2811
<i>Smillie, Andrew; Troeltzsch, Christina; Walsh, David</i>	
<b>Effect Of Heat Sealing Pressure On Properties Of Heat-Sealed Oriented Polypropylene/Cast Polypropylene (Opp/Cpp) Film</b> .....	2814
<i>Hamada, Hiroyuki; Hashimoto, Yasuo; Hashimoto, Yumi; Leong, Yew Wei; Tsujii, Tetsuya; Yamada, Kazushi</i>	
<b>Mechanical Properties Of Heat-Sealed Part In Environment-Friendly Film</b> .....	2819
<i>Hamada, Hiroyuki; Hashimoto, Yasuo; Konishi, Reichi; Leong, Yew Wei; Tsujii, Tetsuya; Yamada, Kazushi</i>	
<b>Abrasion Testing Of Packaging Films</b> .....	2824
<i>Jaenecke, Alan</i>	
<b>Investigation On The Tear Property Of Polyethylene Blown Films At Variable Angles</b> .....	2829
<i>Anderson, Ken; Choi, Byoung-Ho; DeGroot, Alexander; Demirsors, Mehmet; Liu, Lizhi; Patel, Rajen</i>	
<b>Effect Of Hairline Crack On The Toughness Of Polyethylene Terephthalate</b> .....	2835
<i>Hamada, Hiroyuki; Leong, Yew Wei; Ogazi-Onyemaechi, Benard; Okano, Masanori</i>	

## **ENGINEERING PROPERTIES AND STRUCTURE-D26**

### **POLYMER ANALYSIS**

<b>Improvement Of The Mechanical Properties Of Thermoplastic Foams Through Modification Of The Foam Structure</b> .....	2840
<i>Brinkmann, Markus; Flórez, Laura; Michaeli, Walter; Obeloer, Dominik</i>	
<b>New Perspective On Heat Deflection Temperature Of Glassy Polycarbonate</b> .....	2845
<i>Li, XY; Mason, Jim</i>	
<b>The Generation Of The PTFE Porous Structure Induced By Uniaxial Stretching Process With Asymmetric Heating Operation</b> .....	2858
<i>Chen, Shia-Chung; Hsu, Ping; Huang, Lei-Ti</i>	
<b>Effect Of Triacetyl Cellulose Film Surface Hydration On The Adhesion Strength To Polyvinyl Alcohol (Pva) Film</b> .....	2863
<i>Cho, Jinsik; Kang, Ho-Jong; Kim, Hansung; Kim, Hyokap; Kim, Yongwon; Shu, Juhe</i>	
<b>Flammability Of FR-PP Based Sandwich Injection Moldings</b> .....	2867
<i>Kotaki, Masaya; Nomura, Manabu; Seino, Makoto</i>	
<b>Determination Of PVT Property Of Asymmetric Ps/CO<sub>2</sub> Drop At High Temperature And Pressure</b> .....	2871
<i>Li, Yao Gai</i>	
<b>Dimensionless Durometry And ASTM D2240</b> .....	2878
<i>Giacomin, Alan; Mix, Adam</i>	

## **INJECTION MOLDING-D23**

### **MATERIAL PROPERTIES**

<b>Influence Of Injection Molding Parameters On The Electrical Resistivity Of Polycarbonate Filled With Multi-Walled Carbon Nanotubes</b> .....	2883
<i>Pegel, Sven; Pötschke, Petra; Villmow, Tobias; Wagenknecht, Udo</i>	
<b>Determination Of Material Property Changes Due To Combining Flow Fronts</b> .....	2889
<i>Koleck, George; Spaniol, Jared; Young, Brian</i>	
<b>Morphology Development Of Polypropylene/Polyamide 6 Blend Molded By Water-Assisted Injection Molding</b> .....	2895
<i>Huang, Han-Xiong; Zhou, Run-Heng</i>	
<b>Effect Of Processing Conditions On Mechanical Properties Of Ultra High Speed Injection Molded ABS Parts</b> .....	2900
<i>Chen, Shia-Chung; Hsu, Peming; Lin, Yu-Tseng; Peng, Hsin-Shu; Tseng, Hsien-Hsun</i>	
<b>Dynamic Property Of The Frozen-Layer And Its Effects On Warpage In Injection Molded Parts</b> .....	2905
<i>Chang, Yuing; Chen, Meng-Chih; Huang, Chao-Tsai; Huang, Shih-Tsun; Liu, Chung-Shin; Yang, Venny</i>	
<b>Evaluation Of Molecular Orientation Of Weldline By Polarized Laser-Raman Spectroscopy</b> .....	2911
<i>Hamada, Hiroyuki; Tomari, Kiyotaka; Yamada, Koji</i>	
<b>Influence Of Mechanically Blended Investment Casting Wax Formulations On Quality Of Injection Moulded Parts</b> .....	2916
<i>Blackburn, Stuart; Draper, Owen; Greenwood, Richard; Shobanjo, Oludolapo</i>	

## **PROCESS CONTROL II**

<b>A Nonlinear Model-Based Predictive Controller For Injection Speed</b> .....	2923
<i>Abu-Ayyad, Ma'moun; Dubay, Rickey; Hernandez, Mauricio</i>	
<b>Efficacy Of Saturated Design Of Experiments In Multivariate Process Characterization</b> .....	2930
<i>Hazen, Dan; Johnston, Stephen; Kazmer, David; VanDerwalker, Darin</i>	
<b>Part Weight Control Via Model Free Optimization For Injection Molding</b> .....	2935
<i>Chen, Xi; Kong, Xiang; Shao, Zhi</i>	
<b>Study On Packing Effects On The Part Shrinkage Molded By External Gas-Assisted Injection Molding Process</b> .....	2941
<i>Chen, Shia-Chung; Huang, Hsin-Yi; Huang, Shih-Tsun; Lin, Yi-Chang</i>	
<b>Iterative Learning Control Of Mold-Open Position In Injection Molding</b> .....	2946
<i>Furong, Gao; Shengyong, MO; Yi, Yang</i>	

## **MEDICAL PLASTICS-D36**

### **DEVELOPMENT MATERIALS FOR MEDICAL APPLICATIONS**

<b>Development Of An Active Agent Carrying, Biodegradable Implant For The Intravesical Therapy Of The Overactive Bladder Syndrome</b> .....	2951
<i>Grosse, Joachim; Laar, Nina; Michaeli, Walter; Michaelis, Ina; Von Walter, Matthias; Wintermantel, Erich</i>	
<b>Improving The Compatibility Of Poly(<math>\epsilon</math>-Caprolactone)/Poly(Vinyl Alcohol) Blends</b> .....	2957
<i>Etxebarria, A.; Lejardi, A.; Meaurio, E.; Monasterio, N.; Sarasua, Jose-Ramon; Zuzza, E.</i>	
<b>Nonwoven Pet Fiber Structures For Vascular Grafts Applications</b> .....	2962
<i>Ajji, Abdellah; Bureau, Martin; Diaz-Quijada, Gerardo; Maire, Marion; Merhi, Yahye; Robitaille, Lucie</i>	
<b>Radiation Sterilization Of Polycarbonate-Polyestercarbonate Copolymers</b> .....	2967
<i>Malinoski, Jon</i>	
<b>HA-Coated Carbon Fiber Composite For Hip Replacement With Improved Osseointegration</b> .....	2976
<i>Bureau, Martin; Dimitrievska, Sashka; Hacking, Adam; Whitfield, Jim</i>	
<b>Soft Polyurethane Foams As Cartilage Replacement: Processing Behavior And Biocompatibility</b> .....	2981
<i>Bureau, Martin; Champagne, Michel; Dimitrievska, Sashka; Gendron, Richard</i>	

## **MOLD MAKING AND MOLD DESIGN-D35**

### **INNOVATIONS IN HOT RUNNER TECHNOLOGY**

<b>Study on the In-Mold Punching of the Thermoplastic Injection Molding</b> .....	2986
<i>Hsu, Chi Feng; Hsu, Ray Quen; Tsai, Yu Pin</i>	
<b>Plate Actuated Hot Runner Valve Gates For Improved Part Quality And Molding Process Consistency</b> .....	2991
<i>Bouti, Abdeslam; Gray, Stephen</i>	
<b>Advancements In Stack Molding Technology</b> .....	2996
<i>Overfield, Sarah</i>	
<b>Opportunities For Improved Profitability In Pet Molding Using Advanced Hot Runner Technologies</b> .....	3000
<i>Catoen, Bruce; Godwin, Harold</i>	
<b>Optimization Of Hot Runner System Geometry For LGF Reinforced Thermoplastics</b> .....	3006
<i>Cellere, Alessandro; Lucchetta, Giovanni</i>	

## **SIG023-NANO/MICRO MOLDING**

### **APPLICATIONS FOR NANO/MICRO MOLDING**

<b>Integration In Design And Manufacturing Of Moulded Polymer Micro Devices</b> .....	3011
<i>Bolt, Pieter; Bullema, Jan Eite; De Zwart, Rene; Korbee, Roland; Tacken, Roland</i>	
<b>Two Component Micro Injection Molding For Mid Fabrication</b> .....	3016
<i>Hansen, Hans; Islam, Aminul; Jørgensen, Martin; Ørts, Søren; Tang, Peter</i>	
<b>New Process Chains For Replicating Micro And Nano Structured Surfaces With Bio-Mimetic Applications</b> .....	3021
<i>Brousseau, Emmanuel; Dimov, Stefan; Griffiths, Christian; Lalev, Georgi; Petkov, Petko; Scholz, Steffen</i>	
<b>The Injection Molding Of Nanostructured Polystyrene Templates To Investigate The Control Of Mesenchymal Cell Differentiation</b> .....	3028
<i>Coulter, John; Jaafar, Israd; Jedlicka, Sabrina</i>	

<b>The Effect Of Residual Stresses On Protein G Adhesion</b> .....	3033
<i>Barry, Carol; Farris, Leslie; George, Nicholas; McDonald, Melisenda; Yoon, Sung-Hwan</i>	
<b>Development Of Plastic Dental Brackets By Microinjection: Mechanical And Reological Simulation, Prototypes Production By Micromilling And Production By Microinjection</b> .....	3039
<i>Azcarate, Sabino; Cervera, Alberto; Esmoris, Joseba; Herrero, Alberto; Oñate, Roberto</i>	
<b>Three-Dimensional Nano Imprint Lithography Using Photo-Curable Resin</b> .....	3044
<i>Kamiya, Yasuhiro; Ohsaki, Takeshi; Sakai, Nobuji; Taniguchi, Jun; Unno, Noriyuki</i>	

## **POLYMER ANALYSIS-D33**

### **APPLICATION DRIVEN POLYMER ANALYSIS II**

<b>DSC Fast Cooling Rates And Improved Precision Temperature Control Enable Precise Isothermal Crystallization Studies</b> .....	3049
<i>Menard, Kevin; Salamon, Andrew; Ye, Peng</i>	
<b>Anisotropic Thermal Conduction In Polymers Subjected To Uniaxial Elongations</b> .....	3053
<i>Camponeschi, Erin; Gupta, Sahil; Kloppenborg, Ellen; Schieber, Jay; Venerus, David</i>	

### **APPLICATION DRIVEN POLYMER ANALYSIS III**

<b>Improvement Of Intrinsic Viscosity Of Recycled Pet By Radio Frequency Heating</b> .....	3056
<i>Hamada, Hiroyuki; Leong, Yew Wei; Nagata, Shigeyuki; Ogasahara, Minoru; Shidou, Manabu</i>	
<b>Diluent Effect Of The Poly(Ethylene-Alt-Propylene) Block Upon The Polyethylene Block Thermal Fractionation Of PE-Block-PEP Diblock Copolymers</b> .....	3060
<i>Arnal, María; Lorenzo, Arnaldo; Müller, Alejandro</i>	
<b>Thermal Fractionation By SSA As An Approach For The Identification Of Binary PE Blends</b> .....	3065
<i>Guastaferrero Preda, Franco; Sanchez, Johan; Scorza, Fabiana Lulli</i>	

## **SIG022-RADIATION PROCESSING OF POLYMERS**

### **RADIATION PROCESSING OF POLYMERS**

<b>Dual-Cure Low-Temperature And Electron Beam-Curable Resins</b> .....	3070
<i>Dorsey, George; Griffith, William; Harper, David; Rials, Tim; Stortz, Tim</i>	

## **THERMOSET-D28**

### **THERMOSET**

<b>Effect Of Carbon Nanofibers On The Reaction Kinetics Of Wind Blade Vinyl Ester System</b> .....	3075
<i>Cai, Zhi-Qi; Castro, Jose; Guerra, Dante; Hioe, Yuniar; Lee, James; Movva, Siva</i>	
<b>Photoinitiators For UV Led Curing Of Acrylate Thin Films</b> .....	3080
<i>Gogos, Costas; Lu, Yong; Young, Ming-Wan; Zhu, Linjie</i>	
<b>Use Of UV-DSC And DMA To Study The Photocuring Of Materials</b> .....	3085
<i>Brostow, Witold; Chonkaew, Wunpen; Menard, Kevin; Menard, Noah; Newman, Sheldon; Salamon, Andrew</i>	
<b>Morphological And Mechanical Characteristics Of Rigid Polyurethane Foams</b> .....	3088
<i>Henao, Edgar Ossa; Mejía, Felipe Cano; Zapata, Nora Restrepo</i>	
<b>Cure Kinetics Of Thermoset Based Mortars For Bonded Anchors In Civil Engineering</b> .....	3092
<i>Hülder, Gerrit; Osswald, Tim</i>	

**Author Index**