

SPE Extrusion Newsletter



Chairman's message

ANTEC 2018 is knocking on our door! Many plastics professionals will be gathering in Orlando, FL for SPE's Annual Technical Conference (ANTEC) in about a month. This year ANTEC will be co-located with NPE2018, the Plastics Show. There are at least two reasons to attend in Orlando, May 7-11!

I am excited to announce that the Extrusion Division has put together a 5-session program. The sessions are highly relevant to our industry and will be covering Twin-Screw Extrusion, Single-Screw Extrusion, a General Extrusion session as well as a session dedicated to Process Modeling. We will be hosting our Annual Business Meeting on Tuesday afternoon, followed by a reception to honor and meet the recipients of this year's Awards. The reception is the perfect time to meet with friends, exchange ideas and network!

Our initiative to extend the Board of Directors to Young Professionals (YP) that started in 2015 is going full pace and this year we will welcome Kevin Laux from Kuraray as well as Sidney Carson from PolyOne. They will be officially joining the Board during our Spring Board Meeting in Orlando right before ANTEC.

Also, don't miss 2 exciting SPE Extrusion Minitecs where we bring the technology to you: June 14th in Detroit, MI and June 21st in Marietta, GA. See below for more details.

Finally, I would like to thank our Sponsors who support the Division and ANTEC!

Come and meet your Extrusion Division Board members in Orlando! We look forward to a great ANTEC and NPE 2018!

Olivier Catherine
SPE Extrusion Division Chair, 2017-2018
Email: ocatherine@cloeren.com

Don't miss ANTEC/NPE 2018

ANTEC2018 is co-located with NPE2018, May 7–11 at the Orange County Convention Center in Orlando, Fla. The Extrusion Division will have morning and afternoon sessions on Monday, Tuesday and Wednesday. More than 35 presentations will cover a wide range of topics in general extrusion, single- and twin-screw extrusion, and extrusion modeling.

**View details on NPE2018 @
<http://www.npe.org>**

**View details on ANTEC2018 @
<https://www.4spe.org/antec>**

SPE Extrusion Division to host 2 regional programs in June 2018

SPE Extrusion Minitec #1, June 14th in cooperation with Michigan State University at The Institute for Advanced Composites

- Technical presentations by SPE Extrusion Manufacturing Innovation in Detroit, MI. The program will include: Div. Board members and others
- Tour of the IACMI facility @ <https://acmi.org>
- Tabletop displays/corporate sponsorships
- Reception to mix and meet with speakers, sponsors and attendees

SPE Extrusion Minitec #2, June 21st at the Hilton Hotel in Marietta, GA. The program will include:

- Technical presentations by SPE Extrusion Div. Board members and others
- Tabletop displays/corporate sponsorships
- Reception to mix and meet with speakers, sponsors and attendees
- Friday golfing @ championship golf course, @ <http://bit.ly/ExtrusionGolfOuting>

For additional information or to register for either event contact Sarah Scovens @ +1 908.685.2333 or sscovens@leistritz-extrusion.com

ANTEC Best Paper: Troubleshooting and Mitigating Gels in Polyolefin Film Products

Mark A. Spalding, Eddy Garcia-Meitin and Stephen L. Kodjie, Dow Chemical Company
Gregory A. Campbell, Clarkson University/

Castle Associates.

The term “gel” is commonly used to refer to any small defect that distorts a film product. Eliminating gel defects from extruded polyolefin film products can be difficult, time consuming, and expensive due to the complexity of the problem and the high levels of off-specification product produced. This paper discusses the identification of gel types, the common root causes for gels, and the technical solutions for mitigating gels in film products produced using single-screw extruders.

**Download this paper @
<http://bit.ly/ExtrusionPaper>**

Extrusion Formula of the Month: Temperature rise caused by pressure in a co-rotating intermeshing twin screw extruder... Don't underestimate it!

It's common knowledge that pressure generation in the front-end of a co-rotating twin screw extruder results in a temperature rise. But don't underestimate it! Co-rotating twin screw extruders operate at high screw rpms...200, 600 or even 1000+. The more restrictive the front-end the higher the pressure and melt temperature rise, which typically adversely effects product quality.

A useful temperature rise formula is as follows:

$$\Delta T (\text{ }^{\circ}\text{C}) = \Delta P (\text{bar}) / 2$$

Units:

ΔT = Change in temperature in $^{\circ}\text{C}$

ΔP = Change in pressure (1 bar = 14.5 PSI)

For example: If a TSE is processing 500 KGS/HR and the die pressure is 40 bar (580 PSI) then the associated melt temperature rise might be 20°C . ($\Delta T = 40/2$)



Co-rotating intermeshing twin screw extruder discharge elements (image courtesy of Leistritz)



Pressure drop across flow field simulation
(image courtesy of Compuplast)

Editor's note: This formula is meant to be insightful, if not necessarily accurate, as screw rpms, material viscosity, and the geometry of the discharge screw elements all play significant factors in the actual melt temperature.

SPE Extrusion Division contributes to ICIPC Colloquium in Colombia

The ICIPC Colloquium 2018 (March 14–16, 2018) in Medellin Colombia was 1 of the top plastics events in South America in recent memory and focused on disseminating and transferring the novelties and trends in materials, processes and products of the plastics, rubber and allied industries. The ICIPC Colloquium 2018 included on topics relating to polymer processing, flexible packaging, industry 4.0, sustainable materials, energy efficiency, automotive applications, hot melt extrusion (HME), polymer processing simulations and others. The Colloquium included more than 30 speakers, approx. 600 participants from countries, such as, USA, Mexico, Guatemala, Salvador, Colombia, Dominican Republic, Venezuela, Ecuador, Peru, Brazil, etc.

The SPE Extrusion Board was well represented at this event. Presentations were given by: Charlie Martin (Leistritz), John Christiano (Davis Standard), Monika Gneuss (Gneuss, Inc.), Olivier Catherine (Cloeren) and Maria Noriega (ICIPC), who is also the Director of the ICIPC and the event organizer. The

SPE Extrusion Division also had a display in Spanish (see below) at the event to help solicit new SPE members.



Speakers @ ICIPC 2018 Colloquium



SPE Spanish display (screw images provided by Leistritz and Davis-Standard)

Introduction to Scientific Extrusion

Braulio Polanco
Systematic Extrusion
Presented at Plastics Technology's Extrusion
2017 Conference

Scientific Extrusion is a data-driven systematic approach for running an extrusion process. The method is based on scientific principles which enable extrusion manufacturers to produce high quality product consistently and effectively every time.

One of the biggest challenge for processors is inconsistency in polymer quality. Implementing a Scientific Extrusion process will transform your extrusion operation from art to science. Consequently, it will provide a system that can consistently produce parts that meet specifications regardless of polymer molecular weight variations, enable implementation of consistent procedures, and simplify process validation which comply with FDA requirements.

Yes, it is possible to transform extrusion from art to science and it's time for the extrusion industry to take the leap and shadow the path of the injection molders.

**Download this presentation @
<http://bit.ly/ExtrusionPresentation>**

SPE website link of the month- there a tons of useful information here!

Plastics Research Online allows you to view and download technical articles for free:
<http://www.4spepro.org>

Browse the latest articles by category:
Applied Rheology, Bioplastics, Composites, Conductive Polymers, Engineering Properties, Extrusion, Failure Analysis, Injection Molding, Plastics Nanotechnology, Polymer Modifiers, and Thermoplastics

Book recommendation: Extrusion of Polymers by Dr. Chan I. Chung

This book presents single-screw extrusion technology together with the relevant polymer fundamentals with an emphasis on screw design. It begins on a physical level, providing an in-depth conceptual understanding, followed by an analytical level with mathematical models.

About the author: Dr. Chug is a long-time member of SPE. He was awarded the Division's Distinguished Achievement Award for outstanding contribution to the knowledge of plastic extrusion, and was honored with the Bruce Maddock Award in 2000 for contributions to single-screw extrusion technology.

**Order Dr. Chung's book @
<http://bit.ly/2JCIQWe>**

Editor's note: Dr. Chung is donating his royalties from sales of the book to the Extrusion Division. Thank you!

Upcoming SPE Extrusion Division related events

May 7-11, 2018
NPE/ANTEC 2018, Orlando, FL.

June 14, 2018
SPE Extrusion Minitec, Detroit MI.
June 21, 2018
SPE Extrusion Minitec, Marietta, GA.

**See the complete SPE calendar of events @
<http://bit.ly/SPECalendar>**

SPE Extrusion Division Board of Directors

View the list of current SPE Extrusion Division Board of Directors@ <http://bit.ly/ExtrusionBOD>

SPE Extrusion Division Sponsors

Platinum

Davis Standard – www.davis-standard.com
Nordson – www.nordson.com
Coperion – www.coperion.com
ACS Group – www.acscorporate.com
Leistritz Extrusion – www.leistritz-extrusion.com
Barr Plastics – www.robertbarr.com
Cloeren – www.cloeren.com
JSW – www.jsw.co.jp/en/index.html
Gneuss – www.gneuss.com
Merck – www.merck.com
Kuraray – www.kuraray.com
US Extruders – www.us-extruders.com

Gold

Teel Plastics – www.teel.com

Silver

Polymer Center of Excellence – www.polymers-center.org



Questions or comments?

Jim Callari, SPE Extrusion Division Newsletter Editor,
jcallari@ptonline.com