



**SPE[®] Medical Plastics MiniTec 2013 Technical Program with Abstracts
Technology Advances in Plastic Materials and Processing for Medical Devices**

Monday, September 9, 2013 (8 am – 5 pm)

Organizer and Moderator: Len Czuba – Czuba Enterprises, Inc.

Morning Session on New Materials

Title:
High Performance Polymers

Presenter:
Ryan Roeder – University of Notre Dame

Compare various resins and compare some of the effects of processing routes on structure and properties- all directed at providing audience with actionable info about options.

Title:
**Silicone Biomaterial Applications:
Past, Present and Future**

Presenter:
Alexis Proper – PolyOne Corporation

Silicone materials have been an ideal material for use in the medical device industry for 50+ years. Realize how silicone materials were used in the past and present devices and how current and new materials can be leveraged in the future.

Title:
**Specialty Polymer Solutions for a Changing
Healthcare Landscape**

Presenter:
Dane Waund – Solvay Specialty Polymers

As the global healthcare industry continues to evolve, so too do the opportunities and requirements for plastic materials. Two particular areas of focus for Solvay Specialty Polymers are single use instrumentation, and the growth of mobile electronic devices designed specifically for healthcare applications. An overview of developments within these two market sub-segments will be presented, with an emphasis on technical requirements, part design, and material selection.

MiniTec Technical Program subject to change.

Title:
PEEK in Medical Implant Applications

Presenter:
Kenneth Ross/David Berry – Evonik Corporation

Implants for the human body place heavy demands on the material used. For a long time, the materials favored for the purpose were the metals stainless steel, titanium and cobalt-chromium, but now high-performance plastics such as PEEK are gaining ground. Applications and performance characteristics of PEEK in implant applications will be presented.

Morning Break

Title:
Openair® Plasma Improves Adhesion of LSR to Medical Grade Polymer Substrate Materials

Presenter:
Jeff Leighty – Plasmatreat

New, highly engineered polymers present a significant challenge for silicone rubber adhesion. Plasmatreat presents a unique, simple solution to these challenges. This presentation covers the issues with LSR over-molding on difficult-to-bond substrates, current approaches and how atmospheric plasma treatment can improve adhesion, simplify the process and minimize labor and material costs.

Title:
Fluoropolymers in Healthcare Applications

Presenter:
John Felton – Daikin – America

As materials that are used in medical devices, fluoropolymers are very misunderstood. Ironically, many of the key properties they possess, if utilized properly, will solve long-standing problems the industry has been accepting for years.

Key properties such as low coefficient of friction, excellent moisture barrier, superior chemical resistance, bio-inertness and low surface energy all are desirable characteristics device developers are seeking.

Long-standing issues the industry has seen such as reliable & economical catheter construction, plunger stick-slip problems in syringes, glass replacement and greater vascular access all can be achieved by designing with fluoropolymers.

The key to solving these problems lies with education. Once educated on their diversity, properties, and potential applications, design engineers will have greater opportunity to solve these issues while developing the next generation of devices.

Title:
Polycarbonate Resins for Medical Applications: Today and Tomorrow

Presenter:
Pierre Moulinie – Bayer Material Science LLC

While Polycarbonate has remained a consistent solution for many challenges presented to medical device providers, the challenges presented today are different than just 5 years ago. In addition to highlighting some tangible benefits polycarbonate and its blends bring to medical applications, we will show how newly-introduced resins in our portfolio help healthcare providers and plastics processors stay on top of today's megatrends.

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Title:
A Multi-pronged Approach to Meeting HAI Challenges with Specialty Engineered Thermoplastics

Presenter:
Lynn Collucci Mizenko/Manish Nandi – SABIC

There is intense effort in the healthcare industry to employ multi-pronged strategies to address urgent needs to reduce the spread of secondary infections among patient populations being treated for unrelated primary conditions. These efforts are driven by the significant negative impacts that such secondary infections have on patient outcomes; the additional cost of treatment, as well as changes to the reimbursement schedules related to these complications. Healthcare service providers are aggressively employing a broad range of solutions to address these challenges which will require specific responses from material suppliers to help them achieve the improvements needed. This presentation will provide an overview of various approaches to managing infection control and how specialized engineered thermoplastics can help practitioners and institutions meet these challenges on a number of fronts with emphasis on the development of SABIC's antimicrobial portfolio, an offering of nine antimicrobial compounds across four different product families.

Lunch

Afternoon Session on New Processing Technologies

Title:
Exciting, New Extruded Tubing Materials for Medical Applications

Presenter:
Ed Boarini – Teleflex Medical OEM

Are you on a constant hunt for solutions to critical challenges in your designs? The new generation of tubing materials could provide the answers you need.

These advanced materials have the potential to expand product performance characteristics and give you a competitive edge in the market.

This presentation will target some of the latest innovations in tubing materials, which include:

- Etch-free EFEP co-extrusion as an inert liner
- PTFE for multi-lumen extrusion and liner applications
- Ultra-small fluoropolymer microcatheters

Title:
Advantages of Co-extrusion for Use in Medical Tubing

Presenter:
Tom Thompson – Teel Plastics

The use of multi-layer, co-extruded tubing for medical tubing applications can allow for increased flexibility of design for many tubing applications. By using the co-extrusion process to manufacture tubing with a different material on the OD (outside diameter) than on the ID (inside diameter) of the tube will allow the manufacturer to optimize the functional requirements of the product that is best suited for that specific medical device application. Material properties for the outside of the tube are often just as important as the material properties that are needed on the ID of the tubing product. Co-extrusion can be used to maximize the benefits of the increasingly complex medical industry and allow the manufacturer to use a variety of materials to solve complex requirements.

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Title:**PET: A Sustainable Material for Medical Packaging Applications****Presenter:****Scott Steele – Plastics Technologies Inc.**

Due to a variety of desirable properties—ability to be shaped, processing temperatures, lightweight, clarity and more— polyethylene terephthalate (PET) continues to be a viable packaging material for a broad variety of applications.

Significant progress has been made in the reclaim and reuse of PET in food and beverage packaging applications. Increased consumer participation in recycling programs, waste stream infrastructure and new processing technology has enabled these bottles and containers to reincarnate as recycled PET (rPET) resin. There are commercial food and beverage packages today that are made from as much as 100% rPET resin.

The next generation of development is focused on biobased PET resin alternatives. Emerging materials will align more closely with desirable sustainable initiatives.

This paper will review the PET journey, discuss the latest biobased developments and take a look at how material and processing inroads could impact medical device packaging in the future.

Afternoon Break**Title:****Why Your Perfect Mold and Process Produces Imperfect Parts****Presenter:****David Rose – Beaumont**

In 1997 one of the leading causes of plastic part failure was first revealed to the world and recognized by the SPE IMD as one of the most significant discoveries in injection molding. The problem begins in the injection phase of the molding cycle where high shear conditions create viscosity variations of more than 1000%. These variations are non-uniformly and often unknowingly, distributed throughout a mold thus making many part quality defects appear to be a result of random acts of process variation. The phantom-like phenomena impacts every part that is injection molded and affects shrinkage, warpage, mechanical properties as well creating cavity-to-cavity product variations during each molding cycle. This presentation will reveal the source of the problem, how it affects molded parts, where it appears, how to recognize it and how it can be managed.

Title:**Advanced Process Controls for Injection Molding****Presenter:****Susan Montgomery – Priamus Systems
Umberto Catignani – Orbital Plastics**

It is possible to control viscosity including shear stress and shear rate, part compression and shrinkage from inside the mold cavity. Utilizing cavity pressure and cavity temperature sensors to detect melt front, target values for these parameters are achieved and more consistent parts are produced.

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Title:

**Seeing Beyond the Surface: How CT Scanning
Redefines Industrial Metrology**

Presenter:

Tom Casali – NyproMold, Inc.

CT Scanning is changing the landscape of industrial metrology by allowing 100% dimensional and quality analysis of a plastic part or assembly without deconstruction, manipulation, or expensive fixturing. NyproMold will explain the technology and its capabilities while showing the incredible value it can bring to fit, form, function, and failure analysis for medical devices as well as reliable dimensional metrology results and repeatability on complex parts as opposed to traditional measurement equipment.

Q & A