

## **GREETINGS FROM THE CHAIR**



Fellow Medical Plastics Division Members:  
Hope you and your family are safe and taking precautions against an ongoing COVID-19 surge.

Elections were conducted in May to elect Medical Plastics Division (MPD) Councilor and Board of Directors for term ending in 2024.

Ned E LeMaster was elected as the division councilor while Margie Hanna, Amin Sedighiamiri, Vijay Kudchadkar, Rob Klein, Kumin Yang, Kyle Kulwicki, and Selvaanish Selvam are our elected Board of Directors.

Please join me in welcoming them!

I would also like to thank Vipul Davé for conducting the election and getting to the finish line.

Over the last two months, MPD has been involved in planning and organizing a number of events.

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# GREETINGS FROM THE CHAIR

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In our Virtual Technical Forum and Networking event series, Jeff Ellis, a senior technical leader at EWI presented a talk on “Developing Cost Effective and Reliable Plastic Medical Products” on June 2 and Nilesh Billade from Stress Engineering Services Inc. presented a talk on “Computational Modeling for Medical Device Regulatory Submissions per ASME V&V40” on July 7.

A one-day Medical Plastics Virtual Symposium was organized on June 10 with key focus on Medical Plastics, Material Formulation, Novel Device Design, Implantables, Modeling, Surface-Modified Materials, 3D Printing and Bioresorbable polymers. I would like to thank symposium organizing committee for their hard work and commitment to make this event a success.

Medical Plastics Division teamed up with Informa Markets to organize one-day MiniTec conference “Medical Plastics to Help Save the World” on August 10, 2021 at Anaheim Convention Center in Anaheim. It was great to see everyone in-person. The conference was held in conjunction with MD&M West with podium and poster presentation and panel discussion on sustainability. I would like to thank Len Czuba and Ned LeMaster for their leadership in organizing this event. I would also like to thank our sponsors for their support.

Finally, I would like to acknowledge Celanese, Avient, Evonik and many more for supporting Medical Plastics Division.

I look forward for your feedback and recommendations.

Cheers

Ali

**Are you interested in volunteering for the BOD?**

**Please email Ali Ashter**  
**ashter2000@gmail.com**



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# NEWSLETTER EDITOR

## GREETINGS FROM THE NEWSLETTER EDITOR



Greetings fellow Medical Plastics Division Members! Welcome to the latest edition of our award winning newsletter! I appreciate your efforts to help me improve this communication tool; please send feedback my way:

[vijay.kudchadkar@westfall-technik.com](mailto:vijay.kudchadkar@westfall-technik.com)

In this newsletter we are honoring our Emeritus member – **Glenn Beall** who has made significant contributions to the medical plastics industry. Please take a moment to read about his achievements and contributions to the plastics industry. On behalf of the MPD, we would like to thank Glenn for the contributions and continued support.

Plastics play an important role in our lives. In this newsletter, we are featuring stories and articles about efforts to reduce the environmental impact of medical plastics and to make medical plastics manufacturing more sustainable.

Our 2021 Minitex in Anaheim was a big success. It was nice to meet people in-person again. The presentations and posters were excellent. I have included photos from our Minitex in this newsletter.

Best regards,

Vijay Kudchadkar

**Do you have questions about MPD Membership?**

Please email Ravi Ayyar  
[rayyar@lilly.com](mailto:rayyar@lilly.com)

**Newsletter Suggestions? Interested in Sponsorship?**

Please email:  
**Vijay Kudchadkar** [Vijay.Kudchadkar@westfall-technik.com](mailto:Vijay.Kudchadkar@westfall-technik.com)  
**Selvaanish Selvam** [Selvaanish.Selvam@avient.com](mailto:Selvaanish.Selvam@avient.com)



# MPD Emeritus Board Members

## Glenn Beall – the first Emeritus Member of the Medical Plastics Division Board of Directors of SPE



In the spring of 2020, the MPD Board of Directors adopted an updated set of ByLaws for our division. One of the newly added sections was to establish the recognition of Emeritus Board Members that will allow experienced, long-standing members of the MPD and our board to continue to contribute beyond their elected terms of service.

Shortly after the adoption of these ByLaws, Glenn Beall was nominated and overwhelmingly approved for this distinction. We decided to write a little about Glenn and his background so that you, the reader can get an appreciation of the amazing contributions that have been made to our industry by this very talented and humble person.

**Glenn Beall** earned his Bachelor of Science degree in engineering from **Bradley University** and then began his career at **General Electric** where he spent a year developing plastic parts for equipment to test heavy electrical switches. When an opportunity opened for him at **Abbott's** Research Division in North Chicago, Glenn changed jobs and began working with a design team to help transition from reusable medical devices to disposable plastic devices avoiding the cost and complications associated with reusables. He enjoyed his role at Abbott where in the 10 years he was there from 1958-68 he developed many new products which resulted in him earning 12 of his impressive **35 patents**.

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# MPD Emeritus Board Members

Glenn joined **SPE** in May of 1960 and almost immediately became involved with the local **Chicago Section** as newsletter editor in 1962 which he held for 2 years. He was active on the board as secretary in 1965 and became Section president in 1967. He then continued to serve on various conference committees and still participates in the section leadership.

Before continuing, we need to step back and bring into this review of Glenn Beall's life and contribution to our industry, Glenn's wife **Patsy Jo Wheeler Beall** who was his high school sweetheart. **Patsy and Glenn were married in 1953**. Glenn credits Patsy with helping support him through his college years. But that was only the start. When Glenn went to Abbott, Patsy also got a job there as well. During these years they worked on and were involved with many after-work related activities such as SPE volunteering. More on this later.



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## MPD Emeritus Board Members

In 1968, Glenn (and Patsy) both left Abbott and started Glenn Beall Engineering Inc. specializing in designing products and making prototypes. Glenn focused on plastics and although he had gained much hands-on experience at Abbott in their mold shop with extruders and molding machines, Glenn continued to learn as much as he could about the plastics industry and how the various technologies available could help make useable products beyond medical devices. Throughout these years, Glenn never stopped learning and sharing his expertise. While serving the need for plastic design and prototype parts at GBE, Glenn also served as a consultant and instructor both for corporations and universities. During this time, he was a frequent contributor of articles on plastic part design, writing books and presenting technical presentations at conferences such as ANTEC and other SPE conference venues.

In 1972, Glenn taught his first seminar which was a joint effort with a fellow Chicago SPE section colleague, Dr. Larry Broutman. Broutman (SPE President 1977–1978) was asked to help a company train their engineers on plastics by giving an in-house seminar. Dr. Broutman taught about the plastic materials used and why. He asked Glenn to cover injection molding and processing, which also touched on design. Other similar opportunities gave Glenn a chance to continue teaching seminars both with Broutman but also on his own. This led to SPE inviting Glenn to join its list of seminar instructors and teach seminars at SPE events such as ANTEC. This gave Glenn the opportunity to continue his teaching and to expand his ability to help train new engineers in the industry. To date, although he retired from teaching seminars in 2008, while actively teaching, Glenn Beall taught more than **770 seminars to nearly 30,000 attendees/students!** He also published more than **50 technical papers and articles, wrote or co-authored 4 technical reference books** and contributed a monthly technical article on **Design in Plastics Today** magazine. More than **80 contributions appeared during his almost 15 year affiliation** with the magazine.

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# MPD Emeritus Board Members

Glenn was one of the founding members of the **Medical Plastics Division** and served on the board starting in 1981. He was the division Secretary in 1982 and served as Newsletter Editor from 1982-1985. Glenn Beall served as the Chairman of the Division in 1984 & 1985 and was selected as MPD's Most Valuable Division Member in 1984, 1985 & 1986. He was awarded the Outstanding Contribution Award in 1994 for his on-going support of so many division activities. Glenn continued to serve on the board, frequently giving conference presentations and attending meetings as often as his schedule allowed.

In 1993, Glenn, with the complete support of Patsy decided to sell GBE to their long-time business partner, Robert Giles allowing Glenn to focus on consulting and teaching seminars working under the name of **Glenn Beall Plastics, Ltd.** During this time of growth of both the plastics industry and especially plastics in medical devices, Glenn joined other organizations which allowed him to expand his network and contribute to other areas of the industry.



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# MPD Emeritus Board Members

Among other organizations, Glenn joined SPI (now called Plastics) in 1969 and was active throughout the '70s & '80s serving the **Midwest Section** in several board positions:

- Conference Program Committee: 1971
- Chicago Chapter Steering Committee: 1972
- Chairman, Midwest Conference Program: 1973
- Board of Directors: 1974-1986
- Section Treasurer: 1976
- Recipient of Founders Award: 1977
- Speaker, Midwest Conference, Lake Geneva, WI (#64): 1978
- Speaker, Midwest Processors Meeting, Chicago, IL (#59): 1978
- Vice Chairman, Board of Directors: 1980-1982
- Chairman, Board of Directors: 1982-1984
- Member of Illinois Chapter Steering Committee: 1982-1991
- Speaker, Midwest Conference, Lake Geneva, WI (#321): 1986

In addition to the local section of SPI, Glenn contributed to the **National SPI activities** as follows:

- Products Liability Political Action Committee: 1978-1981
- Speaker, Products Liability Conference, Hasbrouck Heights, NJ (#63): 1978
- Speaker, Molders Conference, Scottsdale, AZ (#73): 1979
- Speaker, Products Liability Conference, Los Angeles, CA (#76): 1979
- Speaker, Products Liability Conference, Houston, TX (#78): 1979
- National Plastics Exposition Program Committee: 1981-1982
- Speaker, National Plastics Exposition, Chicago, IL (#184): 1982
- Plastics Committee on Medical Products: 1980-1989
- Chairman of SPE Liaison Committee: 1980-1989
- Chairman of Public Relations Committee: 1981-1983
- Chairman of Executive Committee: 1983-1984
- SPI/SPE Medical Division Liaison to National Plastics Museum: 1985-2007
- National Board of Directors: 1982-1984
- National Membership Committee: 1982-1984
- National Processors Committee: 1982-1984
- Speaker, Plast-Ex '83, Toronto, Canada (#176): 1983
- Speaker, Mold Making Division Conference, Scottsdale, AZ (#324): 1985
- Speaker, Mold Making Division Conference, Newark, NJ (#392): 1986
- Judge, Structural Plastics Design Competition, San Diego, CA: 1989
- Speaker, Automotive Market Council, Detroit, MI (#543): 1991
- Speaker, Mold Makers Division, Newark, NJ (#633): 1992
- Speaker, National Plastics Exposition, Chicago, IL (#663): 1994

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# MPD Emeritus Board Members

Glenn was nominated and then elected to the **Plastics Pioneers Association** in 1983 and served in several leadership positions in that organization as shown below:

Elected Member of Plastics Pioneers Association: 1983  
Chairman, Archives & Artifacts Committee: 1991 to 1995, 2006 to Present  
Elected to Board of Governors: 1995-1999  
Awarded Much Traveled Shirt: 2000  
Chairman, History Club: 2002 to Present  
Southeastern Member of the Year Award: 2003  
Distinguished Service Member: 2013

Glenn also participated in other technical societies, trade associations and industry activities:

**American Engineering Model Society:** Joined 1972-1979

**American Society of Mechanical Engineers:** Joined 1973 to Present

**Association of Rotational Molders:** Joined 1980

Member, Education Committee: 1980 to Present  
Chairman, Design Manual Committee: 1981-1983  
Workshop Director (#185): 1981  
Conference Paper (#191): 1982  
ANTEC Paper (#189): 1983  
Member, Rotational Molding Development Center Committee: 1984-1991  
Chairman, Seminar Committee: 1984-1998  
“Introduction to Rotational Molding” Seminar Speaker: 1985-2003  
Presented in USA, Canada, Germany, England & Spain  
“Advances in Rotational Molding” Seminar Speaker: 1995 to 1999  
Outstanding Contribution Award: 1985  
Conference Paper (#487): 1988  
Conference Paper (#530): 1989  
Elected Director of Technical Services: 1991 to 1998  
Conference Paper (#609): 1993  
Conference Paper (#668): 1995  
Inducted into Rotational Molding Hall of Fame: 1998  
Seminar Instructor: 1979-1990  
Member, Plastics Historical Society: 1987 to Present

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# MPD Emeritus Board Members

**American Mold Builders Association:** Joined 1981-1993

Speaker, Product Liability (#346): 1985

Speaker, Product Liability (#438): 1985

Newsletter Contributing Editor: 1987-1993

Speaker, Interface (#706): 1995

**American Design Drafting Association:** Joined 1993-1994

**British Plastics Consultancy Network:** Joined 1994 – 2005

**Named to U.K. Worshipful Company of Horners:** 2002

**Awarded Freedom of the City of London:** 2002

**Packaging Institute:** Joined 1975-1987

**Society of Manufacturing Engineers:**

Senior Member, Joined 1978

Seminar Instructor: 1976 to 1984

**Plastics Academy:** 1988 to Present

Mold Maker Industry Achievement Award: 1994

**American Society of Materials International:** 1986-1988

**Industrial Design Society of America:** Joined 2001 to Present

During all the “free-time” that Glenn and Patsy enjoyed, Glenn also participated in various **other professional activities:**

**Judge, Packaging Institute’s Design Competition:** 1976

**Judge, Bachner Award Design Competition:** 1976, 1979, 1985

**Milwaukee School of Engineering, Advisory Board:** 1977-1983

**Judge, SPE Design Competition:** 1979, 1980

Trustee, **National Plastics Center and Museum:** 1983-1989

**National Plastics Center and Museum Liaison** to SPE Medical Plastics

Division and SPI Medical Products Division: 1985-1992

Trustee, **SPE Plastics Education Foundation:** 1984-1986

**Judge, SPI Structural Plastics Design Competition:** 1989

**Co-Chairman, Plastics Product Designers’ Forum** Conferences: 1990-1995

**Judge, Montel International Design Competition:** 1998

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# MPD Emeritus Board Members

Glenn taught various Plastics Technology seminars; served in various editorial activities; and wrote numerous journal and magazine articles.

## Plastics Technology Seminars

Elgin Community College, Elgin, IL  
Morrisville Technical College, Morrisville, NY  
New York University  
North Carolina State University at Raleigh, NC  
Pittsburg State University, Pittsburg, KS  
University of California, Los Angeles, CA  
University of Minnesota  
University of Wisconsin  
Pennsylvania College of Technology  
Borg-Warner Chemical  
Dow Chemicals U.S.A.  
E. I. Du Pont de Nemours & Co.  
M. A. Hanna Company  
Hoechst Celanese Corporation  
General Electric Company  
General Polymers  
Monsanto

## Editorial Activities:

Technical Volumes Committee, Society of Plastics Engineers: 1976-1980  
Editorial Advisory Board, Plastics Design & Processing: 1980-1981  
Design Editor, Plastics Design Forum: 1981-1995  
Editorial Advisory Board of Directors for Wiley's Handbook of Plastics  
Materials and Technology: 1981-1990  
Editorial Reviewer to Marcell Dekker on Edward Miller's Plastics Products  
Design Handbook: 1980-1982 (#26)  
Editorial Advisor for Society of Manufacturing Engineers' Tool & Manufacturing  
Engineers Handbook – Properties & Processing of Plastics: 1982 (#25) and  
Tool & Manufacturing Engineers Handbook – Plastic Part Manufacturing: 1995 (#106)  
Hanser Gardner Publications, Editorial Reviewer: 1987 to Present  
Editorial Advisory Board, Wiley's Advances in Polymer Technology: 1988-1990  
Contributing Editor, Kunststoffe/German Plastics: 1989 to 1994

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## Publications

Plastic Design & Processing Journal: **“Advantages of In-Plant Technical Education”** November 1977

Plastics Technology Journal: **“Preventing Liability Lawsuits”**: May 1978

Plastics Technology Journal: **“Products Liability Concerns”**: September 1978

SPE ANTEC Paper: **“Products Liability and the Plastics Processor”**: Nov. 1978

Plastics Machinery & Equipment Journal: **“Portrait of a Plastics Molder”**: May 1979

Appliance Journal: **“Equipment for Plastics Processing”**: June 1979

Plastics Design Forum: **“Plastics Exposition Preview”**: May 1979

SPE RETEC Paper: **“Specifying a Molded Part”**: September 1980

Plastics Engineering Journal: **“What to Put on a Plastic Part Drawing”**: September 1980

Plastics Design Forum Journal: **“Attention to Detail”**: September 1981

Paulson Training Programs, Inc.: **Part Design Videotapes & Workbooks**: 1982

Plastics Design Forum Journal: **“NPE Review”**: May 1982

Plastics Design Forum Journal: **“Forceps Heater”** : November 1982

Association of Rotational Molders' Design Manual: **“Engineer's Guide to Designing Rotationally Molded Plastic Parts”** February 1983

Plastics Design Forum Journal: **“Timing Gear – Cam”** : March 1983

Plastics Design Forum Journal: **“Good Appearance Sells Products”**: May 1983

Plastics Design Forum Journal: **“Plastic Part Designer's Quiz”**:

Part I: September 1983

Part II: November 1983

Part III: January 1984

Medical Device & Diagnostic Industry Journal: **“Using Prototypes to Minimize Product Development Time and Expenses”**: June 1984

Plastics Design Forum Journal: **“Designing Rotationally Molded Parts”**: November 1984

Plastics and Rubber International Journal (British): Excerpts from London Seminar: December 1984

Continued on the next page...



## Publications

Plastics Machinery & Equipment Journal: **“Foreign Mold Competition”**: June 1985

Design Engineering Journal (British): **“Plastic Part Design”**: June 1985

Plastics and Rubber International Journal (British): **“Design Quiz”**: Interplas, September 1985

Plastics Design Forum Journal **“Designer’s Guide to Pressure Forming”**: September/October 1985

Borg-Warner Chemicals, Inc.: **“Plastvision”** editorial quarterly: August 1985

SPE RETEC Paper: **“Productivity Improvements Through Prototyping”**: March 1985

Plastics Design Forum Journal: **“Water Filter”** : January/February 1986

Plastics Machinery & Equipment Journal: **“Products Liability – Minimizing Risks for Mold Makers and Designers”**: February 1986

Society of Plastics Engineers ANTEC Paper: **“Designer’s Guide to Pressure Forming”**: April 1986

Plastics Design Forum Journal: **“Hydraulic Valve Litigation”** September/October 1986

Plastics Machinery & Equipment Journal: **“Safer Mold Handling Device Available”**: January 1987

Plastics Design Forum Journal: **“Infant Seat”** January/February 1988

Society of Plastics Engineers: **“A Listing of Mold Making & Mold Design Teaching Institutions”**: 1988

Kunststoffe/German Plastics Journal: **An ongoing series of technical design articles**: October 1989

**“Rotational Moulding of Plastics”**: Contributed book chapter “Design of Rotationally Moulded Products”: published 1992 by Research Studies Press Ltd.

Plastics Design Forum Journal: Monthly Editorial Column entitled **“InSIGHT”**: 1994-1995

Injection Molding Magazine (IMM), **“The Dangers of Part Consolidation:”** March 31, 1997

IMM, **“Words of Wisdom: Automation vs. Emigration”**: September 3, 2002

IMM, **“Words of Wisdom: Rotational Molding, Then and Now”**: July 5, 2004

IMM, **“Technology Notebook, Rotational Molding, An Active Competitor”**: July 2, 2005

IMM: Series of Bimonthly Columns Entitled **“By Design”**: June 1996–2011

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# MPD Emeritus Board Members

Now back to Glenn Beall's **SPE activities**. He worked in areas besides Medical Plastics Division detailed below:

## Chicago SPE Section Activities

Newsletter Editor: 1962-1964  
Secretary: 1965  
President: 1967  
Chairman, Executive Advisory Committee: 1968–1970  
Injection Molding RETEC Committee: 1975  
Medical Plastics RETEC Committee: 1983  
Product Design RETEC Committee: 1994

## National SPE Activities

Seminar Instructor: 1973–2008  
Vice-Chairman, ANTEC Committee: 1972  
Chairman, Membership Committee: 1974  
Chairman, Divisions Committee: 1975  
Technical Volumes Committee: 1976-1980  
NATEC Paper No. 5: 1978  
Chairman, Constitution & By-Laws Committee: 1979  
SPE Design Competition Judge: 1979 & 1980  
RETEC Paper No. 9: 1980  
Chairman, Seminars Committee: 1980-1982  
National Membership – Division Liaison Committee: 1982-1983  
ANTEC Paper: 1983  
Chairman, John W. Hyatt Awards Committee: 1983-1986  
Trustee, Plastics Education Foundation: 1984-1986  
RETEC Paper No. 345: 1985

Winner, 1985 Membership Growth Contest, Mold Making & Mold Design Division

Winner, 1985 Membership Growth Contest, Medical Plastics Division

ANTEC Paper No. 59: 1986

## Board of Directors, Medical Plastics Division: 1981-1987

Secretary: 1982  
Newsletter Editor: 1982-1985  
Chairman, Medical Plastics Division: 1984 & 1985  
Most Valuable Division Member Award: 1984, 1985 & 1986  
Outstanding Contribution Award: 1994



# MPD Emeritus Board Members

## **Board of Directors, Mold Making & Mold Design Division: 1982–2013**

Chairman, Public Interest Committee: 1982-1984

Skilled Manpower Liaison Committee: 1982-1984

Intersociety Liaison Committee: 1983-1993

I. T. Quarnstrom Foundation Board of Directors: 1985-1998

Chairman, Mold Making & Mold Design Division: 1986

Mold Maker of the Year Award: 1990

## **Founder Product Design & Development Division**

Board of Directors, Product Design & Development Division: 1989 to Present

Chairman, Product Design & Development Division: 1991–1995

Elected Emeritus Member of the Board: 1995

SPE International Product Design Awards named in honor of G. L. Beall: 1995

## **Founder Rotational Molding Division**

Board of Directors, Rotational Molding Division: 1996 to Present

Chairman, Rotational Molding Division: 1996-2000



**Continued on the next page...**



# Awards & Recognitions – Glenn Beall



During his career, Glenn was recognized by various **Technical Society & Trade Associations** for these activities with these **Awards and Special Recognitions:**

**Scientific Staff Award**, Abbott Laboratories: 1965

**Founders Award**, Society of the Plastics Industry: 1977

**Valuable Contribution Award**, Borg-Warner Chemicals: 1983

**Outstanding Contribution Award**, Association of Rotational Molders: 1983

**Merit Award**, Chicago Association of Technological Societies: 1984

**Recognition of Contribution**, SPE/SPI Medical Plastics Conference: 1984

President's Cup, Association of Rotational Molders: 1985

**Mold Maker Industry Achievement Award**, nominated by the SPI, AMBA, & SPE: 1994

**Lifetime Achievement Award in Design**, Injection Molding Magazine & Gabriel, Inc.: 1995

Inducted into **Plastics Hall of Fame**: 1997

Inducted into **Rotational Molding Hall of Fame**: 1998

DuPont, **Gold Award Winner**, Packaging Design Competition: 1998

University of Wisconsin/Milwaukee, **Distinguished Service Award**: 2000

Society of Manufacturing Engineers (SME), **Gold Medal Award**: 2000

Association of Rotational Molders, **Distinguished Service Award**: 2004

Admitted into Bradley University. **Centurion Society**: 2007

Bradley University, **Distinguished Alumnus Award**: 2007

Plastics Pioneers Association, **Distinguished Service Member Award**: 2013

Inducted Honourable Company of Horners, **Master Collector and Historian**: 2019



# MPD Emeritus Board Members



Glenn received numerous awards from the **Society of Plastics Engineers** for his contributions to the SPE and plastics Industry.

**Outstanding Service Award**, SPE Executive Council: 1970

**President's Cup**, Society of Plastics Engineers: 1983

**Most Valuable Member Award**, SPE Medical Plastics Division: 1984, 1985, and 1986

**Mold Maker of the Year Award**, SPE/Mold Making & Mold Design Division: 1990

**Seminar Program Contribution Award**, Society of Plastics Engineers: 1990

**Elected Distinguished Member** of Society of Plastics Engineers: 1990

**Outstanding Achievement in Plastics Education Award**, SPE: 1993

**Outstanding Contribution Award**, SPE Medical Plastics Division: 1994

**SPE International Product Design Awards** named in honor of G. L. Beall: 1995

**President's Trophy for Advance of SPE**, Plastics Technology: 2000

**Society of Plastics Engineers**, International Award: 2003

**Society of Plastics Engineers**, Excellence in Mentoring Award: 2014

**Outstanding Achievement Award**, SPE Milwaukee Section: 2019

**President's Trophy for Advance of SPE**, Plastics Technology: 2000

**SPE's International Award**: 2003

Society of Plastics Engineers, **Excellence in Mentoring Award**: 2014

Elected as an **Emeritus Member** of the Board by the Medical Plastics Division: 2020

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# MPD Emeritus Board Members

This list of credentials and accolades represents thousands of meetings, countless phone calls, extensive research and preparation and helping generations of plastics professionals learn about our industry. Throughout more than 60 years of Glenn's career, he excelled in his practice of his expertise and selflessly helped so many of us, me included, learn about plastics.

At the start of his career his goal was to learn everything there was to know about the plastics industry. We believe that it is safe to say that Glenn Beall has done about as much as anyone could do in one person's lifetime. Sadly on November 22, 2014, Glenn lost his best and most precious supporter, Patsy. Patsy lost her battle with cancer and left a void in Glenn's life that is still obvious to those of us that know him. Glenn also has been forced to slow down, but who can blame him! He still drops in to meetings and gatherings to reconnect with friends and colleagues. It is an honor to recognize this amazing person that has given so much to his industry and our profession. The next time you see Glenn, please give him a sincere Thank You!



## Thank you Glenn!

Sincerely,  
MPD Board of Directors







## Emeritus Members



**Glenn Beall**

- Emeritus Member
- Historian
- [glennbeallplas@msn.com](mailto:glennbeallplas@msn.com)



**Len Czuba, Czuba Enterprises**

- Emeritus Member
- Awards & Social Committee Chair
- [LCzuba@CzubaEnterprises.com](mailto:LCzuba@CzubaEnterprises.com)



# MEET YOUR SPE MPD BOARD OF DIRECTORS



**Kathy Schacht, SPE**

- SPE Liaison
- [kschacht@4spe.org](mailto:kschacht@4spe.org)

## MPD Board Members with Term Expiring in 2021



**Ali Ashter, Advanced Plastics Enterprise**

- Chair
- [ashter2000@gmail.com](mailto:ashter2000@gmail.com)



**Maureen Reitman, Exponent**

- Member – Technical Program Committee & Awards Committee
- [mreitman@exponent.com](mailto:mreitman@exponent.com)

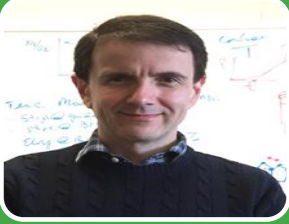
**Are you interested in volunteering for the BOD?**

Please email Ali Ashter  
[ashter2000@gmail.com](mailto:ashter2000@gmail.com)



# MEET YOUR SPE MPD BOARD OF DIRECTORS

## MPD Board Members with Term Expiring in 2022



**Pierre Moulinié, Covestro**

- Secretary
- pierre.moulinie@covestro.com



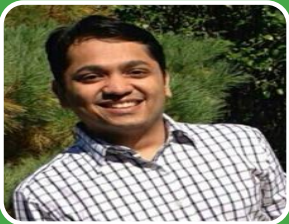
**Victoria Nawaby, Patina Solutions**

- Education Committee Co-Chair
- Webinar Committee
- nawabyv@hotmail.com



**Anil Mahapatro, Wichita State University**

- Technical Program, Awards Committee
- anil.mahapatro@wichita.edu



**Bhavin Shah, Tephra**

- Treasurer, Finance Committee
- shah@tepha.com



# MEET YOUR SPE MPD BOARD OF DIRECTORS

## MPD Board Members with Term Expiring in 2023



**Louis Somlai, Eli Lilly**

- Vice-Chair, Communications Committee
- somlai\_louis@lilly.com



**Vipul Davé, Johnson & Johnson**

- Past Division Chair/Finance Committee/TPC
- VDave1@its.jnj.com



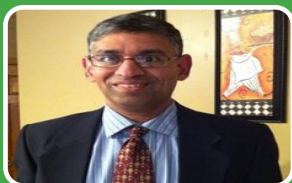
**Ravishankar Ayyar, Eli Lilly**

- Membership Chair & Awards Co-Chair
- Awards & Social Committee
- rayyar@lilly.com



**Nathan Rader-Edkin, BD Corporation**

- nathan.rader-edkin@bd.com



**Ajay Padsalgikar, DSM**

- MPD Technical Program Committee – Co-Chair
- Ajay.Padsalgikar@dsm.com



**Gregorio Velez, Stryker Corporation**

- Gregorio.Velez@stryker.com



# MEET YOUR SPE MPD BOARD OF DIRECTORS

## MPD Board Members with Term Expiring in 2024



**Margie Hanna, Czuba Enterprises**

- Member - Finance Committee
- m\_hanna@yahoo.com



**Ned LeMaster, DuPont**

- Councilor
- ned.e.lemaster@dupont.com



**Vijay Kudchadkar, Westfall-Technik**

- Communications Committee – Newsletter Editor
- Vijay.Kudchadkar@westfall-technik.com



**Kyle Kulwicki, Kimball Electronics**

- kyle.kulwicki@kimballelectronics.com



**Kumin Yang (Charles)**

- Kumin.Yang@bsci.com



**Rob Klein, ArtiCure**

- rklein@atricure.com



**Selvaanish Selvam, Avient**

- Communications Committee
- selvaanish.selvam@avient.com



**Amin Sedighiamiri, AstraZeneca**

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# MEDICAL PLASTICS DIVISION COMMITTEES

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**Are you interested in volunteering for the BOD?**

**Please email Ali Ashter  
ashter2000@gmail.com**



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Healthcare technology is growing and evolving, and we want to help you advance forward. Let's work together to solve your toughest medtech challenges, and spark breakthroughs for tomorrow.

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## Sustainable Design for Plastic Packaging



The plastics supply chain is keen to take action in order to work towards the circular economy and ensure plastic packaging products are created sustainably.

The sustainable design principles proposed herein can act as a guide in developing new products or processes. These principles may be phrased as questions to ask ourselves when developing new initiatives.

- Does this simplify life for the consumer?
- Are we minimizing environmental impacts?
- Have we engaged the whole supply chain?
- Are we taking a unified approach?
- Are we being transparent and open?
- Have we simplified the design?

[Download PDF](#)

**Newsletter Suggestions? Interested in Sponsorship?**

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somlai\_louis@lilly.com



## Advanced Recycling of Healthcare Plastics: An Opportunity for Circularity



Plastics play a critical role in the delivery of safe and cost-effective healthcare services around the world. However, the healthcare industry has recognized that the environmental footprint from the widespread use of plastics, especially packaging, is significant. And while we recognize that reduction and reuse initiatives have a higher priority on the waste hierarchy and progress in these areas must continue, we wanted to explore advanced recycling technologies in an effort to discover if they could address the healthcare plastics waste stream in a meaningful way.

[Read More...](#)

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# Sustainability in Plastics

## Bio Plastics



Bioplastics are either:

- 1) made from a renewable resource such as corn or sugar cane (biobased),
- 2) break down completely via a natural process (biodegradable)
- 3) are both biobased and biodegradable.

They are used in the same ways as other plastics: packaging, agriculture, medical, automotive parts, 3D printing and more. Biodegradable plastics also reduce the amount of trash that is sent to landfills.

Globally, over 1.7 million metric tons were produced in 2014 and contributed to \$4.4 billion and 32,000 jobs in the U.S. Bioplastics are one of the fastest growing sectors of the plastics industry, with an anticipated 20-30% annual growth.

[Read More...](#)

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[somlai\\_louis@lilly.com](mailto:somlai_louis@lilly.com)



## Plastics: Recycling and Sustainability



In order for a product or material to be truly described as sustainable it must be environmentally, economically and socially sustainable.

These aspects have become known as the Three Pillars of Sustainability. Plastics make a positive contribution to all three pillars of sustainability.

Plastics make an immense contribution to the environmental sustainability through their energy saving potential and intrinsic recyclability and energy recovery options.

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# Sustainability in Plastics

## Improving HDPE recycling

Design, material and molding closure technologies come together to enable monomaterial recyclable blow-molded packages.



Advancing the circular economy for plastics requires transformation across the recycling system, from collection all the way to expansion of end-use markets. One of the biggest challenges facing the plastics recycling industry today is separating all of the various polymers entering the recycling stream.

Several steps throughout the supply chain play a role in the success of this separation, starting with the design of the package to consumers correctly placing items in the appropriate recycling bins to the capabilities of material recovery facilities and ultimately the actual plastics recycling plants. Each step in the supply chain is critical to generating usable feedstock for recycling.

[Read More...](#)

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## Healthcare plastic: let's recycle!



Healthcare's impact on climate and environment has long been under the radar, as the sector naturally has cure and patient safety as its number one priority. Yet, the growing amounts of medical waste in the wake of COVID-19 and the increasing focus on reducing greenhouse gas emissions from every sector in society means healthcare must also do its part in the green transition of society.

In a recent op-ed in *Brussels Times*, Dan Vukelich from the Association of Medical Device Reprocessors calls for reuse of single-use medical devices as the solution to challenges of climate change and plastic waste.

[Read More...](#)

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## Greener medical plastics: Sustainability and the environment



Over the last century plastics have impacted all industry sectors by providing innovative solutions to the world's evolving needs. In more recent years, major material improvements have seen a global surge in demand for plastic in rapidly advancing industries such as healthcare. Today's most ground-breaking medical applications are dependent on plastics; from MRI and X-ray machines to prosthetic limbs, artificial joints, heart valves and the smallest of tubing, modern healthcare would not be possible without the use of plastic materials.

[Read More...](#)

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# Sustainability in Plastics

## Sustainability continues as a focus for resin makers, consumers



Sustainability remains a major focus for materials makers, consumer products companies and many others in the plastics value chain.

Resin maker Nova Chemicals of Calgary, Alberta, is working on resin designs to incorporate post-use plastics, according to Greg DeKunder, polyethylene marketing vice president for the company. Nova is also investing in recycling operations in Indonesia, which is in a part of the world where a large amount of ocean plastics originates.

Allison Lin has seen the impact of sustainability at previous career stops with consumer giants Coca-Cola Co., Procter & Gamble Co. and Starbucks. She's now tackling that topic for plastics molder and processor Westfall Technik Inc. as vice president of procurement and sustainability.

[Read More...](#)

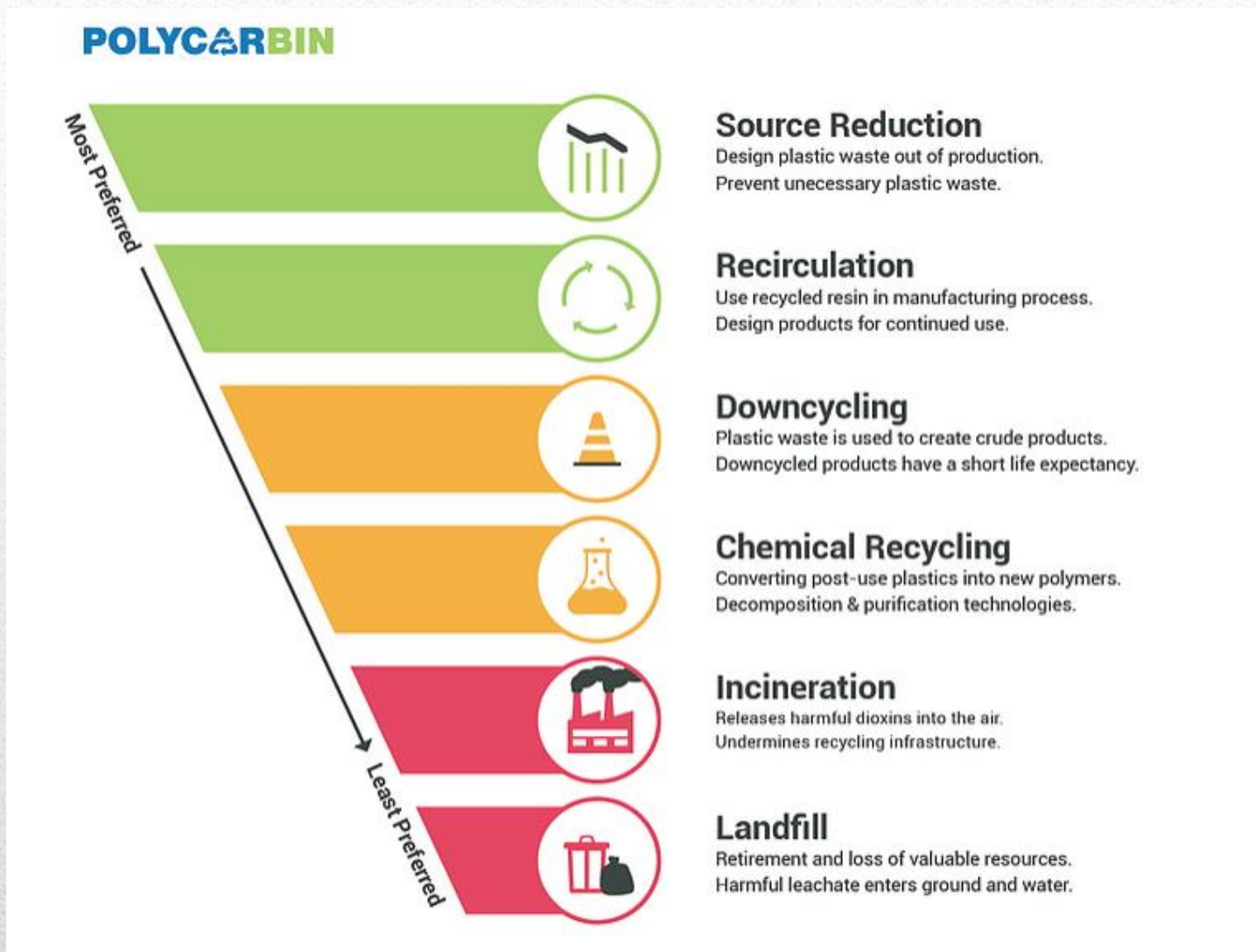
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# Sustainability in Plastics

## The Past, Present, and Future of 'Reduce, Reuse, Recycle'



You've likely heard of the maxim 'Reduce, Reuse, Recycle,' known to some as 'The Three Rs.' For many, this saying served as early guidance as for how to be an upstanding environmental steward. Simple, memorable, actionable. As far as rules of thumb go, The Three Rs, in many ways, set a precedent in the realm of environmental communications. [Read More...](#)

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## Recycling of Medical Plastics



A large amount of non-infected plastic wastes are being generated at the healthcare facilities all over the world. However, only a small fraction is recycled. Conventionally, the used plastics are either disposed in landfills or inadequately incinerated. These practices impart an adverse effect on our environment. Plastics are indispensable part of the medical sector owing to their high versatility. The outbreak of COVID-19 clearly showed the growing demand for single use plastics. Hence, completely avoiding plastics can be challenging at this point of time. Recycling of plastics is undoubtedly a solution to solve the crisis of plastic pollution. [Read More...](#)

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## Environmental sustainability of plastics in construction



Plastics have become increasingly popular in construction due to many factors, such as their performance, durability and their ability to be weathering resistant, low maintenance, cost-effective, lightweight and design flexible. These qualities make plastics ideal products for construction and an essential component for a sustainable built environment. The numerous types of plastics all have different performance levels and properties, enabling them to meet the exact needs of diverse applications, from corrosion protection to thermal insulation.

Today, buildings are both the largest user of energy (40%) and, consequently, the largest emitter of CO<sub>2</sub> (36%) in the EU. It is, therefore, imperative to keep energy efficiency in mind when constructing and renovating buildings. The consumption of fossil energy during the use phase of a building is by far the biggest contributor to a building's environmental impact.

[Read More...](#)

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# Sustainability in Plastics

## A path to recycling medical plastic waste from down under



The PVC Recycling in Hospitals program, developed by the Vinyl Council of Australia and sponsored by medical device OEM Baxter Healthcare, provides one pathway to effective recycling of the most widely used plastic in healthcare settings, PVC.

The PVC Recycling in Hospitals program, developed by the Vinyl Council of Australia and sponsored by medical device OEM Baxter Healthcare, provides one pathway to effective recycling of the most widely used plastic in healthcare settings, PVC, according to Ole Grøndahl Hansen, Project Manager, PVCMed Alliance (Copenhagen). [Read More...](#)

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# TREASURER'S REPORT



## TREASURER'S REPORT – Bhavin Shah

 <b>SPE MPD Q2 2021 TREASURER'S REPORT</b>	
Financial Report for the Period:	Mar 1, 2021 - July 31, 2021
Section/Division Name:	Medical Plastics D36
<b>Balance as of Mar 1, 2021</b>	<b>\$ 36,479.34</b>
<b>Income</b>	
Informa Payment for MD&M, 2020	2,500.00
2020 Q4 Chapter Passthrough	640.00
Newsletter Advertisement – Covestro LLC	820.25
Newsletter Advertisement – Evonik	1,500.00
2021 Q1 Chapter Passthrough	470.00
Newsletter Advertisement – Avient	820.25
<b>Total Income</b>	<b>\$ 6,750.50</b>
<b>Expenses</b>	
N/A	N/A
<b>Total Expenses</b>	<b>\$ 0.00</b>
<b>Ending Balance as of July 31, 2021</b>	<b>\$ 43229.85</b>

**Do you have questions about the Treasurer Report?**

Please email Bhavin Shah  
[shah@tepha.com](mailto:shah@tepha.com)



# MPD SPONSORSHIP OPPORTUNITIES



## SOCIETY OF PLASTICS ENGINEERS – MEDICAL PLASTICS DIVISION

### About Us - The Medical Plastics

Division exists to encourage the interchange of technical and regulatory information on the polymer materials/components used in medical devices and in device containers among the scientists and engineers who are working in medical device and related industries.

With over several hundred members and webinars, newsletters, and conferences arranged every year, MPD allows sponsors a unique opportunity to establish deep connections within the plastics community.

### MPD NEWSLETTER SPONSORSHIP OPPORTUNITY

Be a sponsor on our Award-winning Division Newsletter! Below are the prices and sizes available for purchase. Do not miss this rare opportunity to have your company seen by thousands of readers every year!

Full page - \$1500

Half page - \$850

Quarter Page - \$450

Eighth Page - \$250

The newsletter, as scheduled, is prepared and circulated four times per year. Every MPD member receives a copy emailed directly to their listed address. Additional copies are also circulated via the Chain and broader social media (LinkedIn, Twitter) in our continuing effort to reach new and prospective members and other interested individuals.

Follow us on our social media platforms to stay up to date on the latest medical plastics news!

- [SPE - Medical Plastics Division Micro Website](#)
- [SPE - Medical Plastics Division - LinkedIn](#)
- [SPE - Medical Plastics Division - Twitter](#)

### BENEFITS OF BEING A SPONSOR:

**INSTANT MARKET ATTENTION FROM HUNDREDS OF MEMBERS**

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**ACCESS TO MPD BOARD AND QUARTERLY UPDATES**

**SOCIAL MEDIA POSTS**

### FOR SPONSORSHIP PLEASE CONTACT

Louis Somlai  
[somlai\\_louis@lilly.com](mailto:somlai_louis@lilly.com)



# SPE MPD WEBINARS

The Medical Plastics Division and Webinar Team plans to host a series of webinars during 2021, with a goal of at least three to four. Some of the topics in consideration include: Advances in Medical Tubing Materials, Drug Delivery and Implantable Materials, Materials for Excipient Release, Relevant Changes in Regulatory Directives, Biodegradable & Resorbable Polymers in Med Device, Best Practices for Introduction of New Polymers in Med Device, Speed to Market through Improved Development, and Advances in Friction Reducing Materials. We are even considering a series on project management.

We welcome your interest to participate, as well as suggestions for topics and/or speakers. Please contact the MPD Webinar team:

Pierre Moulinié ([pierre.moulinie@covestro.com](mailto:pierre.moulinie@covestro.com)),

Victoria Nawaby ([nawabyv@hotmail.com](mailto:nawabyv@hotmail.com))

Ned LeMaster ([ned.e.lemaster@dupont.com](mailto:ned.e.lemaster@dupont.com))







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## Virtual Technical Forum & Networking Event

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As Members of the Medical Plastics Division, you are welcome to join the MPD Board of Directors for an informal meeting to chat, catch-up and network. We will kick off the meeting with a presentation from an invited speaker, followed by a “half-hour social”.

For more details please email:  
[Louis Somlai](#) or [Pierre Moulinie](#)

### **1st Wednesday of the Month**

**5-6 PM EST**

**5:00-5:30PM**

Invited Speaker /  
Technical Seminar

**5:30-6:00PM**

Networking (topical break  
out rooms lead by BoD  
members)



# SPE Minitec 2021 - MD&M West





# SPE Minitec 2021 - MD&M West





# SPE Minitec 2021 - MD&M West



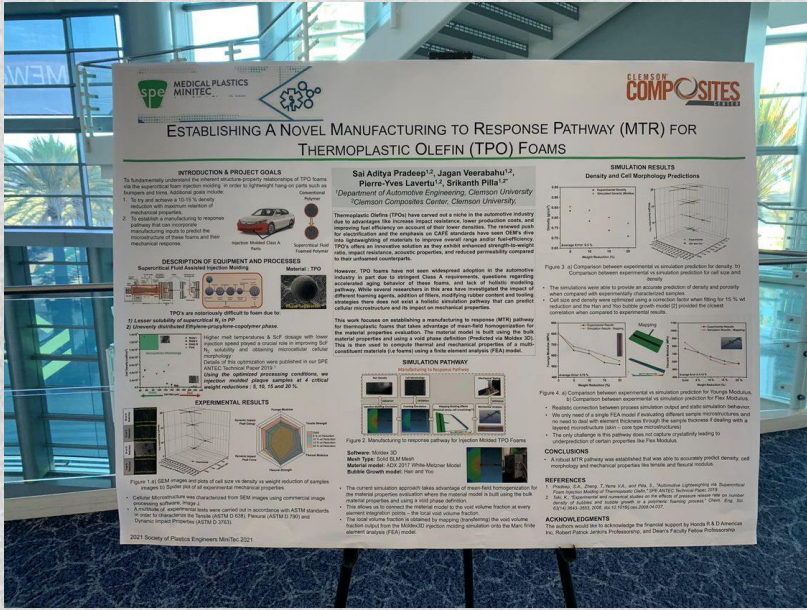
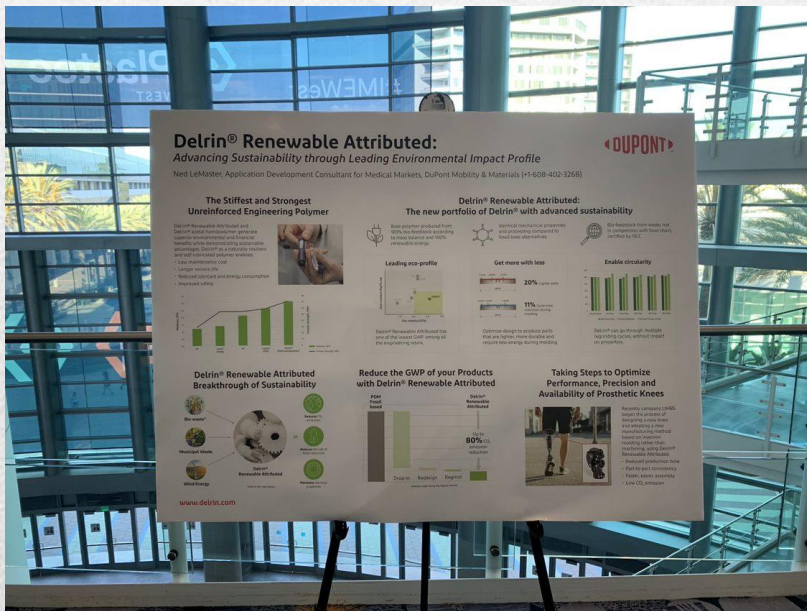
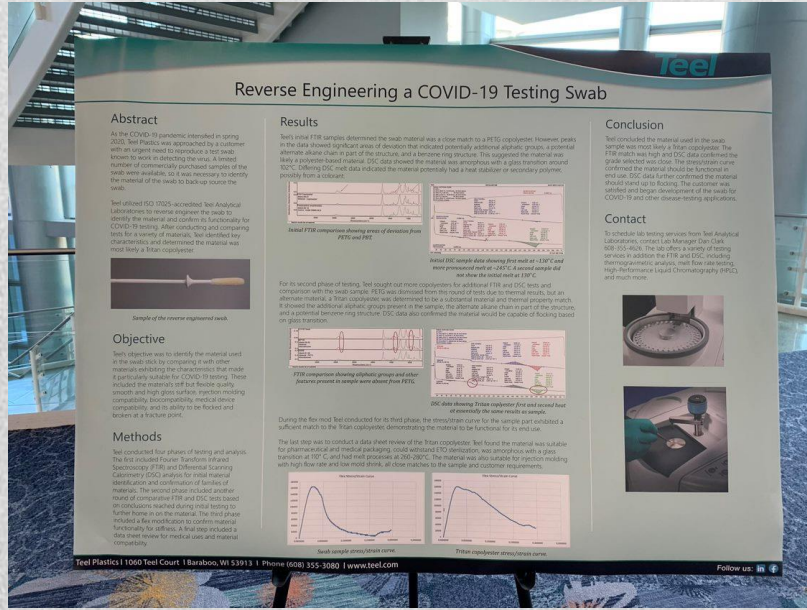
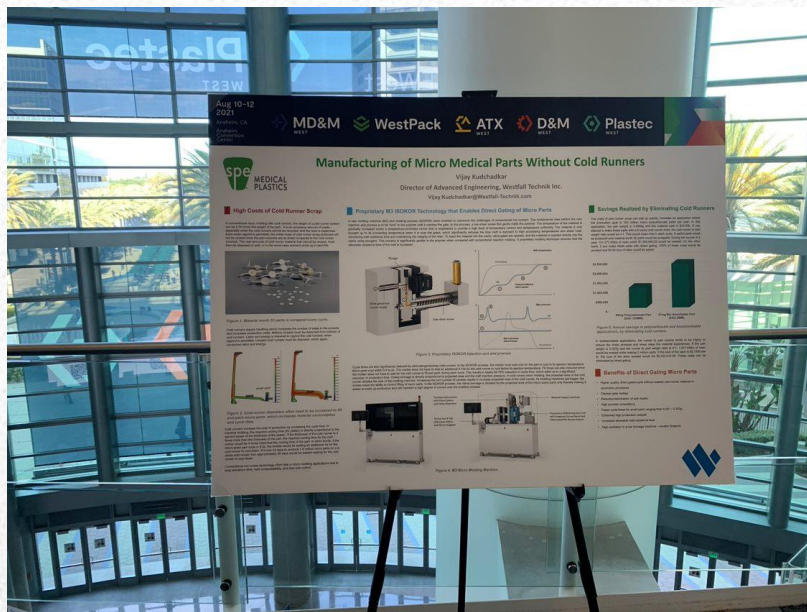


# SPE Minitec 2021 - MD&M West



**MiniTec 2021**  
Anaheim, CA • August 10, 2021  
Presented by SPE Medical Plastics Division

## Technical Poster Presentations





# SPE Minitec 2021 - MD&M West

## Wearable Device Skin Patches That Stay Put

**Abstract**  
Wearable medical devices are becoming more common in clinical settings, and require monitoring by both consumers and medical professionals. While, 2020 emergency regulations called for enhanced safety for wearables, the industry is still working to develop devices that are safe, effective, and easy to use. Wearable devices are used in a variety of applications, including monitoring of vital signs, temperature, blood glucose, and other physiological parameters. They are also used for patient monitoring, and for patient education and engagement.

**Wearable Product Development Checklist**

- 1. Time and weight of the device
- 2. Size, shape, and weight
- 3. Material
- 4. Color
- 5. Texture
- 6. Adhesive
- 7. Battery
- 8. Connectivity
- 9. Usability
- 10. Compliance
- 11. Cost

**Mock-up Device for Adhesive Testing**

- 1. Create a mock-up device for adhesive testing.
- 2. Create a mock-up device for adhesive testing.
- 3. Create a mock-up device for adhesive testing.
- 4. Create a mock-up device for adhesive testing.
- 5. Create a mock-up device for adhesive testing.
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- 17. Create a mock-up device for adhesive testing.
- 18. Create a mock-up device for adhesive testing.
- 19. Create a mock-up device for adhesive testing.
- 20. Create a mock-up device for adhesive testing.

**Wearable Adhesive Comparison**

Adhesive Type	Benefits	Challenges
Acrylic	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability
Urethane	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability
Epoxide	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability
Acrylic	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability
Urethane	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability
Epoxide	Good adhesion, low cost, easy to use	Low adhesion, low strength, low durability

**References**

1. [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42] [43] [44] [45] [46] [47] [48] [49] [50] [51] [52] [53] [54] [55] [56] [57] [58] [59] [60] [61] [62] [63] [64] [65] [66] [67] [68] [69] [70] [71] [72] [73] [74] [75] [76] [77] [78] [79] [80] [81] [82] [83] [84] [85] [86] [87] [88] [89] [90] [91] [92] [93] [94] [95] [96] [97] [98] [99] [100]

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**Functionally identical to conventional POM, Celanese Hostaform® M7 POM ECO-B offers top-tier performance with a significantly lower CO<sub>2</sub> footprint.**

**CO<sub>2</sub> footprint per kg of POM product**

POM Type	CO <sub>2</sub> footprint (kg/kg)
PA11	~1.5
PA12	~1.5
POM*	~1.5
ABS	~1.5
PET	~1.5
LDPE	~1.5
HDPE	~1.5
PP	~1.5
M7 POM ECO-B	~0.5

**CO<sub>2</sub> footprint per kilogram of polymer is less than half that of conventional POM**

**Manufacturing processes are unchanged so no product requalification or performance sacrifice**

**Contains up to 97% bio-content via a mass-balance approach: fossil-based and bio-based feedstocks are mixed in the process but accounted for separately**

**ISCC®-certified approach and in compliance with the EU Renewable Energy Directive**

## THE CHALLENGE OF TRANSITION TO SINGLE-USE SYSTEMS FOR BIO-PHARMACEUTICALS MANUFACTURING

**Introduction**  
Single-use systems are becoming more common in pharmaceutical manufacturing, and require monitoring by both consumers and medical professionals. While, 2020 emergency regulations called for enhanced safety for wearables, the industry is still working to develop devices that are safe, effective, and easy to use. Wearable devices are used in a variety of applications, including monitoring of vital signs, temperature, blood glucose, and other physiological parameters. They are also used for patient monitoring, and for patient education and engagement.

**Case One - Gel Residue in Coated Cylinders**

**Case Two - Storage / Transfer Systems Breakage**

**Case Three - Breakage of Single-Use Protection Filters**

**Conclusions/Recommendations**

**Summary of the Single-Use System Risks and Solutions**

## Influence of Pellet Size on Medical Tubing Extrusion Process Stability

**Abstract**  
The influence of pellet size on medical tubing extrusion process stability is a critical factor in the design and manufacturing of medical devices. This paper presents a study on the relationship between pellet size and process stability, and provides recommendations for optimal pellet size selection.

**Results**

Pellet Size (mm)	Process Stability (%)
1.0	~10
1.5	~20
2.0	~30
2.5	~40
3.0	~50
3.5	~60
4.0	~70
4.5	~80
5.0	~90

**Conclusions**

The study demonstrates that pellet size has a significant impact on medical tubing extrusion process stability. Optimal pellet size selection is crucial for ensuring consistent and reliable manufacturing results.

## Using water-based hydrophilic coatings to create medical devices for the future

**Abstract**  
Water-based hydrophilic coatings, such as the bioactive CoatingGraft products from S.C. Specialty Co., are being used to create medical devices that are safe, effective, and easy to use. These coatings are used in a variety of applications, including monitoring of vital signs, temperature, blood glucose, and other physiological parameters. They are also used for patient monitoring, and for patient education and engagement.

**Figure 1: CoatingGraft Hydrophilic**

**Figure 2: CoatingGraft Hydrophilic**

**Figure 3: CoatingGraft Hydrophilic**

**Figure 4: CoatingGraft Hydrophilic**

**Figure 5: CoatingGraft Hydrophilic**

**Figure 6: CoatingGraft Hydrophilic**

**Figure 7: CoatingGraft Hydrophilic**

**Figure 8: CoatingGraft Hydrophilic**

**Figure 9: CoatingGraft Hydrophilic**

**Figure 10: CoatingGraft Hydrophilic**

**Figure 11: CoatingGraft Hydrophilic**

**Figure 12: CoatingGraft Hydrophilic**

**Figure 13: CoatingGraft Hydrophilic**

**Figure 14: CoatingGraft Hydrophilic**

**Figure 15: CoatingGraft Hydrophilic**

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**Figure 22: CoatingGraft Hydrophilic**

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**Figure 27: CoatingGraft Hydrophilic**

**Figure 28: CoatingGraft Hydrophilic**

**Figure 29: CoatingGraft Hydrophilic**

**Figure 30: CoatingGraft Hydrophilic**

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**Figure 34: CoatingGraft Hydrophilic**

**Figure 35: CoatingGraft Hydrophilic**

**Figure 36: CoatingGraft Hydrophilic**

**Figure 37: CoatingGraft Hydrophilic**

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**Figure 40: CoatingGraft Hydrophilic**

**Figure 41: CoatingGraft Hydrophilic**

**Figure 42: CoatingGraft Hydrophilic**

**Figure 43: CoatingGraft Hydrophilic**

**Figure 44: CoatingGraft Hydrophilic**

**Figure 45: CoatingGraft Hydrophilic**

**Figure 46: CoatingGraft Hydrophilic**

**Figure 47: CoatingGraft Hydrophilic**

**Figure 48: CoatingGraft Hydrophilic**

**Figure 49: CoatingGraft Hydrophilic**

**Figure 50: CoatingGraft Hydrophilic**

**Figure 51: CoatingGraft Hydrophilic**

**Figure 52: CoatingGraft Hydrophilic**

**Figure 53: CoatingGraft Hydrophilic**

**Figure 54: CoatingGraft Hydrophilic**

**Figure 55: CoatingGraft Hydrophilic**

**Figure 56: CoatingGraft Hydrophilic**

**Figure 57: CoatingGraft Hydrophilic**

**Figure 58: CoatingGraft Hydrophilic**

**Figure 59: CoatingGraft Hydrophilic**

**Figure 60: CoatingGraft Hydrophilic**

**Figure 61: CoatingGraft Hydrophilic**

**Figure 62: CoatingGraft Hydrophilic**

**Figure 63: CoatingGraft Hydrophilic**

**Figure 64: CoatingGraft Hydrophilic**

**Figure 65: CoatingGraft Hydrophilic**

**Figure 66: CoatingGraft Hydrophilic**

**Figure 67: CoatingGraft Hydrophilic**

**Figure 68: CoatingGraft Hydrophilic**

**Figure 69: CoatingGraft Hydrophilic**

**Figure 70: CoatingGraft Hydrophilic**

**Figure 71: CoatingGraft Hydrophilic**

**Figure 72: CoatingGraft Hydrophilic**

**Figure 73: CoatingGraft Hydrophilic**

**Figure 74: CoatingGraft Hydrophilic**

**Figure 75: CoatingGraft Hydrophilic**

**Figure 76: CoatingGraft Hydrophilic**

**Figure 77: CoatingGraft Hydrophilic**

**Figure 78: CoatingGraft Hydrophilic**

**Figure 79: CoatingGraft Hydrophilic**

**Figure 80: CoatingGraft Hydrophilic**

**Figure 81: CoatingGraft Hydrophilic**

**Figure 82: CoatingGraft Hydrophilic**

**Figure 83: CoatingGraft Hydrophilic**

**Figure 84: CoatingGraft Hydrophilic**

**Figure 85: CoatingGraft Hydrophilic**

**Figure 86: CoatingGraft Hydrophilic**

**Figure 87: CoatingGraft Hydrophilic**

**Figure 88: CoatingGraft Hydrophilic**

**Figure 89: CoatingGraft Hydrophilic**

**Figure 90: CoatingGraft Hydrophilic**

**Figure 91: CoatingGraft Hydrophilic**

**Figure 92: CoatingGraft Hydrophilic**

**Figure 93: CoatingGraft Hydrophilic**

**Figure 94: CoatingGraft Hydrophilic**

**Figure 95: CoatingGraft Hydrophilic**

**Figure 96: CoatingGraft Hydrophilic**

**Figure 97: CoatingGraft Hydrophilic**

**Figure 98: CoatingGraft Hydrophilic**

**Figure 99: CoatingGraft Hydrophilic**

**Figure 100: CoatingGraft Hydrophilic**

## FOCUS ON THE LATEST REGULATORY AND RISK MANAGEMENT REQUIREMENTS FOR MEDICAL PLASTICS

**Abstract**  
The latest regulatory and risk management requirements for medical plastics are a critical factor in the design and manufacturing of medical devices. This paper presents a study on the relationship between regulatory and risk management requirements and medical plastics, and provides recommendations for optimal design and manufacturing practices.

**Results**

Requirement	Impact (%)
ISO 13485	~10
ISO 14957	~20
ISO 14971	~30
ISO 14973	~40
ISO 14974	~50
ISO 14975	~60
ISO 14976	~70
ISO 14977	~80
ISO 14978	~90
ISO 14979	~100

**Conclusions**

The study demonstrates that regulatory and risk management requirements have a significant impact on medical plastics. Optimal design and manufacturing practices are crucial for ensuring consistent and reliable manufacturing results.



