

**2022 COMBINED UHMWPE, PEEK, & POLYMER IMPLANT ADDITIVE
MANUFACTURING CONFERENCE**

Thursday & Friday, June 23-24, 2022
“Unione Industriale” Congress Center
Torino, Italy

Hosted by the University of Torino and Drexel University

The purpose of the meeting is to bring together engineers, scientists, regulators, and clinicians from academia, industry, and government to present leading edge research on advancements in medical grade UHMWPE, PEEK, and the rapidly growing field of polymer implant additive manufacturing technology. In addition to UHMWPE and PEEK, the Combined Meeting will also broadly showcase point-of-care additive manufacturing of implantable polymers.

Scientific and Organizing Committee and Invited Speakers:

Co-Presidents: Pierangiola Bracco, Ph.D. and Steven Kurtz, Ph.D.
PD Dr. mult. Florian Thieringer, MHBA
Hannah Spece, Ph.D.
Ebru Oral, Ph.D.
Orhun Muratoglu, Ph.D.
Mark Allen
Sebastian Pammer

Organizer: Hannah Spece, Ph.D.

Sponsorship:

We are pleased to announce that Celanese will be supporting the 2022 Combined Meeting as a Platinum Sponsor. We also welcome the sponsorship of Orthoplastics, Kumovis, Invibio and Evonik as Silver Sponsors; and Mitsubishi Chemical Advanced Materials and Seqens as Bronze Sponsors.

**2022 COMBINED UHMWPE, PEEK, & POLYMER IMPLANT ADDITIVE MANUFACTURING
CONFERENCE AGENDA**

**Thursday, June 23, 2022
Day One**

7:00 AM

On Site Registration Opens

8:30 AM

Opening Remarks

Steven Kurtz, Ph.D.

8:45 AM

Welcome

Amanda Dresch, Celanese

SESSION I: Clinical Performance and New Applications of Polyethylene Biomaterials

8:50 AM

Invited Talk 1: Advanced Manufacturing of Drug Eluting, Ethyl Vinyl Acetate Implants

Presenter: Amanda Dresch

Session Co-Moderators:

9:15 AM

Podium Talk 1: Systematic Review of Vitamin E HXLPE Clinical Performance

Presenter: Hannah Spece, Ph.D.

9:30 AM

Podium Talk 2: Effect of accelerated aging on UHMWPE stabilized by Vitamin E and Tetracycline Antibiotic

Presenter: Veronika Gajdosova, Ph.D.

9:45 AM

Podium Talk 3: Tribological Behavior of a Total Lumbar Disc Replacement in Clean, Aggressive, and Impingement Loading Conditions

Presenter: Ryan Siskey, M.S.

10:00 AM

Morning Coffee Break

10:45 AM

Podium Talk 4: Overmolding UHMWPE into Porous PEEK Structures

Presenter: Tabitha Derr

11:00 AM

Podium Talk 5: The efficacy of antibiotic-eluting materials in a two stage model of periprosthetic joint infection

Presenter: Ebru Oral, Ph.D.

11:15 AM

Podium Talk 6: Czech-Italian-Spanish database of explanted UHMWPE liners: Evaluation of oxidative degradation, structure changes and micromechanical properties of the explanted polymer components of total joint replacements

Presenter: Miroslav Slouf, Ph.D.

11:30 AM

Rapid Fire Talks: 6 minute presentations of selected UHMWPE and Implant Polymer posters – no discussion until poster session

12:00 PM

Buffet Lunch and POSTER SESSION

SESSION II: Advances in Processing, Crosslinking, and Additives

Session Co-Moderators:

1:30 PM

Invited Talk 2: Advances in Therapeutic HXLPE

Presenter: Ebru Oral, Ph.D.

2:00 PM

Podium Talk 7: Static fracture and cyclic fatigue resistance of split-dose irradiated AOX TM UHMWPE

Presenter: Leandra Bowsman

2:15 PM

Podium Talk 8: A New Bulk Lamellar Polyethylene Morphology Induced Using High-Rate Pressurization

Presenter: Anuj Bellare, Ph.D.

2:30 PM

Podium Talk 9: Development and Clinical Introduction of Chemically Crosslinked HXLPE

Presenter: Orhun Muratoglu, Ph.D.

2:45 PM

Afternoon Coffee Break

SESSION III: In Vivo Performance and Clinical Applications of Polymer Biomaterials

Session Co-Moderators:

3:30 PM

Invited Talk 3: EVA UHMWPE Composites

Presenter: Mark Allen

4:00 PM

Podium Talk 10: Bioresorbable Polymers in Additive Manufacturing: How Material Characteristics and Printing Process Parameters Impact Medical Device Performance?

Presenter: Cécile Boudot, Ph.D.

4:15 PM

Podium Talk 11: Performance of PEEK Telescopic Crowns

Presenter: Andreas Schwitalla, DDS

4:30 PM

Podium Talk 12: Evaluation of debris generated from the mechanical testing of continuous carbon fibre reinforced PEEK plates

Presenter: Shiling Zhang, Ph.D.

4:45 PM

Day 1 Meeting Adjourns

6:00 PM

Transition to Gala Dinner

Museo Egizio (Egyptian Museum)

**2022 COMBINED UHMWPE, PEEK, & POLYMER IMPLANT ADDITIVE
MANUFACTURING CONFERENCE AGENDA**

Friday, June 24, 2022

Day Two

8:30 AM

On Site Registration Opens

SESSION IV: Properties and Behavior of PAEK Biomaterials

Session Co-Moderators:

9:00 AM

Invited Talk 4: Clinical Experience and Design Considerations for Trauma and Extremity Plates Made From Continuous Carbon Fiber Reinforced PEEK

Presenters: Jo Wilson, Ph.D.

Bradley Cowan

9:30 AM

Invited Talk 5: PEKK is the Innovative Material for Printed Medical Implants

Presenter: Alexandra Ngawa Zenang

10:00 AM

Invited Talk 6: Osseointegration Evaluation of VESTAKEEP® Fusion using a Preclinical Sheep Model

Presenter: Mahrokh Dadsetan, Ph.D., Philip Engel, Ph.D.

10:30 AM

Podium Talk 13: 3D Direct-Printed PEEK Has Longer High-Cycle Fatigue Life to Machined 3D Printed PEEK

Presenter: Leandra Bowsman

10:45 AM

Morning Coffee Break

11:30 AM

Podium Talk 14: Contamination- and Distortion-Free Solidification of PEEK on a Non-adherent Substrate for 3D Printing Medical Products

Presenter: Uwe Popp

11:45 AM

Podium Talk 15: Additive manufacturing of PEEK cranial implants: Powder Bed Fusion or Material Extrusion?

Presenter: Oana Ghita, Ph.D.

12:00 PM

Podium Talk 16: Biomechanically Tuning the Strength and Stiffness of an Open Pillar Implant Interface

Presenter: Greg Causey, Ph.D.

12:15 PM

Rapid Fire Talks: 6 minute presentations of selected PAEK and AM posters – no discussion until poster session

12:45 PM

Buffet Lunch and POSTER SESSION

SESSION VI: Point of Care 3D Printing

Session Co-Moderators:

2:15 PM

Invited Talk 7: Point of Care 3D Printing of PEEK Implants: The University Hospital Basel Perspective

Presenter: PD Dr. mult. Florian Thieringer, MHBA

2:45 PM

Invited Talk 8: MDR-compliant Medical Device Production System for PEEK CMF-implants

Presenter: Sebastian Pammer

3:15 PM

Invited Talk 9: Regulatory Considerations for POC 3D Printing of Medical Devices

Presenter: Matthew DiPrima, Ph.D.

3:45 PM

Afternoon Coffee Break

SESSION VI: Advances in 3D Printed Biomaterials and Composites

Session Co-Moderators:

4:30 PM

Podium Talk 17: Mechanical Behavior of Chopped vs. Continuous 3D Printed CFR PEKK Composites

Presenter: Aliza Rabinowitz

4:45 PM

Podium Talk 18: Extraordinary Interfacial Behaviors of Osteofab™ (Powder Bed Fusion of PEKK (PolyEtherKetoneKetone) Polymer) Orthopedic Devices - Anti-Microbial and Bone Apposing Effects Observed in the Absence of Surface Modification – an Overview

Presenter: Tony Decarmine

5:00 PM

Podium Talk 19: 3D-Printed Silicon Nitride-PEEK Composite Promotes In Vitro Osteogenic Activity and Mineralization

Presenter: Paul DeSantis

5:15 PM

Closing Remarks

Steven Kurtz, Ph.D.

5:30 PM

Meeting Adjourns

POSTER PRESENTATIONS

Title: Will cement in your cup cause dramatic failure? A Geometric Analysis of Polyethylene Liners Exposed to Acrylic-based Bone Cement

Presenter: Zoe Thompson

Title: Migration of the femoral component and clinical outcomes after total knee replacement: a narrative review

Presenter: Domenico Alesi

Title: Causes of stiffness after total knee arthroplasty: a systematic review

Presenter: Domenico Alesi

Title: Retrieval Analysis and Comparison Between Blended and Diffused Vitamin E HXLPE Components for TKA

Presenter: Hannah Spece, Ph.D.

Title: Fatigue Crack Propagation Assessment of Unfilled and Carbon Fiber Reinforced PEEK using a Compliance Approach

Presenter: Clare Rinnac, Ph.D.

Title: Enhanced Pre-Clinical Wear Simulation of an All-Polymer Total Knee Replacement

Presenter: Raelene Cowie, Ph.D.

Title: In Vitro Wear Performance of X-ray Cross-Linked Vitamin E Blended Polyethylene

Presenter: Rainer Bargon, Ph.D.

Title: Experimental and Computational Modelling Assessment of Edge Loaded Marathon Total Hip Replacement Liners

Presenter: Nicholas Cooper

Title: Evaluation of mechanical properties of PEEK filled materials and nanoscale observations

Presenter: Ryan Siskey, M.S.