

 $14^{\mbox{\tiny TH}}$ International Conference on Advances in Foam Materials & Technology

CONFERENCE, TUTORIAL & EXHIBITION SEPTEMBER 12-15 SEATTLE, WA

CONFERENCE PROGRAM

TUTORIAL SESSIONS

Monday, September 12 8:00 Registration begins 9:00 – 1:00 Foaming Technology – Chul Park 1:00 Provided lunch 1:30 – 5:30 Sustainable Foams – Hani Naguib Tuesday, September 13 7:30 Registration begins 8:00 – 12:00 Fundamentals and Nanofoams – Dr. Stéphane Costeux

BOEING TOUR

Tuesday, September 13 12:30 – 4:30

PROGRAM SESSIONS

Wednesday, September 14 Thursday, September 15

EXHIBITOR RECEPTION & POSTER SESSION

Wednesday, September 14 4:00-7:00

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Society of Plastics Engineers Thermoplastic Materials & Foams Division and The Pacific Northwest Section

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WEDNESDAY, SEPTEMBER 14

8:00 WELCOME ADDRESS AND ANNOUNCEMENTS Xiaoxi Wang and Vipin Kumar

8:15 PLENARY ADDRESS: RECENT ADVANCES IN MICROCELLULAR INJECTION MOLDING TECHNOLOGY AT KYOTO Masahiro Ohshima, Dept. of Chem. Eng., Kyoto University, Japan

SESSION 1A

ADVANCES IN FOAM PROCESSING Moderator – Prof. Hani Naguib, University of Toronto, Canada

9:15 INFLUENCE OF COC ON THE FOAMING BE-HAVIOUR AND THE RHEOLOGICAL PROPERTIES OF POLYPROPYLENE

Matthias Walluch, Polymer Competence Center Leoben, Austria

9:45 HIGH-PRESSURE FOAM INJECTION MOLD-ING WITH LOCAL CORE-BACK METHOD – SIMU-LATION APPROACH.

Mike Tromm, Institute of Materials Engineering, University of Kassel, Germany

10:15 KINETIC NUCLEATORS MAXIMIZE CELL DISTRIBUTION IN FOAM EXTRUSION Peter Schroeck, Reedy Chemical Foam, USA

10:45 COFFEE BREAK & EXHIBITS OPEN

SESSION 1B

ADVANCES IN FOAM PROCESSING Moderator – Prof. Chul Park, University of Toronto,

Canada

11:15 HIGHLY EFFICIENT MINERAL-BASED FOAM NUCLEATING AGENTS. *Neil Treat, IMERYS, USA*

11:45 A NOVEL TECHNOLOGY FOR MELT TEM-PERATURE CONTROL IN FOAM EXTRUSION Christian Schlummer, Promix Solutions AG, Winterthur, Switzerland

12:15 FABRICATION OF CARBON FOAM FOR THE IMPROVED EMI SHIELDING

Wentao Zhai, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, China

SESSION 2A

ADVANCES IN FOAM MATERIALS Moderator – Prof. Miguel Ángel Rodríguez-Pérez, CellMat Laboratory, University of Villadolid, Spain

2:00 DEVELOPMENT OF NOVEL POLYMERIC METAMATERIALS BASED ON ORIGAMI FOAMED STRUCTURES

Hani E. Naguib, Department of Mechanical and Industrial Eng., University of Toronto, Canada

2:30 ADVANCES IN ANALYSIS TECHNIQUES AND FAILURE MECHANISMS OF POLYMER FOAM PRODUCTS USED IN STRUCTURAL LONG-TERM APPLICATIONS

Michelle Zwick, Cultec Inc., USA

3:00 FIBER-SPUN POLYPROPYLENE/POLYETHYL-ENE TEREPHTHALATE MICROFIBRILLAR COM-POSITES WITH ENHANCED TENSILE AND RHEO-LOGICAL PROPERTIES AND FOAMING ABILITY *Ali Rizvi, University of Toronto, Canada*

3:30 MODELING OF MULTI-CELL GROWTH EF-FECT ON FIBER ROTATION AND TRANSLATION IN POLYMER COMPOSITE FOAM *S. Wang, University of Toronto, Canada*

4:00 EXHIBITOR RECEPTION & STUDENT POSTER SESSION



12:45 PROVIDED LUNCH



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THURSDAY, SEPTEMBER 15

8:00 PLENARY ADDRESS: TRADITIONAL & NON-TRADITIONAL FOAMS FOR AEROSPACE APPLICATIONS

Todd E. Steyer, Senior Manager, Extreme Environments Technology, The Boeing Company

SESSION 2B

ADVANCES IN FOAM MATERIALS, Cont. Moderator – Dr. Stéphane Costeux, The Dow Chemical Company

9:00 INTRODUCTION OF NOVEL HIGH MELT STRENGTH POLYPROPYLENE

Sachio Hotta, Product Technical Center, Japan Polypropylene Corporation, Japan

9:30 ON THE STRUCTURE AND PROPERTIES OF FLEXIBLE OPEN-CELL POLYURETHANE FOAMS Hani E. Naguib, Department of Mechanical and Industrial Eng., University of Toronto, Canada

10:00 LOW DENSITY POLYPROPYLENE FOAM: TECHNICAL CHALLENGES AND APPROACHES *Kim McLoughlin, Braskem Innovation and Technology, USA*

10:30 COFFEE BREAK

SESSION 3

MICROCELLULAR AND NANOCELLULAR FOAMS Moderator – Dr. Anson Wong, The Dow Chemical Company

11:00 LOW DENSITY NANOCELLULAR FOAMS BASED ON PMMA: PRODUCTION, STRUCTURE AND PROPERTIES

Miguel Ángel Rodríguez-Pérez, Cellular Laboratory, University of Valladolid, Spain

11:30 MACHINING THE SKIN OF MICROCELULLAR AND NANOCELLULAR FOAMS TO ACCESS THE CORE

Andrei Nicolae, Department of Mechanical Engineering, University of Washington

12:00 POLYMER NANOCOMPOSITE FOAM MATERI-ALS FOR APPLICATIONS IN SENSORS

Harish Kumar, Polymer Program, Institute of Materials Science, Univ. of Connecticut, USA

12:30 AWARD CEREMONY & PROVIDED LUNCH

SESSION 4A

OBSERVATION, ANALYSIS AND MODELLING Moderator – Prof. Vipin Kumar, University of Washington

2:30 FORECAST OF PROFESSIONAL AND IN-VESTMENT INTEREST IN FOAMED POLYMERS USING DATA-MINING TECHNIQUES *Lauren Jacky, HP Inc., USA*

3:00 ANALYSIS OF HEAT TRANSFER IN OPACI-FIED LOW-DENSITY CO2-BLOWN STYRENIC FOAM

Anson Wong, Dow Chemical Company, USA

3:30 MATHEMATICAL MODELING OF THE FOAMING STAGE IN THE BATCH MICROCEL-LULAR PROCESS Ankita Sinha, Indian Institute of Technology, Gandhinagar, India

4:00 COFFEE BREAK

SESSION 4B

OBSERVATION, ANALYSIS AND MODELLING Moderator – Dr. Xiaoxi Wang, The Boeing Company

4:30 A THERMODYNAMIC INVESTIGATION OF INTERACTIONS BETWEEN POLYMER AND BLEND BLOWING AGENT

S.H. Mahmood, Microcellular Plastics Manufacturing Lab, Univ. of Toronto, Canada

5:00 ON-LINE MONITORING METHOD FOR POLYURETHANE FOAMING GROWTH PROCESSES BASED ON FIBER OPTIC SENSING TECHNOLOGY

Xinglin Tong, Wuhan Univ.of Technology, China

5:30 RESEARCH ON POLYURETHANE FOAMING DYNAMIC CHARACTERISTICS Cui Zhang, Wuhan Univ. of Technology, China

6:00 CLOSING REMARKS



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LIST OF POSTERS

1. NEEDLE-LIKE NANOPARTICLES AS A NEW NU-CLEATING AGENT IN CO2-FOAMING OF NANOCEL-LULAR PMMA

V. Bernardo, University of Valladolid, Spain

2. NANOCELLULAR POLYMERS BASED ON PMMA/ MAM BLENDS: EFFECT OF THE COPOLYMER CHEM-ISTRY ON THE NANOSTRUCTURATION AND THE CELLULAR STRUCTURE

V. Bernardo, Univ. of Valladolid & Istituto Italiano di Tecnologia & Univ. of Genova, Spain

3. PREPARATION OF POLYPROPYLENE (PP) /CELLU-LOSE NANOFIBER (CNF) NANOCOMPOSITE FOAMS WITH CORE-BACK FOAM INJECTION MOLDING AND ANALYSIS OF THEIR MECHANICAL PROPER-TIES

Shota Ishihara, Department of Chemical Engineering, Kyoto University, Japan

4. EFFECT OF DESORPTION TIME TO THE DENSITY OF NANOCELLULAR FOAM

Zong-En Liao, Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan

5. ANALYSIS OF INTERACTIONS OF POLY METHYL METHACRYLATE (PMMA) AND CO₂ FROM A THER-MODYNAMIC STAND POINT

S. H. Mahmood, Microcellular Plastics Manufacturing Laboratory, Univ. of Toronto, Canada

6. DESCRIPTION OF THE PROCESS PARAMETERS FOR THE PRODUCTION OF PPSU NANOCELLULAR MATERIALS

Judith Martin-de León, Univ. of Valladolid, Spain

7. UNDERSTANDING THE MECHANISMS THAT AL-LOW REDUCING DENSITY IN PMMA NANOCELLU-LAR POLYMERS Judith Martin-de León, Univ. of Valladolid, Spain 8. CONTROLLING THE OPEN CELL CONTENT OF POLYPROPYLENE MICROCELLULAR FOAMS WITH CRYSTAL NUCLEATING AGENTS IN CORE-BACK FOAM INJECTION MOLDING PROCESS A. Minato, Department of Chemical Engineering, Kyoto University, Japan

9. FLUID FLOW THROUGH NANOPOROUS FOAMS Andrei Nicolae, University of Washington, USA

10. MATHEMATICAL MODELING AND VISUAL OB-SERVATION OF A PRESS FOAM MOLDING OF CROSS-LINKING LOW DENSITY POLYETHYLENE (LDPE) WITH CHEMICAL FOAMING AGENTS Tomohiro Shigeta, Department of Chemical Engineering, Kyoto University, Japan

11. POLYPROPYLENE CRYSTALLIZATION STUDIES IN EXTRUSION FOAMING: VISUALIZATION, QUAN-TIFICATION & APPLICATION

A. Tabatabaei, Microcellular Plastics Manufacturing Laboratory, University of Toronto, Canada

12. FOAMING ABILITY OF THERMOPLASTIC POLY-URETHANE COMPOSED WITH DIFFERENT SOFT SEGMENTS

Tzu-Jian Tseng, Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan

13. HOMOGENEOUS NANOCOMPOSITE ELASTO-MER FOAMS BASED ON NATURAL RUBBER/NANO-CLAY

A. Vahidifar, Isfahan Univ. of Technology, Iran; University of Toronto, Canada; Leibniz Institute of Polymer Research Dresden, Germany; Bonab University, Iran