

# **BIOFOAMS 2013** **TECHNICAL PROGRAM**

## **DAY 1: Tuesday, August 27, 2013**

07:30	<b>Registration – Hart House: Great Hall</b>				
08:15	<b>General Welcome Address – Chul B. Park</b>				
	<b><u>Session 1: Tutorials on Biofoams</u></b>				
p.1	08:20	<b><u>Tutorial 1: Biomedical Foams by Salvatore Iannace</u></b> Institute for Composite and Biomedical Materials of the National Research Council (IMCB-CNR), University of Naples Federico II, Italy	p.100	01:30	BASF FOAMS FOR SUSTAINABLE FUTURE, Achim Loeffler, Polymer Foams, BASF - The Chemical Company.
	09:30	<b>COFFEE BREAK</b>	p.101	02:00	MULTISCALE POROUS HYBRID BIOFOAMS OBTAINED FROM REACTIVELY MODIFIED THERMOPLASTIC VEGETAL PROTEINS, Letizia Verdolotti, Marino Lavorgna, Maria Oliviero, Andrea Sorrentino, Ernesto Di Maio, Salvatore Iannace, Institute for Composite and Biomedical Materials (IMCB-CNR), Italy, Department of Materials and Production Engineering, University of Naples Federico II, Italy
p.36	09:50	<b><u>Tutorial 2: Food Foams by Grant M. Campbell</u></b> Satake Centre for Grain Process Engineering, School of Chemical Engineering and Analytical Science, The University of Manchester, Manchester, United Kingdom	p.104	02:30	BIODEGRADABLE STARCH-BASED FOAMS FOR PACKAGING CUSHIONING USE, Georges Abi Nader, Catherine Lacoste, Marie Lebaillif, Damien Erre, Alain Copinet, University of Reims Champagne Ardennes, Reims, France
p.69	11:00	<b><u>Tutorial 3: Bio and Sustainable Foams by Hani E. Naguib</u></b> Smart & Adaptive Polymer Laboratory, Department of Mechanical & Industrial Engineering, University of Toronto, Toronto, Canada	p.108	03:00	PREPARATION OF NATURAL RUBBER BASED POLYOL BY OXIDATIVE DEGRADATION UNDER SUPERCRITICAL CARBON DIOXIDE FOR FLEXIBLE BIO-BASED POLYURETHANE FOAMS, Thidarat Amnuaysin, Piyapong Buahom, Surat Areerat, King Mongkut's Institute of Technology Thailand
	12:10	<b>LUNCH BREAK</b>		03:30	<b>COFFEE BREAK</b>
	01:20	<b>Conference Opening – Chul B. Park</b>	p.113	04:00	RECENT ADVANCES FOR PRODUCING HIGHLY POROUS, BIO-SOURCED, MONOLITHS, Alain Celzard, Andrzej Szczurek, Vanessa Fierro, Antonio Pizzi University of Lorraine, ENSTIB, Epinal, France
			p.118	04:30	PERFORMANCE OF ZEALAFOAM FISH BOXES Stephanie Weal, Samir Shah, Kate Parker, Alan Fernyhough, Scion/Biopolymer Network Ltd, Rotorua, New Zealand
				05:00	OPENING RECEPTION <b>Hart House: Debates Room</b>

## DAY 2: Wednesday, August 28, 2013

### Session 3: Biomedical Foams

Moderator: Salvatore Iannace, National Research Council, Italy

- p.130 08:20 **KEYNOTE SPEECH: FABRICATION OF TISSUE ENGINEERING SCAFFOLDS USING ELECTROSPINNING, THERMALLY INDUCED PHASE SEPARATION, AND MICROCELLULAR INJECTION MOLDING**, Lih-Sheng (Tom) Turng, University of Wisconsin Madison
- p.134 09:00 PREPARATION AND CHARACTERIZATION OF PLLA-HA SCAFFOLDS FOR BONE TISSUE ENGINEERING, F. Carfi Pavia, V. La Carrubba, V. Brucato. Dipartimento di Ingegneria Civile, Ambientale e dei Materiali, Università di Palermo, Italy
- p.137 09:30 DEVELOPMENT OF AEROGELS FOAMS FOR MEDICAL IMAGING, Eunji In and Hani Naguib, University of Toronto, Canada
- 10:00 **COFFEE BREAK**
- p.140 10:30 **KEYNOTE SPEECH: BUBBLE FORMATION IN POLYMERIC MICRO- AND NANO-SPHERES**, S. Orsi, E. Di Maio, P.A. Netti, S. Iannace, Center for Advanced Biomaterials for Health Care, Istituto Italiano di Tecnologia (IIT@CRIB), Department of Chemical, Materials and Production Engineering, University of Naples Federico II, Institute for Composite and Biomedical Materials of the National Research Council (IMCB-CNR), Italy

### Session 4: Biofoam Technology

Moderator: Philip W. Cox, University of Birmingham, UK

- p.122 11:00 BIO-BASED POLYURETHANE FOAMS MODIFIED WITH MICROCELLULOSE, Aleksander Prociak, Maria Kurańska, Szymon Bąk Cracow University of Technology, Department of Chemistry and Technology of Polymers, Poland
- p.126 11:30 RIGID POLYISOCYANURATE FOAMS OBTAINED FROM RAPESEED OIL AND MODIFIED WITH NANOCCLAYS, Ugis Cabulis, Vladimir Yakushin, Uldis Stirma, Janis Andersons, University of Latvia, Latvia
- p.249 12:00 THE EFFECT OF MIXING CONDITIONS ON THE MORPHOLOGY AND PERFORMANCE OF FIBRE REINFORCED BIOFOAMS, Li-Chi Chang, Mohini Sain, and Mark Kortschot, University of Toronto
- 12:30 **INTERACTIVE SESSION and LUNCH**
- p.142 P1 MORPHOLOGICAL AND IMPACT PROPERTIES OF POLYLACTIC ACID/CELLULOSE NANOFIBER COMPOSITE FOAMS, Weidan Ding, Chul B. Park, Mohini Sain, University of Toronto
- p.146 P2 FABRICATION AND CHARACTERIZATION OF PLA/PHBV CHITIN NANOWHISKER FOAMS, Qi Guan, Hani Naguib, University of Toronto
- p.149 P3 FOAMING OF MICROFIBRILLATED CELLULOSE REINFORCED POLYVINYL ALCOHOL BIOCOMPOSITES, Na Zhao, Takashi Kuboki, Lun Howe Mark, Chul B. Park, Qian Li, Zhengzhou University, China, University of Toronto, Canada, University of Western Ontario, Canada
- p.155 P4 SOLID-STATE BATCH FOAMING AND STRUCTURE OF SUB-MICRON & NANO-CELLULAR POLYLACTIDE FOAMS, M. Saniei, N. J. Hosseiny, A. Ameli, C. B. Park, University of Toronto
- p.158 P5 CRYSTALLIZATION KINETICS OF DIFFERENT PLA MATERIALS IN PRESENCE OF DISSOLVED GAS, Mohammadreza Nofar, Chul B. Park, University of Toronto, Canada
- p.162 P6 THERMAL STABILITY AND MECHANICAL PROPERTIES OF PUR-PIR FOAMS OBTAINED FROM

RAPESEED OIL POLYOLS AND MODIFIED WITH EXPANDABLE GRAPHITE, Maria Kurańska, Aleksander Prociak, Mikelis Kirpluks, Ugis Cabulis, Cracow University of Technology, Poland, Latvian State Institute of Wood Chemistry

- p.165 P7 QUANTIFYING DISPROPORTIONATION IN HIGH VOID FRACTION FOAMS WITH ULTRASOUND, D. Daugelaite, M.G. Scanlon, V. Leroy, J.H. Page, University of Manitoba, Winnipeg, Canada, Université Paris Diderot, Paris, France
- p.168 P8 ACOUSTIC CHARACTERIZATION OF LIQUID FOAMS WITH AN IMPEDANCE TUBE, Juliette Pierre, Reine-Marie Guillemic, Florence Elias, Wiebke Drenckhan, Valentin Leroy, Université Paris, Université Paris-Sud, Orsay, Université Paris, France
- p.171 P9 THE EFFECTS OF THE FREEZE THAW CYCLE ON PROTEINS USED FOR THE PRODUCTION OF AIR FILLED EMULSIONS, Ali J. Green, Mathieu Boujot-Matignon, Philip W. Cox, Chemical Engineering, University of Birmingham, Edgbaston, Birmingham, UK
- p.175 P10 X-RAY COMPUTERISED TOMOGRAPHY INVESTIGATION OF BREAD DOUGH: CHANGES IN THE STRUCTURE AND CELL VOLUME DISTRIBUTION DURING PROVING Linda Trinh, Tristan Lowe, Grant M Campbell, Philip J Withers and Peter J Martina, The University of Manchester, United Kingdom

### Session 5: Biofoam Characterization

Moderator Ernesto Di Maio, University of Naples Federico II, Italy

- p.177 02:00 RHEOLOGICAL PROPERTIES AND FOAMING BEHAVIOR OF POLYLACTIDE WITH DIFFERENT MOLECULAR STRUCTURES, N. Najafi, M. C. Heuzey, P. J.Carreau, D. Therriault, Ecole Polytechnique de Montreal
- p.181 02:30 FOAMING AND CRYSTALLIZATION BEHAVIORS OF HIGHLY EXPANDED INJECTION-MOLDED POLYLACTIDE COMPOSITE FOAMS, A. Ameli, M. Nofar, D. Jahani, M. Saniei, C.B. Park, University of Toronto
- p.185 03:00 BIODEGRADABLE PLA-BASED FOAM FOR PACKAGING APPLICATIONS, Byungjoo Jeon, Kwon Bin Song, Eung Kee (Richard) Lee and Minhee Lee, LG Hausys R&D Center, Anyang-City, Gyeonggi-do, KOREA
- 03:30 **COFFEE BREAK**
- p.245 04:00 EXTRUSION FOAMING OF POLY(BUTYLENE SUCCINATE) USING LOW GLOBAL WARMING PHYSICAL BLOWING AGENTS, Sven Hendriks, Christian Hopmann, Stephan Kabasci, Hans-Joachim Radusch, Frank van Lück, Stefan Zepnik, Aachen University, Martin Luther University, Xtrusion Consulting, Kaarst, Germany
- p.192 04:30 CHARACTERIZATION OF WOOD PLASTIC COMPOSITES USING X-RAY MICRO TOMOGRAPHY, U. Saeed, G. Rizvi, UOIT Canada
- p.196 05:00 BIODEGRADABILITY AND MECHANICAL PROPERTIES OF SUGARCANE BAGASSE FILLED PP/HMSP STRUCTURAL FOAMS BIOCOMPOSITES TREATED WITH GAMMA-IRRADIATION, Elisabeth C.L. Cardoso, Sandra R. Scagliusi, Luis F.C.P. Lima, Nelson R. Bueno, D.F. Parra, Ademar B. Lugão, Instituto de Pesquisas Energéticas e Nucleares, São Paulo, Brasil
- p.251 05:30 VISUALIZING INJECTION FOAMING PHENOMENON: A NOVEL APPROACH IN MOLD DESIGN CONSIDERING WEIGHT REDUCTION, Amir H. Behraves, Ahmadzia Ahmad Zai, Tarbiat Modares University, Tehran, Iran
- 07:00 **BANQUET Hart House: Music Room**

## DAY 3: Thursday, August 29, 2013

### Session 6: Biofood Foams

Moderator: Grant Campbell, The University of Manchester, UK

- p.202 08:20 **KEYNOTE SPEECH: FORMATION AND STABILITY OF FOOD FOAMS AND AERATED EMULSIONS: HYDROPHOBINS AS NOVEL FUNCTIONAL INGREDIENTS**, Philip W. Cox, Chemical Engineering, University of Birmingham, Edgbaston, Birmingham, UK
- p.205 09:00 DETERMINING HOW EGG WHITE FOAMS DRAIN, D. Daugelaite, M.G. Scanlon, J.H. Page University of Manitoba, Winnipeg, Canada
- p.208 09:30 PROTEIN STABILISED FOAMS; RHEOLOGICAL PROPERTIES AND STABILITY, A Lazidis, RD Hancocks, M Kreuss, R Berrocal, IT Norton, Department of Chemical Engineering, University of Birmingham, United Kingdom, Nestlé Product Technology Centre, Switzerland
- 10:00 **COFFEE BREAK**
- p.212 10:30 HOW FOAMS STAND UP FOR THEMSELVES, Reine-Marie Guillermic, Sabrina Volland, Sylvain Faure, Bruno Imbert, Wiebke Drenckhan, Laboratoire de Physique des Solides, Université Paris-Sud, CEA DEN-Marcoule, CEA DAM-DIF, Arpajon, France
- p.215 11:00 AERATION DYNAMICS DURING BREAD DOUGH MIXING USING X-RAY TOMOGRAPHY, Linda Trinh, Tristan Lowe, Grant M. Campbell, Philip J. Withers, Peter J. Martin The University of Manchester, Manchester, UK
- p.218 11:30 FROM MICROSCALE TO MACROSCALE: UNDERSTANDING THE ROLE OF SINGLE PROTEINS IN COMPLEX FOOD FOAMS, Jannika Dombrowski, Anja Eggert, Ulrich Kulozik, Technische Universität München, Chair for Food Process Engineering and Dairy Technology, Freising, Germany, Fraunhofer Institute for Integrated Circuits IIS, Development Center for X-ray Technology, Germany
- p.221 12:00 APPLICATION OF PROTEIN STABILIZED FOAM STRUCTURES AS PROTECTIVE CARRIER SYSTEMS DURING DRYING OF PROBIOTICS, Sabine Ambros, Jannika Dombrowski, Ulrich Kulozik, Technische Universität München, Chair for Food Process Engineering and Dairy Technology, Freising, Germany
- 12:30 **LUNCH**

### Session 7: Biofoam Properties

Moderator: Achim Loeffler, BASF, Germany

- p.225 01:30 BIOPOLYMER FOAM - RELATIONSHIP BETWEEN MATERIAL CHARACTERISTICS AND FOAMING BEHAVIOR OF CELLULOSE BASED POLYMERS, F. Rapp, A. Schneider and P. Elsner, Fraunhofer Institute for Chemical Technology, Karlsruhe Institute of Technology KIT, Germany
- p.231 02:00 UNDERSTANDING THE EFFECTS OF LOW ASPECT RATIO FIBERS ON THE MECHANICAL REINFORCEMENT OF SOYBEAN BASED POLYURETHANE FOAM, S. Hussain, M.T., Kortschot, University of Toronto
- p.234 02:30 STRATEGIES TO IMPROVE THE MECHANICAL PROPERTIES OF HIGH DENSITY PLA FOAM, Geissler, Uray, Laske, Holzer, Langecker, Polymer Competence Center Leoben GmbH., Leoben, Austria
- p.238 03:00 STUDY ON THE EFFECT OF CELL SIZE ON ACOUSTIC ABSORPTION OF OPEN CELL POLYLACTIDE FOAMS, Shahrzad Ghaffari Mosanenzadeh, Hani E. Naguib, Chul B. Park and Noureddine Atalla, University of Toronto, Université de Sherbrooke, Canada
- p.241 04:00 CRYSTALLIZATION AND FOAM BEHAVIORS OF PLA/KRAFT-FLAX-FIBER COMPOSITES WITH SUPERCRITICAL CO<sub>2</sub>, Xiaoli Zhang, Chul. B. Park, University of Toronto
- 04:30 **CLOSING REMARKS**