

*Program*

# **Syntactic and Composite Foams II**

**August 5-10, 2007**

**Davos, Switzerland**

**Conference Chair**

**Gary M. Gladysz**  
*Trelleborg Emerson & Cuming, Inc., USA*

**Conference Co-Chairs**

**Krishan K. Chawla**  
*University of Alabama at Birmingham, USA*

**Aldo R. Boccaccini**  
*Imperial College London, UK*

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## **Sunday, August 5, 2007**

- |               |  |
|---------------|--|
| 17:00 – 19:00 | Registration at Cresta Sun Hotel   |
| 18:00 – 19:00 | Welcome Reception at Cresta Sun Hotel<br>Hosted by Trelleborg Emerson & Cuming, Inc. |
| 19:00 – 21:00 | Opening Dinner at Cresta Sun Hotel   |

### **NOTES**

- **Please observe “No Smoking” at ECI technical sessions, meals and social hours.**
- **Speakers should allow time at the end of their presentation for questions and discussion.**
- **Please silence your cell phone during technical sessions.**
- **Internet access will be available at the Congress Center from 7:30 am to 8:00 pm from Monday through Thursday and until 5:00 pm on Friday.**
- **All lunches, dinners and receptions will be at the Cresta Sun Hotel.**
- **Breakfasts will be at the hotel where you are staying.**
- **Posters should be put on display on Thursday prior to the Poster Session. All poster presenters should be prepared to give a 5-minute oral overview of their presentation to the general session. During the poster session, poster presenters are asked to be with their posters and available to answer questions.**
- **There will be an optional excursion to the Sertig Valley on Tuesday. Boxed lunches will be provided to those going on the excursion. Those not participating may either have lunch at the Cresta Sun Hotel or request a boxed lunch.**

## **Monday, August 6, 2007**

- 07:30 – 08:30 Breakfast
- 08:30 – 08:45 Conference Welcome  
Gary Gladysz, Chair  
K.K Chawla, Co-Chair  
A.R. Boccaccini, Co-Chair  
Barbara Hickernell, ECI Director

### **SESSION I: Processing of Hollow Structures**

Chairs: A. R. Boccaccini, K. B. Carlisle

- 08:45 – 09:30 **Invited Talk**  
NANOCOMPOSITE POLYMER FOAMS CONTAINING CARBON NANOTUBES AND NANOFIBRES  
Milo Shaffer, Imperial College, London, UK
- 09:30 – 10:00 FOAMING OF METAL SUSPENSIONS AND SINTERING TO OPEN CELL STRUCTURES FOR NOVEL COOLING METHODS  
Stefanie Angel, IEHK, Aachen University, Aachen, Germany, Wolfgang Bleck, IEHK, Aachen University
- 10:00 – 10:30 ALUMINIUM FOAM - POLYMER COMPOSITES: PROCESSING AND CHARACTERISTICS  
Karsten Stuebener, Fraunhofer, IFAM, Bremen, Germany  
Gerald Rausch, Fraunhofer, IFAM, Germany  
Joachim Baumeister, Fraunhofer, IFAM, Germany  
Matthias Busse, Fraunhofer, IFAM, Germany
- 10:30 – 11:00 Coffee Break
- 11:00 – 11:30 SELF-ASSEMBLED MONO- AND MULTILAYERS OF TMA-A ZEOLITE NANOCRYSTALS ON GLASS WITH TRIETHOXYSILANE AS COVALENT LINKERS  
Ik Jin Kim, Urs T. Gonzenbach, and Ludwig J. Gauckler, ETH, Zurich, Switzerland
- 11:30 – 12:00 PREPARATION OF MESOPOROUS CARBON USING ZEOLITE AND ITS POTENTIAL APPLICATION IN CATALYSIS  
Wigen Nazarov, University of St Andrews, School of Chemistry, St Andrews, Scotland  
James D Nobbs, Imperial College, London UK  
James Thomson, Ceimig Ltd., Scotland
- 12:00 – 12:45 Discussion
- 12:45 – 14:15 Lunch
- 14:15 – 17:30 *ad hoc* discussions, free time

**Monday, August 6, 2007 (continued)**

17:30 – 18:00            Coffee Break

**SESSION II: Foam Composites**

Chairs: G. Gladysz, M. Shaffer

- 18:00 – 18:30            ULTRASTABLE PARTICLE-STABILIZED FOAMS  
Urs T. Gonzenbach, ETH, Zürich, Switzerland  
André R. Studart, ETH Zürich  
Elena Tervoort, ETH Zürich  
Ludwig J. Gauckler, ETH Zürich
- 18:30 – 19:00            ALUMINUM CLOSED-CELL FOAMS WITH CERAMIC AND METALLIC  
PARTICLE ADDITIONS  
Mustafa Guden, Izmir Institute of Technology, Ýzmir, Turkey  
Sinan Yüksel, Izmir Institute of Technology  
Deniz Karsu, Izmir Institute of Technology  
Alper Tademirci, Izmir Institute of Technology
- 19:00 – 19:30            SHAPE MEMORY SYNTACTIC FOAM  
Richard Tillinger, Cornerstone Research Group, Inc., Dayton, OH. USA  
Ernie Havens, Cornerstone Research Group, Inc., USA  
Lisa Bartlett, Cornerstone Research Group, Inc., USA  
Chris Hemmelgarn, Cornerstone Research Group, Inc., USA  
Zachary Kier, Cornerstone Research Group, Inc., USA
- 19:30 – 20:00            FABRICATION AND CHARACTERIZATION OF FLY ASH  
CENOSPHERE-POLYESTER FUNCTIONALLY GRADIENT SYNTACTIC  
FOAMS  
Nikhil Gupta, Polytechnic University, Brooklyn, NY, USA  
T. Matsunaga, University of Wisconsin-Milwaukee, USA  
Pradeep K. Rohatgi, University of Wisconsin-Milwaukee, USA
- 20:00 – 21:30            Dinner
- 21:30 – 22:30            Social Hour

**Tuesday , August 7, 2007**

07:30 – 08:30 Breakfast

**SESSION III: Foams as Scaffolds**

Chairs: A.R. Boccaccini, J.R. Jones

- 08:30 – 09:15 **Invited Talk**  
THE QUANTIFICATION OF 3D INTERCONNECTED PORE NETWORKS  
IN TISSUE SCAFFOLDS  
Julian R. Jones, Royal Academy of Engineering/ EPSRC Research  
Fellow, Imperial College, London, UK
- 09:15 – 09:45 EFFECT OF POLYURETHANE COMPOSITION AND THE  
FABRICATION PROCESS PARAMETERS ON SCAFFOLDS  
PROPERTIES  
Monika Bil, Warsaw, Warsaw University of Technology, Warsaw, Poland  
Joanna Ryszkowska, Warsaw University of Technology, Poland
- 09:45 – 10:15 Coffee Break
- 10:15 – 10:45 POLYMER COATED BIOACTIVE GLASS FOAMS FOR BONE TISSUE  
ENGINEERING SCAFFOLDS  
Aldo R. Boccaccini, Imperial College, London, UK  
O. Bretcanu, Imperial College London, UK  
Ipsita Roy, University of Westminster, UK  
Christian Hellmich, TU Vienna, Austria  
Enrica Verne, Politecnico di Torino, Italy
- 10:45 – 11:30 **Invited Talk**  
SYNTACTIC FOAMS: USE IN MARITIME PLATFORMS  
J. Guy Reynolds, Naval Submarine League, Washington DC, USA
- 11:30 – 11:45 Discussion
- 12:30 – 18:00 Optional Excursion to Sertig Valley  
Boxed Lunch provided
- 18:00 – 20:00 Free time
- 20:00 – 21:30 Dinner
- 21:30 – 22:30 Social Hour

**Wednesday, August 8, 2007**

07:30 – 08:30 Breakfast

**SESSION IV: Physical Properties**

Chairs: K.K. Chawla, J. Guy Reynolds

- 08:30 – 09:00 EFFECT OF RADIUS RATIO ON HIGH STRAIN RATE PROPERTIES OF SYNTACTIC FOAM COMPOSITES  
Eyassu Woldesenbet, Southern University and A&M College, Baton Rouge, LA, USA  
Sameer L.Peter, Louisiana State University, USA  
Phani Mylavarapu, Louisiana State University, USA  
Lashounda T.Franklin, Southern University and A&M College, USA  
Jarvis Wagner, Southern University and A&M College, USA
- 09:00 – 09:30 ELECTRICALLY CONDUCTING NANOCOMPOSITE FOAM  
S. Sankaran, Aeronautical Development Establishment, Bangalore, India  
Samudra Dasgupta, Aeronautical Development Establishment, India  
K Ravi Sekhar, Aeronautical Development Establishment, India
- 09:30 – 10:00 MICROPOROUS TEMPLATED SILVER FOAM  
Wigen Nazarov, School of Chemistry, St. Andrews University, St. Andrews, Scotland.  
Warren Steckle, Los Alamos National Laboratory, Los Alamos, NM.  
Douglas Faith, Atomic Weapons Establishment, Aldermaston, UK.
- 10:00 – 10:30 Coffee Break
- 10:30 – 11:00 THERMAL PROPERTIES OF EPOXY-GLASS MICROBALLOON MATRIX SYNTACTIC FOAMS  
Nikhil Gupta, Polytechnic University, Brooklyn, NY, USA  
Tien Chih Lin, Polytechnic University, USA  
Sandeep Kumar Gupta, Polytechnic University, USA  
Omri Roden, Polytechnic University, USA
- 11:00 – 11:30 EFFECT OF THE VOLUME FRACTION ON HIGH STRAIN RATE PROPERTIES OF SYNTACTIC FOAM COMPOSITES  
Eyassu Woldesenbet, Southern University and A&M College, Baton Rouge, LA, USA  
Lashounda T.Franklin, Southern University and A&M College, USA  
Jarvis Wagner, Southern University and A&M College, USA  
Sameer L.Peter, Louisiana State University, USA  
Phani Mylavarapu, Louisiana State University, USA
- 11:30 – 12:30 Discussions
- 12:30 – 13:30 Lunch
- 13:30 – 16:00 *ad hoc* discussions, free time



**Wednesday, August 8, 2007 (continued)**

**Session V: Coated Microballoons**

Chairs: N. Gupta, W. Nazarov

- 16:00 – 16:30 THE MECHANICAL ADVANTAGE OF THIN FILM AG COATINGS ON THE HYDROSTATIC PERFORMANCE OF HOLLOW GLASS MICROSPHERES  
William Ricci, Trelleborg Emerson and Cuming, Inc., Mansfield, MA, USA  
Gary M. Gladysz, Trelleborg Emerson and Cuming, USA  
Kipp B. Carlisle, Trelleborg Emerson and Cuming, USA  
Vicente B. Brito, Trelleborg Emerson and Cuming, USA
- 16:30 – 17:00 TITANIA COATED GLASS MICROBALLOONS FOR ENVIRONMENTAL APPLICATIONS  
M. Koopman, University of Alabama at Birmingham, Birmingham, AL, USA  
W. Ricci, Trelleborg Emerson and Cuming, Inc., USA  
G. M. Gladysz, Trelleborg Emerson and Cuming, Inc., USA  
M. Lalor, University of Alabama at Birmingham, USA  
K.K. Chawla, University of Alabama at Birmingham., USA
- 17:00 – 17:30 BRINGING TECHNOLOGY INTO THE HEALTH CARE FIELD  
Jack Kushner, American Opportunity Portal, Annapolis, Maryland, USA
- 17:30 – 18:00 Coffee Break

**SESSION VI: Modeling**

Chairs: E. Woldesenbet, G. Rausch

- 18:00 – 18:30 MODELLING APPROACH FOR DAMAGEABLE MECHANICAL BEHAVIOUR OF GLASS/POLYMER SYNTACTIC FOAMS.  
Dominique Choqueuse, IFREMER Comté, France  
Dominique Perreux, LMA, Université de Franche Comté, France  
Valerie Sauvant-Moynot, IFP, France
- 18:30 – 19:00 ELLIPSOIDAL VS. SPHERICAL MACRO-SHELLS: EXPERIMENTS AND MODELING  
Kipp B. Carlisle, Trelleborg Emerson & Cuming, Inc., Mansfield, MA, USA  
Gary M. Gladysz, Trelleborg Emerson & Cuming, Inc., USA  
Vicente Brito, Trelleborg Emerson & Cuming, Inc., USA  
William Ricci, Trelleborg Emerson & Cuming, Inc., USA
- 19:00 – 19:30 Discussion
- 20:00 – 21:30 Dinner
- 21:30 – 22:30 Social Hour

**Thursday, August 9, 2007**

07:30 – 08:30 Breakfast

**Session VII: Testing/Characterization**

Chairs: M. Koopman, S. Sankaran

- 08:30 – 09:00 MECHANICAL PERFORMANCE OF MICROBALLOONS AND SYNTACTIC FOAMS  
G. M. Gladysz, Trelleborg Emerson & Cuming, Inc., Mansfield, MA, USA  
K.K. Chawla, University of Alabama at Birmingham, USA  
K.B. Carlisle, Trelleborg Emerson and Cuming, Inc., USA  
V.M. Brito, Trelleborg Emerson and Cuming, Inc., USA  
W. Ricci, Trelleborg Emerson and Cuming, Inc., USA
- 09:00 – 09:30 EFFECT OF PORE STRUCTURE ON STRAIN-RATE SENSITIVITY OF TITANIUM FOAMS  
Nihan Tuncer, Anadolu University, Eskisehir, Turkey  
Gursoy Arslan, Anadolu University, Turkey
- 09:30 – 10:00 CORRELATION OF SYNTACTIC FOAM'S UNIAXIAL COMPRESSIVE AND HYDROSTATIC COMPRESSIVE PROPERTIES  
Vicente B. Brito, Trelleborg Emerson & Cuming, Inc., Mansfield, MA, USA  
Gary M. Gladysz, Trelleborg Emerson & Cuming, Inc., USA  
Kipp B. Carlisle, Trelleborg Emerson & Cuming, Inc., USA  
William Ricci, Trelleborg Emerson & Cuming, Inc., USA
- 10:00 – 10:30 INDENTATION BEHAVIOUR OF THIN AL FOAM PANELS  
Maizlinda Izwana Idris, University of New South Wales, School of Materials Science and Engineering, Australia  
Mark Hoffman, University of New South Wales, Australia  
Tania Vodenitcharova, University of New South Wales, Australia
- 10:30 – 11:00 Coffee Break
- 11:00 – 11:30 COMPREHENSIVE ANALYSES OF GLASS SYNTACTIC FOAM BEHAVIOUR IN DEEP WATER ENVIRONMENT  
François Grosjean, IFP, Lyon, France  
Nadège Bouchonneau, Ifremer - IFP, France  
Dominique Choqueuse, Ifremer Brest, France  
Valérie Sauvart-Moynot, IFP Lyon, France
- 11:30 – 12:00 MECHANICAL PROPERTIES OF GLASS MICROBALLOONS: A COMPARISON BETWEEN THE ISOSTATIC TEST AND UNIAXIAL MICROCOMPRESSION METHODS  
M. Koopman, University of Alabama at Birmingham, Birmingham, AL, USA  
K.B. Carlisle, Trelleborg Emerson and Cuming, Inc., USA  
G. M. Gladysz, Trelleborg Emerson and Cuming, Inc., USA  
M. Lalor, University of Alabama at Birmingham, USA  
K.K. Chawla, University of Alabama at Birmingham, USA

**Thursday, August 9, 2007 (continued)**

- 12:00 – 12:30 MICROSTRUCTURE – PROPERTIES RELATIONSHIP IN CERAMIC – ELASTOMER COMPOSITES WITH 3D CONNECTIVITY OF PHASES.  
Kamil Babski, Warsaw University of Technology, Warsaw, Poland  
Anna Boczkowska, Warsaw University of Technology, Poland  
Krzysztof J. Kurzydłowski, Warsaw University of Technology, Poland
- 12:30 – 12:45 Discussion
- 12:45 – 14:00 Lunch
- 14:00 – 18:00 *ad hoc* discussions, free time

**Session VIII: Poster Session**

Chairs: M. Guden, U.T. Gonzenbach

**Each poster presenter will give a 5-minute introduction of his/her poster**

- 18:00 – 20:00 PREPARATION OF MESOPOROUS CARBON USING ZEOLITE AND ITS POTENTIAL APPLICATION IN CATALYSIS  
Wigen Nazarov, University of St Andrews, School of Chemistry, St Andrews, Scotland  
James D Nobbs, Imperial College, London UK  
James Thomson, Ceimig Ltd., Scotland
- THE USE OF BUOYANCY MATERIALS FOR MANNED DEEP SUBMERGENCE VEHICLES  
Robert Brown, Woods Hole Oceanographic Institution, Woods Hole, MA, USA
- PARTICLE-STABILIZED CERAMIC FOAMS  
Franziska Krauss, Nonmetallic Inorganic Materials, ETH, Zurich, Switzerland  
Urs T. Gonzenbach, ETH Zurich, Switzerland  
André R. Studart, ETH Zurich, Switzerland  
Elena Tervoort, ETH Zurich, Switzerland  
Ludwig J. Gauckler, ETH Zurich, Switzerland
- POLY (E-CAPROLACTONE) URETHANE / CALCIUM CARBONATE COMPOSITE POROUS SCAFFOLDS FOR BONE TISSUE ENGINEERING  
Joanna Ryszkowska, Warsaw University of Technology, Warsaw, Poland  
Monika Bil, Warsaw University of Technology, Poland

**Thursday, August 9, 2007 (continued)**

POLYURETHANE SCAFFOLDS FOR TISSUE ENGINEERING WITH  
CARBON NANOTUBE COATING OBTAINED BY ELECTROPHORETIC  
DEPOSITION

Ewelina Zawadzak, Warsaw University of Technology, Warsaw, Poland  
Monika Bil, Warsaw University of Technology, Poland  
Joanna Ryszkowska, Warsaw University of Technology, Poland  
Johann Cho, Imperial College London, UK  
Aldo R. Boccaccini, Imperial College London, UK

SURFACTANT TEMPLATING OF NANOPOROUS SILICA FOAMS

Nicholas Bazin, AWE, Aldermaston, Reading, UK  
Wigen Nazarov, Department of chemistry, St. Andrews University, UK

POLYMER COATED TiO<sub>2</sub> FOAMS FOR BONE TISSUE ENGINEERING

Aldo R. Boccaccini, Saša Novak, John Druce, Qizhi Chen  
Department of Materials, Imperial College London, UK

EFFECT OF WEIR DROP WATER TURBULENCE ON TITANIA  
COATED GLASS MICROBALLOONS

M.L. Jones, University of Alabama at Birmingham, USA  
M. Koopman, K.K. Chawla, M. Lalor, University of Alabama at  
Birmingham, USA  
W. Ricci, Trelleborg Emerson & Cuming, Inc., USA

PHOTOCATALYTIC DEGRADATION OF INDUSTRIAL DYES IN UV-  
IRRADIATED SUSPENSIONS OF TITANIA COATED HOLLOW GLASS  
MICROSPHERES

K.E. Kerr, University of Alabama at Birmingham, USA  
M.L. Jones, M. Koopman, K.K. Chawla, M. Lalor, University of Alabama  
at Birmingham, USA  
W. Ricci, Trelleborg Emerson & Cuming, Inc., USA

20:15 – 21:45 Conference Banquet

21:45 – 23:00 Social Hour

**Friday, August 10, 2007**

07:30 – 08:30 Breakfast

**Session IX: Applications**

Chairs: K.K. Chawla, A.R. Boccaccini

- 08:30 – 09:15 **Invited Talk**  
THE USE OF BUOYANCY MATERIALS FOR MANNED DEEP  
SUBMERGENCE VEHICLES  
Robert Brown, Woods Hole Oceanographic Institution, Woods Hole, MA,  
USA
- 09:15 – 09:45 DEFENSE APPLICATIONS OF SYNTACTIC FOAMS  
John Matthews, Trelleborg Emerson & Cuming, Inc., Mansfield, MA, USA
- 09:45 – 10:15 AN OVERVIEW OF WHISPERING GALLERY MODE RESONATOR-  
BASED MECHANICAL SENSORS AND POTENTIAL APPLICATIONS  
TO SYNTACTIC MATERIALS  
M. Volkan Otugen, Polytechnic University, Brooklyn, NY, USA  
Nikhil Gupta, Polytechnic University, USA
- 10:15 – 10:45 Coffee Break
- 10:45 – 11:15 DEVELOPMENT OF A STRUCTURAL HEALTH MONITORING SYSTEM  
FOR PARTICULATE COMPOSITES USING THEIR  
MICROSTRUCTURAL COMPONENTS  
Nikhil Gupta, Polytechnic University, Brooklyn, NY, USA  
Nguyen Quang Nguyen, Polytechnic University, USA  
Tindaro Ioppolo, Polytechnic University, USA  
M. Volkan Otugen, Polytechnic University, USA
- 11:15 – 11:45 THE USE OF SYNTACTIC FOAM IN TOOLING FOR FORMING  
THERMOPLASTIC SHEET  
Art Buckel, McConnell Co, Inc., Forth Worth, TX, USA
- 11:45 – 12:30 Discussion
- 12:30 – 1400 Lunch

**SESSION X: Round Table Discussions**

Chairs: G. Gladysz, K.K. Chawla, A.R. Boccaccini

- 14:00 – 16:00 **Topics**  
Bio applications  
Deep sea applications  
Testing/characterization  
Processing  
Emerging applications  
Emerging materials  
New directions  
Wrap-up
- 16:00 Adjournment and Departure