10th International Conference and Exhibition of the European Ceramic Society

Programme

June 17 - 21, 2007

Estrel Convention Center
Berlin

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WELCOME

Juergen G. Heinrich
Conference chairman

Christos Aneziris
Vice-Chairman

On behalf of the European Ceramic Society and the organizing committee we would like to welcome you to the 10th International Conference and Exhibition of the European Ceramic Society in Berlin. We are delighted to be hosting this international conference in Germany for the second time since 1991. This year we celebrate the 20th anniversary of ECerS since its original inception at the Canterbury Science of Ceramics meeting in 1987. Since these early days the biannual meetings are a main focus for researchers from academia and industry from all over the world to gather together and share current findings across the full spectrum of ceramic activity.

Ceramic materials will have great significance in sociopolitical contemporary issues like environment protection, sustainable energy application, information and communication as well as medical technology. The great variety of ceramic materials and their widely spread applications necessitate interdisciplinary cooperations between chemists, physicists, physicians, material scientists, process and mechanical engineers as well as system manufacturers in a more intensive way than ever before. In Berlin more than 900 researchers covering 79 countries from all continents will be presenting and discussing ongoing results on basic science, material design, process development and application of ceramics in 11 different symposia. Thus the conference is a good chance for colleagues from all disciplines to exchange informations across all the above mentioned topics.

The cooperation between research establishments and manufacturers/industry is an essential prerequisite for a prosperous conversion of laboratory results into serial applications. That's why an exhibition has been organized for companies who produce and use ceramic materials and for those who develop process technology and characterisation equipment. Researchers from universities and research institutions will meet colleagues from industry to discuss current R&D topics and future developments. Students attending the meeting or competing in the Student Speech Contest can take the chance to meet future employers or to obtain new informations for their running research activities.

The opening ceremony will be followed by a plenary lectures with the title "Ceramics Tomorrow – Driving Forces and Perspectives" given by Wolfgang Rossner, Siemens AG, Corporate Technology, Munich, Germany. Two famous scientists of the ceramic community will be awarded after this presentation. The International Award will be given to Mrityunjay Singh for outstanding contributions to enhance understanding and collaboration within the international ceramic community. The Stuijts Award will be granted to Stuart Hampshire for outstanding contributions in the field of ceramic science and the transfer to the European ceramic industry.

With all these subjects in mind we are sure that we will have a successful conference with interesting discussions between scientists, manufacturers and users of ceramic materials and components for different applications.

A warm welcome to all the conference participants. Have a good and fruitful time in Berlin!

CONFERENCE SYMPOSIA

Conference Objectives

The world of ceramic materials is truly an inter- and multidisciplinary one. People working in fields such as automotive engineering, advanced energy technologies, electrical and electronic applications, metallurgy, materials science and materials engineering, chemistry and chemical engineering as well as solid and fracture mechanics have made important contributions to the development of ceramic materials. The understanding of the mechanical, thermal, chemical and functional properties of ceramic materials as controlled by their structure at nano-, micro- and macrolevels followed by chemical and physical interactions at interfaces / surfaces, presents an unlimited tool for their continuous development and optimization. We all realize that research in this field has been of utmost importance for human progress since the beginning of civilization and will, very likely, remain as important in the decades to come. The meeting of different cultures and approaches in Berlin will encourage the bridging of ceramic disciplines to promote ceramic innovation.

Conference Symposia

1. Basic science, design, modelling and simulation
This coordinated forum is dedicated to original presentations that advance the development and basic research of new materials and processes. Phase transformations, crystal chemistry, microstructural development, thermodynamic and kinetic aspects and structure-property interactions are related topics in this symposium. The aspects design, modelling and simulation cover the analytical and numerical methods and their empirical verification, which are applied in the simulation of the processing and design of ceramic components and in the prediction of lifetime under service loads.

Coordinators:
Krzysztof Haberko, University of Science and Technology, Krakow, Poland; Jean Francois Baumard, University of Limoge, France; Paul Becher, Oak Ridge National Laboratory, TN, USA; Richard Brook, University of Oxford, U.K.; Nikolas Eustathopoulos, Institut National Polytechnique de Grenoble, France; Peter Greil, University of Erlangen, Germany; Shin-Ichi Hirano, Nagoya University, Japan; Danilo Suvorov, Josef-Stefan-Institute, Ljubljana, Slovenia.

2. Innovative processing and synthesis
This symposium will focus on recent advances in powder processing science and technology. The discipline of ceramic processing has made significant progress in colloid and surface chemistry, powder synthesis, particle consolidation, rapid sintering and densification of multimaterial combinations. New materials and new material systems for advanced applications can be tailored by innovative processing techniques.

Coordinators:
Thierry Chartier, University of Limoge, France; Elis Carlström, Swedish Ceramic Institute, Mölndal, Sweden; Kathryn V. Logan, National Institute of Aerospace, Hampton, VA, USA; Gary Messing, Pennsylvania State University, University Park, PA, USA; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan; Andreas Roosen, University of Erlangen, Germany;
Derek Thompson, University of Newcastle, UK.

3. Electroceramics
This symposium is of an interdisciplinary nature including all aspects of chemistry, physics, materials science and technology, and applications for electroceramics. Contributions should cover but are not limited to the following fields:

Coordinators:
Robert Freer, University of Manchester, UK; Yet-Ming Chiang, Massachusetts Institute of Technology, Cambridge, MA, USA; Fatih Dogan, University of Missouri-Rolla, MO, USA; Michael Hoffman, University of Karlsruhe, Germany; Marija Kosec, Josef-Stefan-Institut, Ljubljana, Slovenia; Masaru Miyayama, The University of Tokyo, Japan; Paolo Nanni, University of Genova, Italy; Dong-Soo Park, Korea Institute of Machinery and Materials, Changwon, Korea; Nava Setter, Ecole Polytechnique Fédérale de Lausanne, Switzerland; Jose Arana Varela, Chemistry Institute – UNESP, Araraquara – SP, Brazil.

4. Bioceramics
Ceramic materials that are specially developed for use as medical and dental implants are termed bioceramics. Biomaterials are designed with the aim that once implanted they will help the body to heal itself. Bioceramics with controlled action and reaction in the physiological environment have to be optimized with respect to design, density, pore structure, strength and flexibility. This symposium reflects the progress made in the R&D of ceramic materials for biomedical applications.

Coordinators:
Willi Pabst, Institute of Chemical Technology, Prague, Czech Republic; Eric Champion, University of Limoge, France; Larry Hench, Imperial College London, U.K.; Donglian Jiang, Shanghai Institute of Ceramics, China; Waltraud Kriven, University of Illinois, Urban, IL, USA; Mineo Mizuno, Japane Fine Ceramic Center, Nagoya, Japan.

5. Engineering ceramics and composites
The availability of materials to meet increased requirements for thermal, mechanical and chemical stability is often the key to the successful development of structural components for emerging technologies. Recent developments in processing, properties and applications will be discussed in this symposium.

Coordinators:
Stuart Hampshire, University of Limerick, Ireland; Robert Danzer, University of Leoben, Austria; Gilbert Fantozzi, Institut National des Sciences Appliquées de Lyon, France; Matthias Herrmann, Institut Keramische Technologien und Sinterwerkstoffe, Dresden, Germany; Kiyoshi Hirao, Nagoya University, Japan; Edgar Lara-Curzio, Oak Ridge National Laboratory, TN, USA; Hasan Mandal, Anadolu University, Turkey; Mrityunjay Singh, NASA Glenn Rearch Center, Cleveland, OH, USA.

6. Nanomaterials
Recent developments in the field of inorganic nanoscale structures will be discussed. Inorganic nanowires, nanotubes, nanofilters and related nanostructures enable new developments in such areas as electronics and displays, portable power systems, and for personal protection. Presentations on new applications and opportunities for novel materials systems are of particular interest.

Coordinators:
Rolf Clasen, University of the Saarland, Saarbrücken, Germany; James H. Adair, Penn State University, USA; Yoshio Bando, National Institute for Materials Science, Tsukuba, Japan; John Drennan, The University of Queensland, Australia; Hai-Doo Kim, Korea Institute of Machinery and Materials, Gyeongnam, Korea; John Marra, Savannah River National Laboratory, Aiken, SC, USA; Sanjay Mathur, Wuerzburg University, Germany; Vladimir Schevchenko, Institute of Silicate Chemistry of RAS, Saint-Petersburg, Russia; Athena Tsetsekou, National Technical University of Athens, Greece; Louis Winnubst, University of Twente, The Netherlands.

7. Silicates and traditional ceramics
Substantial progress has been made in the last decade in the automation and rationalization of manufacturing processes for ceramic tiles, sanitaryware, tableware, briks and other silicate-based products. Current issues of interest are process stabilization by statistical methods, environmental and waste management, cost reduction, emissions and the development of new glazing and decoration techniques.

Coordinators:
Paolo Zannini, Universita degli Studi di Modena e Reggio Emilia, Modena, Italy; Jorge J. Bakali, Instituto de Ceramica y Vidrio, Madrid, Spain; Anselmo O. Boschi, Universidade Federal de São Carlos, Brazil; William Carty, Alfred University, USA; Victor Gusarov, Institute of Silicate Chemistry of RAS, Saint-Petersburg, Russia; Bekir Karasu, Anadolu University, Turkey; Wilhelm Siemen, European Industrial Museum for Porcelain, Selb, Germany; V.K. Singh, Banaras Hindu University, Varanasi, India.

8. Refractories
Today's refractory materials are high-quality ceramic products that are indispensable in high-temperature industrial manufacturing processes for iron and steel, non-ferrous metals, cement, glasses and ceramics as well as in modern advanced energy technologies. This symposium deals with the challenges in R&D for the refractory future with reference to economical, environmental and global aspects.

Coordinators:
Christos Aneziris, Technical University of Freiberg, Germany; Keisuke Asano, Krosaki Harima Corporation, Fukuoka, Japan; Axel Eschner, Wiesbaden, Germany; Nan Li, Wuhan University of Science and Technology, China; Andreas Mertke, LOEWE-IndustrieOfenBau, Oberhausen, Germany; Peter Quirmbach, DIFK Bonn, Germany; Serdar Ö. Özgen, Istanbul Technical University, Turkey; Michel Rigaud, Ecole Polytechnique de Montreal, Canada; Jeffrey D. Smith, University of Missouri-Rolla, MO, USA.

9. Porous functional ceramics
Porous functional ceramics are materials with designed hierarchical structures.The challenge for materials scientists is to manufacture ceramics with any fraction, shape, and size of pores and with properties tailored to the application. The main applications of cellular ceramics include liquid metal infiltration, gas filtration, kiln furniture, burners, solar radiation conversion, catalysts support, internal combustion engines and bioactive components. The symposium also focuses on the scientific understanding of porous structures and their properties.

Coordinators:
Paolo Colombo, University of Padova, Italy; Parag Bhargava, Materials Science Centre, Bombay, India; Jon Binner, Loughborough University, U.K.; Georg Grathwohl, University of Bremen, Germany; David Green, Pennsilvania State University, University Park, PA, USA; Murilo Daniel Innocentini, Universidade de Ribeirão Preto, Brazil; Panagiotis Nikolopoulos, University of Patras, Greece; Kazushige Ohno, Ibiden Co., Ltd, Ogaki-Kita Plant, Japan; Anthony P. Roberts, The University of Queensland, Australia; Michael Scheffler, Technical University of Cottbus, Germany.

10. Application of ceramics
Almost only ceramists know that many high-tech systems wouldn't work at all without ceramic components. Even if you can't see them, they play an important role in many applications. They insolate both thermally and electrically, save weight, reduce friction, increase the application temperature, protect against corrosion etc. The symposium offers an ideal platform for a fruitful dialogue between experts from different disciplines.

Coordinators:
Pavol Sajgalik, Slovak Academy of Science, Bratislava, Slovakia; Gian Nicola Babini, Institute of Science and Technology of Ceramics, Faenca, Italy; Xiaozhi Hu, University of Western Australia, Perth, Australia; Ik Jin Kim, Hanseo University, Seosancity, Korea; Walter Krenkel, University of Bayreuth, Germany; Hua-Tay Lin, Oak Ridge National Laboratory, TN, USA; Vijay Srivastava, Banaras Hindu University, Varanasi, India; Masahiro Yoshimura, Tokyo Institute of Technology, Japan.

11. Transparent Ceramics
Beyond former limitations of translucency, recent developments provided really transparent ceramics expected to cover wide fields of applications in the structural as in the functional ceramics sectors. Since mechanisms of transmission and resulting challenges for the ceramic technology differ depending on the wavelengths (UV, visible, IR) and on the design of components (compact, fibers, films), the symposium brings together latest achievements of transmission physics with inspired new ceramic manufacturing technologies, experiences and new requests of applicants.

Coordinators:
Andreas Krell, Fraunhofer IKTS, Dresden, Germany; Hideo Hosono, Tokyo Institute of Technology, Yokohama, Japan; James W. McCauley, ARL, Aberdeen, USA; Elmar Strassburger, Fraunhofer EMI, Kandern, Germany; George Wei, Osram Sylvania, Beverly, USA.

Schedule at a Glance

A	Basic science, design, modelling and simulation
B	Innovative processing and synthesis
C	Electroceramics
D	Bioceramics
E	Engineering ceramics and composites

F	Nanomaterials
G	Silicates and traditional ceramics
H	Refractories
I	Porous functional ceramics
J	Application of ceramics
K	Transparent Ceramics

18.06.2007	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10
10:00 - 12:30	**Plenary**									
14:00 - 16:00	E	C	B	A	D	F	G	I	H	K
16:30 - 18:00	E	C	B	A	D	F	G	I	H	K
18:00 – 19:00	**Poster Session**									

19.06.2007	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10
08:00 - 10:00	E	C	B	A	D	F	G	I	H	K
10:30 - 12:30	E	C	B	A	D	F	G	I	H	K
14:00 - 16:00	E	C	B	A	D	F	G	I	H	
16:30 - 18:00	E	C	B	A	D	F	G	I	C	F
18:00 – 19:00	**Poster Session**									

20.06.2007	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10
08:00 - 10:00	E	C	B	A	D	F	G	I	B	J
10:30 - 12:30	E	C	B	A	D	F	G	I	B	J
14:00 - 16:00	E	C	B	A	D	F	G	E	B	J
16:30 - 18:00	E	C	B	A		F	G		B	J
18:00 – 19:00	**Poster Session**									

21.06.2007	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10
08:00 - 10:00	E	C	B	A	E	F	C	F		J
10:30 - 12:30	E	C	B	A	E	F	C	F		J
14:00 - 16:00	E	C	B	A	E	F	C	F		B

SCHEDULE AT A GLANCE

	Time	Room
Saturday, June 16, 2007		
ECerS Editorial Working Group	2:00 pm - 4:00 pm	Nizza
ECerS, PEC meeting	4:00 pm - 7:00 pm	Nizza
Sunday, June 17, 2007		
Speaker Ready Room	3:00 pm - 7:00 pm	Lyon
Registration	3:00 pm - 7:00 pm	Foyer
ECerS Council meeting	10:00 am - 1:00 pm	Nizza
Welcome Reception	6:00 pm - 8:00 pm	"Biergarten"
Monday, June 18, 2007		
Speaker Ready Room	7:00 am - 7:00 pm	Lyon
Registration	7:00 am - 6:00 pm	Foyer
Opening Awards Ceremony and Plenary Session	10:00 am - 12:30 pm	Room 1 + 2
Technical Sessions	2:00 pm - 6:00 pm	Room 1 - 10
Poster Exhibition	8:00 am - 7:00 pm	Foyer
Poster Session	6:00 pm - 7:00 pm	Foyer
Exhibition		Foyer
Tuesday, June 19, 2007		
Speaker Ready Room	7:00 am - 7:00 pm	Lyon
Registration	7:00 am - 6:00 pm	Foyer
Technical Sessions	8:00 am - 6:00 pm	Room 1 - 10

SCHEDULE AT A GLANCE

	Time	Room
Poster Exhibition	8:00 am - 7:00 pm	Foyer
Poster Session	6:00 pm - 7:00 pm	Foyer
Conference Dinner	7:30 pm	Room 1 + 2
Exhibition		Foyer

Wednesday, June 20, 2007

Speaker Ready Room	7:00 am - 7:00 pm	Lyon
Registration	7:30 am - 6:00 pm	Foyer
Technical Sessions	8:00 am - 6:00 pm	Room 1 - 10
Poster Exhibition	8:00 am - 7:00 pm	Foyer
Poster Session	6:00 pm - 7:00 pm	Foyer
International Ceramic Federation Meeting	2:00 pm - 4:00 pm	
Exhibition		Foyer

Thursday, June 21, 2007

Speaker Ready Room	7:00 am - 12:00 pm	Lyon
Registration	7:30 am - 12:00 pm	Foyer
Technical Sessions	8:00 am - 4:00 pm	Room 1 - 10
Poster Session	8:00 am - 4:00 pm	Foyer
Exhibition		Foyer

PLENARY SPEAKERS

Opening Award Ceremony

Derek Thompson ECerS President	10:00 am
Juergen G. Heinrich Conference Chairman	10:15 am
Wolfgang Rossner Plenary Lecture	10:30 am
Stuart Hampshire Stuijts Award Lecture	11:10 am
Mrityurjay Singh International Award Lecture	11:50 am

Wolfgang Rossner is R&D manager at Siemens AG, Corporate Technology, Munich, Germany and head of the competence center 'Ceramics' with focus on high performance structural and functional ceramics. He got his M.S. and Ph.D. degrees in Materials Science from Friedrich-Alexander-University Erlangen-Nuremberg in 1980 and 1985. In 1984 he joined the Siemens AG, Corporate Research and Development and has as principal research scientist contributed to various fields, like ferro- and piezoelectric materials, ceramic scintillators and lighting phosphors. He has about 25 years experiences in industrial materials R&D and application. He holds several patents, has published more than 40 papers and is a member of the German and American Ceramic Society.

Stuart Hampshire is Professor of Materials Science in the Department of Materials Science and Technology at the University of Limerick, Ireland. He received a B.Sc.Tech. degree with honours from the University of Sheffield, England in 1972 and worked in the refractories until 1975 before undertaking research for a Ph.D. degree at the University of Newcastle upon Tyne under Professor K. H. Jack on the subject of Sintering of Nitride Ceramics, including silicon nitride and sialons. From 1978 to 1980, he remained at Newcastle as a post-doctoral research associate, undertaking some of the first research on Oxynitride Glasses which he has continued to the present day. Professor Hampshire has a distinguished record of Research Publications including: ~120 published papers in refereed ISI journals, 9 books/proceedings volumes, 5 commissioned chapters in reference texts, contribution to a Dictionary of Materials and Manufacturing, ~60 published papers in conference proceedings and 2 patents. Many of his papers are from collaborative work with colleagues in Europe and across the World. Professor Hampshire was chairman of the 2nd International Symposium on Nitrides held in Limerick in 1998 and chairman of various Irish Materials Forum conferences from 1990 to 2000. He has been a visiting scientist at the University of Rennes, and at ENSCI, Limoges, France and the National Industrial Research Institute, Nagoya, Japan. Professor Hampshire is a member of the World Academy of Ceramics, the American Ceramic Society, the Institute of Materials, Mining and Minerals, UK and a Fellow of the Institution of Engineers of Ireland.

Mrityunjay Singh is Chief Scientist at Ohio Aerospace Institute, NASA Glenn Research Center, Cleveland, OH (USA). He received his Ph.D. in Metallurgical Engineering from Banaras Hindu University, Varanasi, India in 1983. He worked as Research Associate at Louisiana State University, Baton Rouge, LA from 1986-1987, Senior Research Associate at Rensselaer Polytechnic Institute, Troy, NY from 1987-1991. He came to NASA Glenn Research Center, Cleveland, OH in August 1991 as Senior Researcher in Ceramics Branch, Materials Division. He is involved with various activities in processing, manufacturing, joining and attachment technologies, and characterization of silicon carbide based ceramics and composites, lightweight cellular ceramics and porous foams. He is also involved in developing microjoining and packaging technologies for sensors for high temperatures and harsh environments. Currently, he is actively involved in developing in space repair technologies for the thermal protection systems of space shuttle and exploration vehicles, heat rejection systems for space exploration missions, and ultra high temperature ceramics and composites for leading edges of next generation space trans more than two hundred thirty publications in journals, edited eighteen books and three journal volumes, holds several patents, and various technology transfers to industries. He is recipient of numerous (more than thirty) national and international awards. He has served and continuously serves on the international scientific and advisory boards of many international conferences, workshops, and technology exchange forums all over the world. He currently serves on the editorial boards of many international journals.

OPENING AWARD CEREMONY

Monday, June 18, 2007

10:00 am **Opening Remarks**
Derek Thompson
ECerS President

10:15 am **Welcome and Introduction**
Juergen G. Heinrich
Conference Chairman

10:30 am **Plenary Lecture**

"Ceramics Tomorrow – Driving Forces and Perspectives"

Wolfgang Rossner
Siemens AG
Corporate Technology, Munich (Germany)

11:10 am **Stuijts Award Lecture**

"Oxynitrides: New Glasses for Old"

Stuart Hampshire
Department of Materials Science and Technology
University of Limerick (Ireland)

11:50 am **International Award Lecture**

"In-Space Repair and Refurbishment of Thermal Protection System Structures of Reusable Launch Vehicles"

Mrityunjay Singh
Ohio Aerospace Institute
NASA Glenn Research Center
Cleveland, OH 44135 (USA)

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COMMITTEES

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