Chairmen

Prof. Siegfried Schmauder. Institute for Materials Testing, Materials Science and Strength of Materials (IMWF), University of Stuttgart, Germany

Prof. Holm Altenbach. Lehrstuhl für Technische Mechanik, Institut für Mechanik, Fakultät für Maschinenbau, Otto-von-Guericke-Universität Magdeburg

Prof. Vera Petrova. Faculty of Mathematics, Voronezh State University, Voronezh, Russia

Prof. Ryszard Pyrz. Department of Mechanical and Manufacturing Engineering, Aalborg University, Denmark

Proceedings

Selected presentations will be published in a special issue of the journal **Computational Materials Science (Elsevier).**

Deadline for submitting a one-page abstract: **December 20, 2014**

Venue

The conference will take place at Commundo Tagungshotel Stuttgart which is located in the campus of the University of Stuttgart (Vaihingen).

Registration

Early registration: till December 20, 2014, fees as below.

Late registration: after December 20, 2014, fees as below plus 30 Euro.

Regular fees (1 presentation per fee):

EUROMECH Member: 176 Euro

Non EUROMECH Member: 200 Euro (inclusive 1 year EUROMECH membership)

Fees include the conference material, coffee breaks, lunches and the social programme. Please find detailed instructions on the colloquium website.

Conference Dinner

It will take place in the evening of Tuesday, March 3, 2015 in the Mercedes Benz Museum.

Contact person

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EUROPEAN MECHANICS SOCIETY

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Colloquium 577

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Micromechanics of Metal Ceramic Composites

March 2 – 5, 2015
Stuttgart, Germany

University of Stuttgart
Germany

Institute for Materials Testing, Materials Science and Strength of Materials (IMWF)

SFB 716

SimTech Cluster of Excellence

DFG Deutsche Forschungsgemeinschaft

http://577.euromech.org/

Scope

Composite materials consist basically of two or more phases and are designed in such a way to produce desired properties for engineering applications, e.g., in metal ceramic composites it is possible to combine the ability to undergo plastic deformation of the metal with the temperature resistance and hardness of ceramics. Among them there is a big class of advanced composites, functionally graded materials (FGMs), with a continually varying composition in a spatial direction and, accordingly, with continuous varying properties in this direction. The mechanical behavior of composites is evaluated on both microscopic and macroscopic scale levels to take into account inhomogeneities and interactions between inhomogeneities. Metal ceramic composites are applied in different fields, such as, nuclear energy (e.g. nuclear reactor components), aerospace (e.g. rocket engine components, space plane body), engineering (e.g. turbine blades, engine components), energy conversion (e.g. thermoelectric generators, fuel cells) as well as other applications. They are subjected to different thermal and mechanical loadings and have to resist high temperature, wear and aggressive environments which strongly influence the composite behavior and degradation. Cracks can nucleate from initial defects or microcracks and appear during manufacturing or service. Therefore, the study of fracture of metal ceramic composites and structures is important for a better understanding of the fracture resistance of composite materials.

Topics

The Colloquium will concentrate on new ideas and innovations in modeling of different types of metal ceramic composites, including functionally graded materials, as well as on fracture of composites. It aims to bring together experts across the disciplines to discuss new models and new trends in this field.

The topics focus on the following aspects of metal ceramic composites:

- Micromechanics of deformation and microstructural fracture aspects
- Atomistic studies on deformation and fracture
- Fracture criteria for prediction of crack propagation
- Mathematical and computational modeling of cracks
- Layered metal/ceramic composite materials, multilayer graded structures and graded interfaces

Results of theoretical and numerical work, including experimental studies are likewise welcome.

Keynote Speakers

Prof. Helmut J. Böhm, Technical University of Vienna, Austria.

Prof. Georges Cailletaud, MINES Paristech, France.

Prof. Pedro Ponte Castañeda, University of Pennsylvania, USA.

Prof. Alexander Hartmaier, ICAMS, Ruhr-Universität Bochum, Germany.

Prof. Javier Llorca, Technical University of Madrid, Spain.

Prof. Robert M. McMeeking, University of California, USA.

Prof. Sergei Mikhailov, Brunel University, United Kingdom.

Prof. Wolfgang H. Müller, Berlin Technical University, Germany.

Prof. Patrizia Trovalusci, Sapienza University of Rome, Italy

Prof. Viggo Tvergaard, Technical University of Denmark, Lyngby, Denmark.