

SHORT COURSE (N. 2) / 21 June, 2008

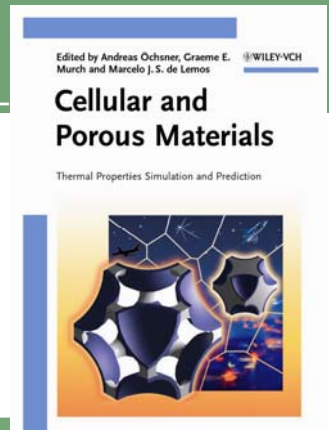
'Modelling and Testing of Cellular Materials'

ACE-X 2009 / Rome, Italy / from 22-23 June, 2009



3rd International Conference on
Advanced Computational Engineering and Experimenting

SHORT COURSE (N.2):
'Modelling and Testing of Cellular Materials'
Prof. Dr. -Ing. A. Öchsner (Lecturer)



Editors: Andreas Öchsner, Graeme E. Murch,
Marcelo J.S. de Lemos
Cellular and Porous Materials - Thermal
Properties Simulation and Prediction
Publisher: Wiley-VCH (2008)
ISBN-10: 3527319387
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Announcement:

Date 21 June / Time 11.15– 14.15

Scope:

Cellular metals are materials with high porosity which are divided into distinct cells. The boundaries of these cells are made of solid metal, while the internal regions are air cavities. Cellular metals therefore exhibit densities which are typically below 10% of their corresponding base metal. Well-known advantages of cellular metals are their high ability for energy adsorption, good damping behaviour, sound absorption, excellent heat insulation and a high specific stiffness. The combination of these properties opens a wide field of potential applications, e.g. in automotive, aviation or space-industry.

The classical assumption for solid materials, i.e. that the plastic behaviour is incompressible, does no longer hold in the case of cellular materials. The plastic behaviour is pressure-sensitive due to the cellular structure even when the pure base material is independent of the hydrostatic pressure in the plastic range. Therefore, the yield criterion needs to incorporate the hydrostatic stress. The course gives a fundamental introduction into the continuum mechanical modelling of the elasto-plastic behaviour of cellular materials. Further topics are related to the realisation of multi-axial testing and the implementation of constitutive equations into commercial finite element codes.

Contents:

1. Introduction
2. Advanced materials (Cellular, Porous, Fibre Reinforced)
3. Summary of elasticity theory and continuum mechanics
4. Plastic material behaviour
5. Experiments
6. Implementation into FE programs
7. Examples (FE simulation based on micro- and macro-models) and Outlook
8. Literature

IMPORTANT DATES:

- ✓ Abstract Submission Deadline 27 March
- ✓ Notification of Acceptance 03 April
- ✓ Early Bird Registration 17 April
- ✓ Accommodation Reservation 20 April
- ✓ **Short course 21 June**
- ✓ ACE-X 2009 22-23 Jun 2009

A CD with slides and certificate of attendance will be given to all participants!

Registration for this course can be done under: <http://www.ace-x2009.com/register.html>

More information is available through:

- The web page of the conference www.ace-x2009.com
- Prof. Dr.-Ing. Andreas Öchsner andreas.oechsner@gmail.com