IWCMM 16

16th International Workshop

on

COMPUTATIONAL MECHANICS of MATERIALS

Lublin, Poland
25 - 26 September, 2006

Final Programme

Lublin University of Technology
Faculty of Civil and Sanitary Engineering
Department of Solid Mechanics
Lublin, Poland

IWCMM 16
Final Programme

SUNDAY 24 SEPTEMBER

18.00 – 19.00 **Registration**
19.00 – 21.00 **Welcome reception**

MONDAY 25 SEPTEMBER

8.45 – 9. 00 **Registration**
9.00 – 9.10 **Opening**

ROOM A

General Lecture I **Chairman: R. de Borst**

9.10 – 10.00 **Z. Bažant, Sz-D. Pang** – Statistical mechanics of failure risk – a challenge for computer simulation of quasibrittle structures at different scales.

Session I A **Chairman: R. de Borst**

10.00 – 10.25 **A. Siddiq, S. Schmauder** – Fracture of bicrystal metal/ceramic (Nb/Sapphire) interfaces: a study via crystal plasticity theory and cohesive modelling approach.
10.25 – 10.50 **S. Berbenni, N. Nicaise, M. Berveiller** – Modelling of microstructural internal length effects on the mechanical behaviour of plastically deforming polycrystals.
10.50 – 11.15 **J. Podgórski, T. Nowicki, J. Jonak,** – Fracture analysis of the composites with random structure.
11.15 – 11.40 **Coffee break**

Session II A **Chairman: S. Schmauder**

11.40 – 12.05 **M. Bocciarelli, G. Bolzon, G. Maier** – A constitutive model of metal-ceramic functionally graded material behaviour: formulation and parameter identification.
12.05 – 12.30 **M. Korthäuer, S. Ataya, E. El-Magd** – Modelling of the scalling effects on the deformation behaviour of W/Cu composites.
12.30 – 12.55 **J. Jackiewicz** – Calibration and evaluation of a combined fracture model of various competing material deterioration modes.

12.55 – 13.20 **U. Prahl, V. Uthaisangsuk, W. Bleck** Micromechanical based failure modelling of multi phase steels.

13.20 – 15.00 **Lunch**

Session III A **Chairman: V. Silberschmidt**

15.00 – 15.25 **C. Gerard, B. Bacroix, M. Bornert, R. Brenner, G. Cailletaud, O. Castelnau, J. Crepin, S. Forest, S. Leclerq** – Experimental study and numerical simulation of non proportional loading paths using finite element crystal plasticity models.

15.25 – 15.50 **G. Cailletaud, T. Dick** – Numerical modelling in fretting of Ti-6Al-4V including crystal palsticity.

15.50 – 16.15 **G. Litak, R. Kasperek, K. Zaleski** – Regenerative metal cutting: effect of high-frequency excitation of high-frequency excitation.

16.15 – 16.40 **Coffee break**

Session IV A **Chairman: E.M. Craciun**

16.40 – 17.05 **L. Berka** – On a modelling of deformation and crushing processes.

17.05 – 17.30 **V. Uthaisangsuk, U. Prahl, S. Münstermann, W. Bleck** – Sheet metal failure criterion using damage mechanics.

Short presentations and Poster session **Chairman: T. Sadowski**

17.30 – 17.35 **S. Ataya, M. Korthäuer, E. EL-Magd** – FE-simulation of the mechanical behaviour of the heterogeneous materials using a microstructure based mesomodel.

17.35 – 17.40 **S. Benke** – An elasto-viscoplastic phase field model for solid state transformation.

17.40 – 17.45 **M. Borowiec, G. Litak, R. Kasperek** – Response of a magnethorhelogical fluid damper subjected to periodic forcing in high frequency limit.

17.45 – 17.50 **J. Warmiński, M. Bocheński** – Autoparametric vibrations of composite and metal beams structure.

17.50 – 17.55 **J. Warmiński, K. Kęcik, A. Mitura** – Influence of nonlinear suspension on vibrations of autoparametric system with pendulum.

17.55 – 18.00 **J. Domińczuk, J. Kuczmaszewski –** Modelling of adhesive joints and predicting their strength with usage of neuron network.

18.00 – 18.05 **J. Gajewski, J. Podgórski, J. Jonak, Z. Szkudlarek –** Numerical simulation of brittle rock loosening during mining process.

18.05 – 18.10 **T. Sadowski, G. Golewski** – Micromechanical approach to modelling of plain concrete.

18.10 – 18.15 **T. Sadowski, K. Mazurek** – Stress induced damage theory in application to modelling of polymer matrix composites.

18.15 - **Meeting of the Working Group Mikrostrukturmechanik**

19.30 **Conference Dinner**

MONDAY 25 SEPTEMBER

ROOM B

Session I B **Chairman: G. Cailletaud**

10.00 – 10.25 **A. Kovács** – Estimation of elasticity modulus and fracture strength of very thin perforated SiN membranes with finite element simulations.

10.25 – 10.50 **X.J. Ren, V.V. Silberschmidt** – Numerical modelling of low-density cellular materials.

10.50 – 11.15 **S. Samborski, T. Sadowski** – Investigation of damage in porous ceramics: modelling and experimental testing.

11.15 – 11.40 **Coffee break (ROOM A)**

Session II B **Chairman: H. Yuan**

11.40 – 12.05 **I.C. Sinka, A.C.F. Cocks** – An efficient computational scheme for powder compaction modelling.

12.05 – 12.30 **C. Sommitsch, R. Sievert, T. Wlanis, C. Redl, V. Wieser** Lifetime evaluation of two different hot work tool steels in aluminium extrusion.

12.30 – 12.55 **T. Wlanis, C. Sommitsch, T. Hatzenbichler, V. Wieser** Damage simulation of extrusion dies of different geometry.

12.55 – 13.20 **S. Benke, G. Laschet** – On the interplay between the solid deformation and fluid flow during the solidification of a metallic alloy.

13.20 – 15.00 **Lunch**

Session III B **Chairman: M. Bocciarelli**

15.00 – 15.25 **H. Hoang, F. Barbe, R. Quey, L. Taleb** – FE determination of the plasticity induced during diffusive transformation in the case of nucleation at random locations and instants.

15.25 – 15.50 **I. Steinbach, M. Apel** – MultiPhaseField model with stress driven diffusion.

15.50 – 16.15 **M. Wolff, M. Böhm, M. Dalgic, I. Hüßler** – Evaluation of models for TRIP and stress-dependent transformation behaviour for the martensitic transformation of the steel 100Cr6.

16.15 – 16.40 **Coffee break (ROOM A)**

Session IV B **Chairman: M. Apel**

16.40 – 17.05 **P. Romiszowski, A. Sikorski** – Motion of a polymer chain in thin confined layers. A computer Monte Carlo study.

17.05 – 17.30 **A. Sikorski P. Romiszowski** – Properties of adsorbed polypeptides on solid surfaces.

19.30 **Conference Dinner**

TUESDAY 26 SEPTEMBER

ROOM A

General Lecture I **Chairman: Z. Bažant**

9.10 – 10.00 **R. de Borst** – Numerical methods for evolving discontinuities in single and multi-phase materials.

Session V A **Chairman: Z. Bažant**

10.00 – 10.25 **M. Białas, Z. Mróz** – Energy model of thin film segmentation cracking.

10.25 – 10.50 **M. Bocciarelli, G. Maier** – Indentation and imprint mapping method for identification of residual stresses.

10.50 – 11.15 **A. Trondl, D. Gross, L. Mishnaevsky Jr., N. Huber** 3D simulations of nanoindentation and size effects in deformation of thin metallic films.

11.15 – 11.40 **Coffee break**

Session VI A **Chairman: A. Kovacs**

11.40 – 12.05 **Z. Gaiech, G. Lubineau, P. Ladeveze** – Analysis of laminates through a damage mesomodel in ABAQUS.

12.05 – 12.30 **Y. Xu, H. Yuan** – Fracture mechanics analysis of adhesive joints.

12.30 – 12.55 **J. Godzimirski, A. Derewońko, K. Kosiuczenko** Strength estimation of the adhesive-bonded joint.

12.55 – 13.20 **T. Sadowski, M. Boniecki, Z. Librant, K. Nakonieczny** – Theoretical prediction and experimental verification of temperature distribution in FGM cylindrical plates subjected to thermal shock.

13.20 – 15.00 **Lunch**

Session VII A **Chairman: L. Berka**

15.00 – 15.25 **S. Karaś, K. Mazurek** – The new approach in determination of visco-elastics material characteristics.

15.25 – 15.50 **T. Sadowski, T. Nowicki** – Numerical investigation of local mechanical properties of WC/Co composite.

15.50 – 16.00 **Closing**

TUESDAY 26 SEPTEMBER

ROOM B

Session V B **Chairman: M. Böhm**

10.00 – 10.25	**M. Bäker** – Finite element crack propagation calculation using energy release rates.
10.25 – 10.50	**E.M. Craciun, A. Carabineanu, N. Peride** – Antiplane interface crack in a pre-stressed elastic composite.
10.50 – 11.15	**M. Skrinar** – On critical buckling load estimation for slender transversely cracked beams with the application of simple computational model.
11.15 – 11.40	**Coffee break (ROOM A)**

Session VI B **Chairman: M. Wolff**

11.40 – 12.05	**J. Gong, Ch. Liu, P.P. Conway, V.V. Silberschmidt** Mesomechanical modelling of SnAgCu solder joints in flip chip.
12.05 – 12.30	**P. Hedge, D. Whalley, V.V. Silberschmidt** – Finite element analysis of low cycle fatigue of lead-free solder joints.
12.30 – 12.55	**W.H. Müller, T. Böhme** – Theoretical and experimental investigations of microstructural changes in lead-free solders.
12.55 – 13.20	**K. Weinberg** – Assessing failure in microelectronic compounds.
13.20 – 15.00	**Lunch**
15.50 – 16.00	**Closing (ROOM A)**