CONFERENCE PROGRAMME

SUNDAY, JANUARY 13, 2013

17:00 – 21:00 **Registration**
18:00 – 21:00 **Reception**

MONDAY, JANUARY 14, 2013

08:00 – 16:00 **Registration**
08:50 – 09:00 Conference opening

09:00 – 10:20	**PLENARY LECTURES (ROOM A)**
09:00 – 09:40	Anisotropic adaptive meshing for computational material modeling *T. Coupez*
09:40 – 10:20	Multiscale method in multi-component materials *A. Thornton, T. Weinhart, S. Gonzalez, V. Ogarko, O. Bokhove, S Luding*

10:20 – 10:50 Coffee/tea

10:50 – 12:40	**COMPUTER ASPECTS OF MODELLING: MESH GENERATION AND ADAPTATION, PROGRAMMING PARADIGMS, COMPUTING EFFICIENCY AND ERROR ANALYSIS (ROOM A)**	**GENETIC ALGORITHMS IN MATERIALS DESIGN AND PROCESSING (ROOM B)**	**MATERIAL PROPERTIES (ROOM C)**
10:50 – 11:20	ModFem - a computational framework for parallel adaptive finite element simulations *K. Michalik, K. Banaś, P. Płaszewski, P. Cybułka*	Evolution of charging programs for optimal burden distribution in the blast furnace (*keynote presentation*) *T. Mitra, D. N. Mondal, F. Pettersson, H. Saxén*	Vision system to support determination of mechanical properties of tubes required for computer modelling of tube hydroforming *H. Sadłowska, A. Kocańda, C. Jasiński, Ł. Morawiński*

11:20 – 11:40	Graph grammar for three dimensional multi-physics adaptive finite element method simulations *A. Paszyńska, M. Paszyński*	Comparison of data driven and analytical blast furnace models for minimizing input carbon rate *K. J. Rajesh, N. Chakraborti, P. K. Sen*	Non standard samples behaviour law parameters determination by inverse analysis *M. Petitprez, K. Mocellin*
11:40 – 12:00	Modeling of the nanostructural defects by implementation of Molecular Statics method for heterogeneous hardware architectures *Ł. Rauch, D. Bachniak*	Parametric sensitivity through optimization under uncertainty approach (invited) *K. Mitra*	Research into the flow stress of Al-Mg-Si alloy (AD-31) during the abrupt change of the strain rate at elevated temperatures *P. Pertov, V. Voronkov, K. Potapenko, M. Petrov*
12:00 – 12:20	Load balancing of parallel FEM calculations on heterogeneous hardware architectures *Ł. Rauch, K. Bzowski*	Updated Food Positions in Artificial Bee Colony Algorithm for Supply Chain Management *T. K. Sharma, M. Pant*	Flow stress under cyclic deformation conditions & modelling possibilities *P. Graca, K. Muszka, J. Majta*
12:20 – 12:40	The sensitivity analysis of deep drawing process using flow approach *T. Bednarek, P. Kowalczyk*	Evolutionary Algorithm Approach to Solar Cell Design Optimization *Y. Li*	Microstructure based constitutive modeling of polycrystalline Nickel based superalloys as a function of temperature *S. Kar*

12:40 – 14:00 Lunch

14:00 – 15:20	**BULK FORMING I (ROOM A)**	**GENETIC ALGORITHMS IN MATERIALS DESIGN AND PROCESSING (ROOM B)**	**FRACTURE (ROOM C)**
14:00 – 14:20	The effect of input parameters on press load and material flow during compression with cyclic shear deformation *M. Tkocz, Z. Cyganek, F. Grosman*	Fitting reactive force fields using genetic algorithms (*invited presentation*) *H. R. Larsson, B. Hartke*	Lemaitre's damage nonlocal model performance under crack initiation and propagation *M. Seabra, J. Cesar de Sa*

14:20 – 14:40	Numerical simulation of tool wear as support of optimization of manufacturing chain for fasteners *M. Skóra, S. Węglarczyk, M. Pietrzyk*	Genetic Algorithms for Crystal Structure Prediction and Atomic-scale Optimizations (*invited presentation*) *C. Ciobanu*	Prediction and validation of hot tearing in permanent mold steel casting using a viscoplastic damage model *S. Hadzic, E. Schmidtne Kelity, C. Sommitsch*
14:40 – 15:00	Modeling of tool wear in forging of hook *Z. Gronostajski, S. Polak*	Applications of genetic algorithms in nanoscience: a short survey of recent results (invited) *W. Paszkowicz*	Effect of friction on failure localization in sheet metal formability tests *D. Lumelskyy, I. Marczewska, J. Rojek, R. Pęcherski, F. Grosman, M. Tkocz*
15:00 – 15:20	Computer aided design of industrial forging technology for heavy crank shafts *A. Milenin, W. Walczyk, B. Kowalski, W Żurek, T. Rec, M. Pietrzyk*	A comparison of Differential Evolution, Particle Swarm Optimization, Artificial Bee Colony and Cuckoo Search for Multilevel thresholding of Waste Wood (invited) *S. Kumar, M. Pant, A. Kumar Ray*	Statistical and Probabilistic Techniques in Modeling of Epoxy Cracking Phenomena *T. Nowak, M. Ambroziński*

15:20 – 15:50 Coffee/tea

15:50 – 17:10	**BULK FORMING II (ROOM A)**	**GENETIC ALGORITHMS IN MATERIALS DESIGN AND PROCESSING (ROOM B)**	**WELDING (ROOM C)**
15:50 – 16:10	Prediction of residual stresses by FE simulations on bimetallic work rolls during cooling *I. Neira Torres, G. Gilles, J. Tchoufang Tchuindjang, J. Lecomte-Beckers, M. Sinnaeve, A. M. Habraken*	Mathematical Modelling of Iron ore Sintering Process using Genetic Algorithm: Effect of Moisture Evaporation and Condensation on the Temperature Profile *S. Suman, B. K. Giri, G. G. Roy*	Model of surface tension in the keyhole formation area during laser welding *A. Siwek*

16:10 – 16:30	Extrusion of SPR Micro-Rivets with complex micro-die *W. Presz, R. Cacko*	Ladle nozzle opening and genetic programming *M. Kovačič, B. Jurjovec, L. Krajnc*	Simulation of the temperature field and the microstructure evolution during multi-pass welding of L485MB pipeline steel *F. Koch, M. Enderlein, M. Pietrzyk*
16:30 – 16:50	Finite element analysis of the machine for micro-forming processes *Z. Zimniak, M. Marciniak, S. Polak*	An Overview of Numerical Optimization Applications for Friction Stir Welding (invited) *C. C. Tutum, J. H. Hattel*	Modeling of Inconel 625 TIG welding process *A. Siwek, J. Rońda, K. Banaś, P. Cybułka, K. Michalik, P. Płaszewski*
16:50 – 17:10	Strain uniformity enhancement in upset-forged flanged turbine shaft *Ł. Lisiecki, P. Skubisz, J. Sińczak*	A Genetic Algorithm for Optimizing Production in a Cold Rolled Steel Slitting Line *B. Mahanty, P. Rakshit*	Thermo-mechanical analysis of the power turbine casing at the running conditions *P. Wojnarowski, A. Kuźniar, S. Kiełbasa, L. Trębacz, D. Szeliga, M. Pietrzyk, J. Rońda*

19:00-21:30 **Regional evening –** (*walking distance from the Belvedere hotel*)

TUESDAY, JANUARY 15, 2013

14:00 – 16:00 **Registration**
09:00 – 13:00 **Winter sports/Excursion**
13:00 – 14:00 Lunch

14:00 – 14:40	**PLENARY LECTURE (ROOM A)**
14:00 – 14:40	Micromechanical Modeling of Materials with Irregularly Shaped Inhomogeneities *I. Tsukrov*

14:40 – 14:50 Coffee/tea

14:50 – 16:50	**MULTISCALE MODELLING AND HOMOGENIZATION METHODS (ROOM A)**	**BOUNDARY AND CONTACT PROBLEMS (ROOM B)**	**ARTIFICIAL INTELIGENCE AND METAMODELLING (ROOM C)**
14:50 – 15:10	Numerical aspects of computational homogenization *M. Serafin, W. Cecot*	Identification of interface position in two-layered domain using the gradient method coupled with the BEM *E. Majchrzak, B. Mochnacki*	A user-inspired knowledge system for the needs of metal processing industry *S. Kluska-Nawarecka, Z. Pirowski, Z. Jančíková, M. Vrožina, J. David, K. Regulski, D. Wilk-Kołodziejczyk*
15:10 – 15:30	Homogenization of elasto-plastic materials by the boundary element method *P. Fedeliński, T. Czyż*	Influence of the sample geometry on the inverse determination of the heat transfer coefficient distribution on the axially symmetrical sample cooled by the water spray *A. Cebo-Rudnicka, Z. Malinowski, B. Hadała, T. Telejko*	The platform for semantic integration and sharing technological knowledge on metal processing and casting *S. Kluska-Nawarecka, E. Nawarecki, G. Dobrowolski, A. Haratym, K. Regulski*

15:30 – 15:50	A POD/PGD reduction approach for an efficient parameterization of data-driven material microstructure models *L. Xia, B. Raghavan, P. Breitkopf, W. Zhang*	Investigation of the heat transport during the hollow spheres production from the tin melt *M. Petrov, P. Petrov, J. Bast, A. Sheypak*	Industrial Process Control with Case-Based Reasoning Approach *J. Kusiak, G. Rojek, Ł. Sztangret, P. Jarosz*
15:50 – 16:10	Local numerical homogenization in modeling of heterogeneous visco-elastic materials *M. Klimczak, W. Cecot*	The influence of heat treatment conditions on the accuracy of forming process simulation *G. Korpała, R. Kawalla, S. Dedov*	Rule-based simplified procedure of modeling of stress relaxation *K. Regulski, D. Szeliga, J. Rońda, A. Kuźniar, R. Puc*
16:10 – 16:30	Numerical simulations of strain localization for large strain damage-plasticity model *B. Wcisło, J. Pamin*	An experimental study of material flow and surface quality using image processing in the hydraulic bulge test *S. Świłło*	Metamodelling of metallurgical processes *K. Myczkowska, Ł. Sztangret, J. Kusiak*
16:30 – 16:50	Multi-scale numerical and experimental analysis of cold wire drawing for hardly deformable biocompatible magnesium alloy *A. Milenin, P. Kustra, D. Byrska-Wójcik*	Selection of significant visual features for classification of scales using boosting trees model *S. Lechwar*	Metamodel of the plane strain compression test to replace FE model in the inverse analysis *M. Sztangret, Ł. Sztangret, M. Pietrzyk*

16:50 – 17:20 Coffee/tea

17:20 – 19:00	PHASE TRANSFORMATIONS (ROOM A)	SHEET FORMING (ROOM B)
17:20 – 17:40	First Principles Phase Diagram calculations for the CdSe-CdS wurtzite, zincblende and rock salt structures *A. Woźniakowski, J. Deniszczyk, O. Adjaoud, B. P. Burton*	Experimental apparatus for sheet metal hemming analysis *S. Świłło*
17:40 – 18:00	Phase diagram calculations for the ZnSe - BeSe system by first-principles based thermodynamic Monte Carlo integration *A. Woźniakowski, J. Deniszczyk*	Numerical and experimental development of the micro-self-piercing riveting (micro-SPR) *R. Cacko, W. Presz*
18:00 – 18:20	Modelling of Carbon Diffusion in Front of the Interface during Ferrite-Austenite Transformation in in the Intercritical Continuous Annealing Process *M. Pernach, K. Bzowski, M. Pietrzyk*	An experimental and numerical study of material deformation of a blanking process *S. Świłło, P. Czyżewski*
18:20 – 18:40	Two-dimensional cellular automaton model combined with mixed-mode approach to simulate the phase transformation from austenite to ferrite in high strength DP steels *J. Opara, R. Kuziak, H. Chao, S. van der Zwaag*	Numerical modelling of pressed parts using elastomer membranes *M. Hyrcza-Michalska, M. Hojny*
18:40 – 19:00	Development of Cellular Automata model for phase transformation during heating *D. Halder, R. Golab, L. Madej, M. Pietrzyk*	Modelling of stamping process of titanium tailor-welded blanks *P. Lacki, J. Adamus, W. Więckowski, J. Winowiecka*

20:00 **Conference Dinner – BELVEDERE Hotel**

WEDNESDAY, JANUARY 16, 2013

09:00 – 10:20	**PLENARY LECTURES (ROOM A)**
09:00 – 9:40	Advancement in computational micromechanics and experimentation for studying ductile damage in free cutting steel during hot rolling *D. Farrugia*
09:40 – 10:20	Data-driven multi-objective evolutionary approaches in materials design *N. Chakraborti*

10:20 – 10:50 Coffee/tea

10:50 – 12:50	**MULTISCALE MODELLING AND HOMOGENIZATION METHODS (ROOM A)**	**MICROSTRUCTRE EVOLUTION (ROOM B)**
10:50 – 11:10	Topological optimization of microstructure using artificial immune system *A. Poteralski, W. Kuś, T. Burczyński*	Modelling microstructure evolution during equal channel angular pressing (ECAP) of Mg alloys using cellular automata finite element (CAFE) method *M. Gzyl, A. Rosochowski, A. Milenin*
11:10 – 11:30	Three-dimensional adaptive algorithm for continuous approximations of material data using space projection *P. Gurgul, M. Sieniek, M. Paszyński, Ł. Madej*	Microstructure transformations in austempered ductile iron *D. Myszka, W. Presz*
11:30 – 11:50	Parallel identification of voids in microstructure using boundary element method and bioinspired algorithm *W. Kuś, R. Górski*	The migration of Kirkendall plane during diffusion *B. Wierzba*
11:50 – 12:10	Application of the three dimensional digital material representation approach to model microstructure inhomogeneity during processes involving strain path changes *K. Muszka, Ł. Madej*	Computer Modeling of Electron Diffraction at Partially Ordered Surfaces of Germanium *Z. Mitura*

12:10 – 12:30	Numerical investigation of representativeness of digital material representation of a single phase microstructure under deformation conditions *J. Szyndler, Ł. Madej*	Modelling of static recrystallization kinetics by coupling crystal plasticity FEM and multiphase field calculations *O. Güvenc, T. Henke, G. Laschet, B. Böttger, M. Apel, M. Bambach, G. Hirt*
12:30 – 12:50	A multiscale model of blood clot formation *A. Jakubowicz, M. Pietrzyk*	Development of static recrystallization model with consideration of particle pining effect based on cellular automata approach *M. Sitko, Ł. Madej*

12:50 – 13:00 Closing of the conference
13:00 – 14:30 Lunch
14:30 Bus departure to Kraków