



ESAFORM



# International ESAFORM Conference 2023

19-21 April 2023 / Kraków, Poland

## Final programme

## General schedule

time	19.04							time	20.04						
08:00	Registration							08:30	Material Testing 2.0						
09:00	Opening							09:00	KN3 - Dominik Dörr						
09:45	KN1 - Marion Merklein							09:45	Industrial Prize						
								10:10	Scientific Prize						
10:40	Coffee							10:40	Coffee						
11:10 - 13:10	Room1	Room2	Room3	Room4	Room5	Room6	Room7	11:10 - 13:10	Room1	Room2	Room3	Room4	Room5	Room6	Room7
	MS01	MS02	MS07	MS05	MS10	MS14			MS01	MS04	MS03	MS09	MS16	MS11	MS13
13:10	Lunch							13:10	Lunch						
14:30	KN2 - Matthew R Barnett							14:30	KN4 - Jeong Whan Yoon						
15:20 - 17:00	Room1	Room2	Room3	Room4	Room5	Room6	Room7	15:20 - 16:20	Room1	Room2	Room3	Room4	Room5	Room6	Room7
	MS01	MS02	MS07	MS05	MS10	MS14	Benchmark		MS15	MS04	MS03	MS09	MS16	MS11	Springer
17:00	Coffee							16:20	Coffee						
17:30 - 19:10	Room1	Room2	Room3	Room4	Room5	Room6	Room7	16:40 - 18:10	General Assembly						
	MS01	MS02	MS06	MS05	MS10	MS14									
19:10	Welcome Cocktail							18:30	Bus Transport						
								19:10	Conference Dinner						

time	21.04						
9:00 - 10:40	Room1	Room2	Room3	Room4	Room5	Room6	Room 7
	MS01	MS04	MS07	MS12	MS05	MS11	MS13
10:40	Coffee						
11:10 - 13:30	Room1	Room2	Room3	Room4	Room5	Room6	Room 7
	MS15	MS02	MS03	MS12	MS08	MS11	MS13
13:30	Lunch						

MS01 ADDITIVE MANUFACTURING  
 MS02 COMPOSITES FORMING PROCESSES  
 MS03 EXTRUSION AND DRAWING  
 MS04 FORGING AND ROLLING  
 MS05 FORMABILITY OF METALLIC MATERIALS  
 MS06 FRICTION AND WEAR IN FORMING PROCESSES  
 MS07 INCREMENTAL AND SHEET METAL FORMING  
 MS08 INNOVATIVE JOINING BY FORMING TECHNOLOGIES  
 MS09 LIONEL FOURMENT MS ON OPTIMIZATION AND INVERSE ANALYSIS IN FORMING  
 MS10 MACHINING AND CUTTING  
 MS11 MATERIAL BEHAVIOUR MODELLING  
 MS12 NEW AND ADVANCED NUMERICAL STRATEGIES FOR MATERIAL FORMING  
 MS13 NON-CONVENTIONAL PROCESSES  
 MS14 POLYMER PROCESSING AND THERMOMECHANICAL PROPERTIES  
 MS15 SUSTAINABILITY ON MATERIAL FORMING  
 MS16 PROPERTY-CONTROLLED FORMING

time	Wednesday, 19.04.2023						
09:00	Opening						
09:45	KN1 - <b>Marion Merklein</b> - Pathways into a sustainable future – research for green processes and products						
10:40	Coffee						
room	Room1 - MS01	Room2 - MS02	Room3 - MS07	Room4 - MS05	Room5 - MS10	Room6 - MS14	Room7
chair	Dermot Brabazon	Pierpaolo Carlone	Mihaela Banu	Dorel Banabic	Domenico Umbrello	Vincent Sobotka	
11:10 - 11:30	<i>M. C. Bacikoglu, <b>U. Yaman</b></i> Design and Evaluation of liquid channel cross sections fabricated via metal fused filament fabrication	<i><b>L. Kärger</b>, F. Schäfer, H.O. Werner</i> Modelling multiaxial stress states in forming simulation of woven fabrics	<i><b>R. März</b>, J. Hafenecker, D. Bartels, M. Schmidt, M. Merklein</i> Numerical investigation on the stretch forming of sheet metals with an additively applied coating	<i><b>A.-P. Pokka</b>, V. Kesti, A. Kaijalainen</i> Total strain on the outer surface of air bended steel sheets	<i>B. Denkena, B. Bergmann, <b>D. Raffalt</b></i> Manufacturing of graded grinding wheels for flute grinding	<i>T. Aizawa, <b>T. Miyata</b>, K. Endo</i> Two-Step PM forging for precise fabrication of carbon fiber reinforced engineering plastic gears	
11:30 - 11:50	<i><b>M. N. Doğu</b>, S. Ozer, M.A. Yalçın, K. Davut, G.M. Bilgin, M. A. Obeidi, H. Brodin, H. Gu, J. Ginn, D. Brabazon</i> Influence of solution heat treatment on microstructure of IN939 fabricated by laser powder bed fusion	<i><b>D. Brands</b>, K.M. van Kammen, S. Wijskamp, W.J.B. Grouve, R. Akkerman</i> In-plane deformation measurements for validation of composite forming simulations	<i><b>M. Leicht</b>, J. Henneberg, M. Merklein</i> Numerical and experimental investigation of a backward extrusion process for forming geared components from coil	<i><b>Q. Tuan Pham</b>, M. Shafiqul Islam, M. Sigvant, L. Perez Caro</i> Prediction of forming limit diagram of automotive sheet metals using a new necking criterion	<i><b>R. Teimouri</b>, M. Grabowski, S. Skoczypiec</i> Modeling of surface hardening in burnishing process	<i><b>D. Quereilhac</b>, J. Femery, G. Morel, A. Korycki, E. De Luycker, P. Ouagne, F. Chabert</i> Exploring sheath-core yarns technology to optimise bio-composite performances	
11:50 - 12:10	<i><b>C. Bruni</b>, D. Ciccarelli, M. Pieralisi, T. Mancia</i> Modeling the shape of additive manufactured parts	<i><b>B. Schäfer</b>, R. Zheng, P. Boisse, L. Kärger</i> Investigation of the compaction behavior of uni- and bidirectional non-crimp fabrics	<i><b>L.M. Reitmaier</b>, D. Bailly, G. Hirt</i> Approaches for load path design for stretch forming based on surface geometry	<i><b>P. Lisiecka - Graca</b>, K. Muszka, M. Kwiecień, J. Dziurdzia</i> Deformation analysis of ZnMgAl coated steel sheet using digital image correlation (DIC) system	<i><b>T. Kelliger</b>, M. Meurer, T. Bergs</i> Orthogonal cutting with additively manufactured grooving inserts made from ASP 2030 high-speed steel	<i><b>A. Korycki</b>, F. Carassus, C. Garnier, F. Chabert, T. Djilali</i> Effect of energy director thickness on thermal diffusion and joint quality during ultrasonic welding of CF/PEEK composites	



Wednesday, 19.04.2023

14:30	KN2 - <b>Matthew R Barnett</b> - Insights into metal forming via the microstructure						
room	Room1 - MS01	Room2 - MS02	Room3 - MS07	Room4 - MS05	Room5 - MS10	Room6 - MS14	Room7
chair	Carlo Bruni	Luise Kärger	Mihaela Banu	Gabriela Vincze	Cedric Courbon	Nadine Allanic	Benchmark
15:20 - 15:40	<b>A. Viscusi</b> , A. Serena Perna, A. Astarita, D. Borrelli, A. Caraviello, L. Carrino, Experimental analysis of cold sprayed precursors for closed-cells aluminum foams	<b>J. Simon</b> , N. Hamila, C. Binétruy, S. Comas-Cardona Modelling the forming of Tailored fibre placement preforms: A tetrahedral part with final orthotropic orientations	S.A. Tronvoll, H. Treffen, <b>J. Ma</b> , T. Welo Low-cost tooling for customized tube bending process using additive manufacturing	R. Borbély, M.L. Köllös, <b>G.J. Béres</b> A stress-based proposal for wrinkling criterion of clamped surfaces	<b>M. Kowalczyk</b> Hardware implementation of Monte Carlo and RSM method for the optimization of cutting force during turning of NiTi shape memory alloy	<b>J. Combettes</b> , A. Abadie, M. Fazzini, A. Borlenghi, J. Bosshard, C. Garnier, G. Dessein, F. Chabert Effect of compression during post-treatment to improve the mechanical strength of printed carbon fiber/ PEKK composites	Esaform Public Benchmark "InterMicro"
15:40 - 16:00	A. Serena Perna, L. Carrino, A. Auriemma Citarella, <b>F. De Marco</b> , L. Di Biasi, G. Tortora, A. Viscusi A machine learning approach for adhesion forecasting of cold-sprayed coatings on polymer-based substrates	<b>Y. Denis</b> , N. Siddig, R. Guitton, P. Le Bot, A. de Fongalland, D. Lecointe Thermo-chemical modeling and simulation of glass/Elium® acrylic thermoplastic resin composites	<b>M. Kruse</b> , N. Ben Khalifa Experimental investigation of the fluid structure interaction during deep drawing of fiber metal laminates in the in-situ hybridization process	B. Myrold, <b>O. Jensrud</b> , J. Holmestad Evaluation of hot and warm forming of age-hardenable aluminium alloys into manufacturing of automotive safety critical parts	<b>N. Teja Sajja</b> , R. Bertolini, A. Ghiotti, S. Bruschi Investigation of surface finish and chip morphology in cryogenic machining biomedical grade polyetheretherketone	I. Papa, A. Langella, <b>F. Napolitano</b> , P. Russo Thermal and mechanical properties of FDMed biocomposites in polylactic acid and food flour waste	
16:00 - 16:20	<b>D. Zettel</b> , P. Bretkopf, P. Nicolay, R. Willmann, Process-dependent material characteristics of DMLS-manufactured specimens	<b>G.C. Vosniakos</b> , P.J. Dimakopoulos, A. Vasileiou An inverse method for determining fabric permeability in vacuum assisted resin infusion for composite parts forming	<b>P. Herrmann</b> , T. Herrig, T. Bergs Modification of the surface integrity of powder metallurgically produced S390 steel via deep rolling	<b>T. Suckow</b> , P. Groche Damage prediction in roll forming of the high strength aluminum alloy AA7075	<b>S. Tamura</b> , T. Matsumura Cutting force in peripheral milling of cold work tool steel	<b>R. Varedi</b> , B. Buffel, F. Desplentere Characterization of the biaxial response of a thermoplastic ABS sheet using an innovative DIC-instrumented bubble inflation technique	

Wednesday, 19.04.2023

room	Room1 - MS01	Room2 - MS02	Room3 - MS07	Room4 - MS05	Room5 - MS10	Room6 - MS14	Room7
chair	Carlo Bruni	Luise Kärger	Mihaela Banu	Gabriela Vincze	Cedric Courbon	Nadine Allanic	Benchmark
16:20 - 16:40	<b>N. Nežic</b> , M. Speth, K.R. Riedmüller, M. Liewald, Development of a new method utilizing semi-solid aluminum wires for extrusion based additive manufacturing	<b>F. Tucci</b> , F. Rubino, V. Esperto, G. Pasquino, P. Carlone Investigation on the pultrusion of thermoplastic preimpregnated polypropylene-glass tapes	<b>D. Dobras</b> , Z. Zimniak M. Zwierzchowski Electrically-assisted deep drawing of 5754 aluminium alloy sheet	<b>H. Wester</b> , E. Stockburger, S. Peddinghaus, J. Uhe, B.A. Behrens Modelling failure of intermetallic phases during forming of hybrid parts	<b>V. Wagner</b> , G. Dessein Evolution of contact lengths during the turning of treated Ti64 beta	<b>B. Palmieri</b> , F. Cilento, A. Martone, M. Giordano, E. Amendola Investigation on reprocessability of epoxy vitrimers composites	Esaform Public Benchmark "InterMicro"
16:40 - 17:00	<b>H. Oberlercher</b> , M. Laux, R. Heim, A. Berndt, S. T. Amancio-Filho, F.O. Riemelmoser In-Situ consolidation of additively manufactured continuous fiber reinforced material: technical approach and results	<b>E.R. Pierik</b> , T. Rouwmaat, W.J.B. Grouve, S. Wijskamp, R. Akkerman Experimental setup and method for characterization of ply-ply adhesion for fiber- reinforced thermoplastics in melt	<b>R. Yagita</b> , S. Kimura, Y.Abe Effect of shear angle in shearing on stretch flangeability of ultra- high strength steel sheets	<b>B. Revil-Baudard</b> , O. Cazacu Multi-scale modeling of the effect of crystallographic texture	Ł. Ślusarczyk, <b>E. Franczyk</b> Analytical method for determining cutting forces during orthogonal turning of C45 steel		
17:00	Coffee						

**Wednesday, 19.04.2023**

room	Room1 - MS01	Room2 - MS02	Room3 - MS06	Room4 - MS05	Room5 - MS10	Room6 - MS14	Room7
chair	Anne Mertens	Stepan Lomov	Chris Nielsen	Sandrine Thuillier	Takashi Matsumura	France Chabert	
17:30 - 17:50	<b>V. Ermolai,</b> A. Sover, A. Lang Characterization of the shape memory behaviour of PET polymer by FFF 3D printing	<b>C. Timo Poppe,</b> M. Kruse, L. Kärger Modeling of 3D fluid-structure-interaction (FSI) during in-situ hybridization of double-curved fiber-metal-laminates (FML) processing	<b>T. Aizawa,</b> K. Fuchiwaki, K. Dohda Galling-free fine blanking of titanium plates by carbon-supersaturated tool steel punch	<b>H. Vural,</b> C. Erdogan, A. Karakaş, T.O. Fenercioglu, T. Yalcinkaya Experimental identification of uncoupled ductile damage models and application in flow forming process	<b>P. Ginestra,</b> M. Quarto, A. Abeni, A. Attanasio, E. Ceretti, G. D'Urso, C. Giardini Novel methodology for burr extension estimation on machined SLM surfaces	V. Le Louët, A. Le Reun, <b>V. Sobotka,</b> S. Le Corre Experimental measurement of CF/PEKK tapes heating behavior in the laser assisted automated fiber placement process	
17:50 - 18:10	<b>L.A. Khan,</b> H. Ayub, J. Cherian Chekotu, C. Muilwijk, K. Tamilselvam, I. Ul Ahad, D. Brabazon Finite element analysis of super elastic Ni rich nitinol lattice structures prior to additive manufacturing	<b>J. Soete,</b> A. Maes, C. Rojas, Y. Kyosev, A.-M. Schmidt, S.V. Lomov, M. Miserez, G. Kerckhofs, M. Wevers XCT-based microstructural analysis and deformability of abdominal wall meshes	<b>Ú. Arinbjarnar,</b> M. Knoll, M. Moghadam, C.V. Nielsen The influence of particle hardness on wear in sheet metal forming	W. Presz, <b>C. Jasiński,</b> Ł. Morawiński, M. Orłowska Hybrid SPD process of aluminium 6060 for microforming	G. Rotella, <b>M. Sanguedolce,</b> M. Rosaria Saffioti, F. Testa, D. Umbrello, L. Filice On the impact of tool material and lubrication in ball end milling of ceramic foams	<b>B. Caubet,</b> F. Léonardi, S. Amand Polymer-tool friction coefficient in temperature for thermoforming numerical simulation	
18:10 - 18:30	<b>M. Latte,</b> M. Grazia Guerra, M. Mazzarisi, A. Angelastro, S. Luisa Campanelli, L. M. Galantucci In process monitoring of geometrical characteristics in laser metal deposition: a comparative study	<b>Y. Kyosev,</b> D. Münks Forming of textile fabrics with additively assembled protective elements on the human body	<b>J. Venema,</b> T. Chezan, F. Korver Surface topography effects on galling of hot dip galvanized sheet metal	<b>G. Vincze,</b> M. C. Butuc, W. Wen, J. Yáñez, D. Lopes Effect of prestrain on mechanical behavior of aluminum alloys	<b>M. Rosaria Saffioti,</b> G. Rotella, D. Umbrello Superfinishing processes applied on the biomedical implants surface to improve their performance	Q. Lin, <b>N. Allanic,</b> P. Mousseau, Y. Béreaux, M. Girault, R. Deterre A local power law versus a well-identified viscosity curve over a large shear rate range in thermorheology of polymers	







time	Thursday, 20.04.2023						
08:30	Pascal Lava - Material Testing 2.0: identifying anisotropic properties via digital image correlation						
09:00	KN3 - Dominik Dörr - Composites forming simulation as a basis for digital product development cycles – potential and challenges						
09:45	Industrial Prize						
10:10	Scientific Prize						
10:40	Coffee						
room	Room1 - MS01	Room2 - MS04	Room3 - MS03	Room4 - MS09	Room5 - MS16	Room6 - MS11	Room7 - MS13
chair	Ulas Yaman	Bernd-Arno Behrens	Riccardo Pelaccia and Marco Negozio	António Gil Andrade-Campos	Junhe Lian	Anne-Marie Habraken	Margareta Coteata and Luca Boccarusso
11:10 - 11:30	<b>K. Papy</b> , A. Borbely, A. Sova, J. Favre, P. Bertrand, J.-M. Staerck Additive manufacturing of cermet produced by laser powder bed fusion using alternative Ni binder	U. Lorenz, K. Brunotte, H. Wester, <b>J. Peddinghaus</b> , F. Müller, B.-A. Behrens Design of a forging process to individually examine thermal, mechanical and tribological stress in the tool surface zone	<b>T. Funazuka</b> , K. Dohda, M. Kinoshita, S. Suzuki Phenomena of tool adhesion at elevated temperature in V-groove friction test of AA7075	<b>M. Gonçalves</b> , S. Thuillier, A. Andrade-Campos On the comparison of heterogeneous mechanical tests for sheet metal characterization	<b>K.C. Grötzinger</b> , A. Schott, M. Rekowski, B. Ehrbrecht, T. Hehn, D. Gerasimov, M. Liewald Analysis of tool heating in cold forging using thin-film sensors	<b>M. Conde</b> , S. Coppieters, A. Andrade-Campos Process-informed material model selection	<b>A. Żyra</b> , S. Skoczypiec, R. Bogucki Influence of material properties on dry-EDM process: the discussion of research for titanium grade 2 and Inconel 625 alloy
11:30 - 11:50	<b>A. Benarbia</b> , V. Sobotka, N. Boyard, C. Roua Fused filament fabrication: numerical adhesion modeling suitable for semicrystalline polymers	M. Siegmund, C. Kipp, <b>J. Peddinghaus</b> , K. Brunotte, G.Bräuer, B.-A. Behrens Hot die forging with nitrided and thermally stabilized DLC coated tools	<b>M.V. Pires</b> , J. Madura, W.Z. Misiolek, D. Leśniak, J. Zasadziński, H. Jurczak Electron backscatter diffraction (EBSD) as a tool for analysis of metal flow in aluminum extrusion	<b>J. Henriques</b> , A. Andrade-Campos, J. Xavier On the inverse identification of sheet metal constitutive parameters using a virtual experiment and the Arcan test	<b>B. Arian</b> , W. Homberg, J. Rozo Vasquez, F. Walther, L. Kersting, A. Trächtler Cryogenic reverse flow forming of AISI 304L	<b>E. Mancini</b> , G. Cortis, L. Cortese, M. Utzeri, M. Sasso Simple multiaxial tests to assess dynamic ductility of 17-4PH	<b>T. Petersen</b> , U. Küpper, T. Herrig, T. Bergs Coefficient of friction of cemented carbides machined by sinking EDM
11:50 - 12:10	<b>F. Jensch</b> , J. Buhl, R. Laue, S. Härtel Application of the plane-strain-compression-test to determine the local mechanical properties of LPBF-manufactured 316L components	<b>A. Piwek</b> , J. Peddinghaus, J. Uhe, K. Brunotte, B.A Behrens Investigation of the joining zone formation of impact extruded components by varied forming sequence and partial cooling	M. Müller, <b>N. Schwark</b> , I.F. Weiser, T. Herrig, T. Bergs Chevron cracking during full forward impact extrusion of aluminum alloy EN AW 7075 in dependence of heat treatment condition and tribological system	<b>R. Lourenço</b> , E. Cueto, P. Georgieva, A. Andrade-Campos On the constraints and consistency in implicit constitutive modelling using ANNs and indirect training	<b>L. Kersting</b> , B. Arian, J. Rozo Vasquez, A. Trächtler, W. Homberg, F. Walther Control strategy for angular gradations by means of the flow forming process	<b>Š. Obid</b> , M. Halilović, B. Starman Nonlinear elastic stress triaxiality dependent constitutive model for fibre-reinforced polymer composites	M. Trajer, A. Czeszkiewicz, <b>M. Machno</b> Analysis of the relationship between the properties of selected materials and the parameters of the EDD process





time	Friday, 21.04.2023						
room	Room1 - MS01	Room2 - MS04	Room3 - MS07	Room4 - MS12	Room5 - MS05	Room6 - MS11	Room 7 - MS13
chair	Merve Nur Dogu	Hendrik Wester	Romina Conte	Benjamin Klusemann	Gabriela Vincze	Lionel Leotoing	Hans Peter Schulze and Laurentiu Slatineanu
9:00 - 9:20	<i>J. Delahaye, A. Habraken, <b>A.M. Mertens</b></i> 2D FE modeling of the thermal history of the heat affected zone in AISi10Mg LPBF	<i><b>C. Durand</b>, H. Song, R. Bigot</i> Parametric identification on a dynamic behavior model for a forging machine	<i><b>M. Mutlu</b>, A. Özsoy, T. O. Fenercioğlu, A. Karakaş, M. Baydoğan</i> Effect of reduction ratio in flow forming process on microstructure and mechanical properties of a 6082 Al alloy	<i><b>M. Zielińska</b>, H. Yang, Ł. Madej, Ł. Malinowski</i> Advanced CFD investigations of electromagnetic stirring of molten steel in continuous caster tundish	<i><b>K. J. Tilly</b>, T. Plum, D. Bailly, G. Hirt</i> Influence of intercritical annealing temperature on formability and mechanical properties of medium-manganese-steel in press hardening	<i><b>R. Juan</b>, N. Xuan Binh, W. Liu, J. Lian</i> Automatic parameter calibration program of crystal plasticity model using optimization algorithms based on machine learning	<i><b>A. Thielecke</b>, G. Meichsner, M. Hackert-Oschätzchen</i> Digital twin for the determination of process input variables for electrochemical precision machining according to DIN SPEC 91399
9:20 - 9:40	<i>A. Jedynek, G. Ertugrul, A. Neumann, R. Pippig, <b>S. Härtel</b></i> Semi-finished products of aluminum matrix composite for a new generation of AM processes	<i><b>S.S. Acar</b>, M. Ş. Dinçer, M. Ozcatalbas</i> An analytical approach for modelling incremental disk rolling process	<i>M. Mutlu, A. Karakaş, <b>H. Kuşdemir</b>, U. Kağan Koltan, T. Yalcinkaya</i> Flow forming and recrystallization behaviour of CuZn30 alloy	<i><b>M. Wermiński</b>, K. Perzyński, M. Sitko, Ł. Madej</i> Evaluation of data transfer influence in coupled Monte Carlo finite element model on microstructure evolution predictions	<i><b>M. B. Jabłońska</b>, Z. Gronostajski, K. Jasiak, M. Tkocz, K. Kowalczyk, M. Skwarski, M. Kostka</i> Specific behavior of high manganese steels in the context of dynamic loading with temperature influence including	<i><b>K. Knaak</b>, B. Revil-Baudard, O. Cazacu</i> Micro-mechanical study of damage evolution in isotropic metallic materials	<i><b>P. Damm</b>, G. Meichsner, C. Lerez, M. Hackert-Oschätzchen</i> Design of a user-friendly human machine interface for jet electrochemical machining
9:40 - 10:00	<i><b>N. Agarwal</b>, K.T. Selvam, M.A. Obeidi, D. Brabazon</i> Effects of printing parameters on phase transformation temperature and mechanical properties of nitinol for medical device manufacturing using laser powder bed fusion	<i><b>M. Ş. Dinçer</b>, M. Ozcatalbas, S.S. Acar, O. Music, C.Ş. Dinçer</i> Evolution of microstructure during hot incremental disk rolling of a nickel-based super-alloy	<i><b>E. Yazgan</b>, M. Mutlu, G. Aydın, A. Karakas, T. O. Fenercioglu, M. Baydogan</i> Mechanical and microstructural properties of AISI 4140 after flow-forming process	<i><b>K. Pawlikowski</b>, M. Sitko, M. Czarnecki, Ł. Madej</i> Evaluation of data transfer methods efficiency in the random cellular automata model of dynamic recrystallisation	<i><b>M. Müller</b>, I. Felix Weiser, T. Herrig, T. Bergs</i> Influence of process parameters and process set-up on damage evolution during deep drawing and stretch drawing of u-shaped profiles	<i><b>I. Umay Aydiner</b>, B. Tatlı, Tuncay Yalcinkaya</i> Micromechanical modeling of failure in dual phase steels	<i><b>D. Krzak</b>, F. Roy, F. Salvatore, A. Gidon, S. Guerin, J. Rech</i> Development of a method for the characterisation of the performance of a polishing process - application to the sensitivity analysis to temperature during the PEMEC process

**Friday, 21.04.2023**

room	Room1 - MS01	Room2 - MS04	Room3 - MS07	Room4 - MS12	Room5 - MS05	Room6 - MS11	Room 7 - MS13
chair	Merve Nur Dogu	Hendrik Wester	Romina Conte	Benjamin Klusemann	Gabriela Vincze	Lionel Leotoing	Hans Peter Schulze and Laurentiu Slatineanu
10:00 - 10:20	<i>J. Szyndler, A. Schmidt, <b>S. Härtel</b></i> Determination of welding heat source parameters for FEM simulation based on temperature history and real bead shape.	<i><b>J. Agirre</b>, B. Erice, P. Arrese, N. Otegi, L. Galdos</i> Effect of near beta- transus forging parameters on the mechanical and microstructural properties of Ti-6Al-4V – application to hammer forging	<i><b>B. Bhushan</b>, J. Ramkumar, U. Shanker Dixit</i> Simulation of incremental sheet metal forming for making U-channel in two light-weight alloys	<i><b>R. Le Goff</b>, N. Marchal, A. Agazzi</i> Visual quality prediction of plastic product based on thermographic images		<i><b>İ. E. Ünsal</b>, E. Günay, T. Yalçinkaya</i> Local and nonlocal strain gradient approaches for size dependent plastic deformation	<i><b>J. Waimann</b>, T. van der Velden, A. Schmidt, S. Ritzert, S. Reese</i> Modeling electrochemical machining based on effective parameters
10:20 - 10:40			<i><b>A. Essa</b>, B. Abeyrathna, B. Rolfe, M. Weiss</i> flange wrinkling in incremental shape rolling	<i><b>C. Soyarslan</b>, M. Pradas</i> Physics-informed machine learning in the determination of effective thermomechanical properties		<i><b>D. Vasquez Ramirez</b>, H. Wester, D. Rosenbusch, B.A. Behrens</i> Extension of the modified Mohr-Coulomb fracture criterion by a strain rate and temperature dependence	<i><b>H.P. Schulze</b>, M. Herzig, O. Kröning</i> Influences in deep hole sinking (EDM, ECM) that make it difficult to analyze the process status.
10:40	Coffee						

**Friday, 21.04.2023**

room	Room1 - MS15	Room2 - MS02	Room3 - MS03	Room4 - MS12	Room5 - MS08	Room6 - MS11	Room 7 - MS13
chair	Giuseppe Ingarao	Pierpaolo Carlone and Luise Kärger	Riccardo Pelaccia and Marco Negozio	Celal Soyarslan	Gianluca Buffa	Joseba Mendiguren	Denise Bellisario and Margareta Coteata
11:10 - 11:30	<b>T. Borgert, W. Homberg</b> Analysis of temperature effect on strength and microstructure in friction induced recycling process (FIRP)	<b>J. Middelhoff, C. Ujvari, A. Hürkamp, K. Dröder</b> Surrogate model of the thermoforming of fiber-reinforced thermoplastics	<b>G. Diyoke, L. Rath, R. Chafle, N. Ben Khalifa, B. Klusemann</b> Process simulation of friction extrusion of aluminum alloys	<b>B. Krishnamurthy, A. A. Shitikov, P. Blackwell, O. Bylya</b> Influence of mesh on modelling of flow forming process	<b>M. Bachmann, K. Riedmüller, M. Liewald, M. Merten</b> Modelling of the weld seam in the forming simulation of friction stir welded tailored blanks	<i>M. C. Oliveira, O. Cazacu, B. Revil-Baudard, D. M. Neto, P. Frohn-Sörensen, J. Ma, Wencheng Liu, D. J. Cruz, A. D. Santos, A. Van Bael, H. Ghiabakloo, A. M. Habraken</i> ESAFORM 2021 cup drawing benchmark of an Al alloy: critical follow up analysis of its potentials	<b>A. Formisano, M. Durante, L. Boccarusso, F. Memola C. Minutolo</b> A numerical approach to optimize the toolpath strategy for polymers forming
11:30 - 11:50	<b>M. Geueke, R. Steinheimer, M. Lutz, B. Engel</b> sustainable tool technology: wood-based forming tools	<b>A. Gambardella, V. Esperto, F. Tucci, P. Carlone</b> Automated programming for the robotic layup process	<b>A. Rüdiger, S. Gall, S. Müller</b> Investigations into the processing and texture of Pr-substituted NdFeB magnets produced by extrusion	<b>S. Waseem, C. Erdogan, T. Yalcinkaya</b> Phase field modeling of ductile fracture and application in metal forming	<i>T. Falk, T. Kropp, W.G. Drossel</i> Clinching with divided punch to provide critical neck thicknesses	<i>M. C. Oliveira, O. Cazacu, B. Revil-Baudard, D. M. Neto, P. Frohn-Sörensen, J. Ma, Wencheng Liu, D. J. Cruz, A. D. Santos, A. Van Bael, H. Ghiabakloo, A. M. Habraken</i> ESAFORM 2021 cup drawing benchmark of an Al alloy: critical follow up analysis of its potentials	<b>D. Bellisario, L. Iorio, A. Proietti, F. Quadrini, L. Santo</b> Out-of-Autoclave Molding of carbon fiber composites pipes with interlaminar carbon nanotubes
11:50 - 12:10	<b>J. Ursinus, A. Koch, K. Brunotte, F. Walther, B.-A. Behrens</b> Microstructure analysis of hybrid aluminum parts from recycled EN AW-6082 and EN AW-7075 chips	<b>Z. Liu, E. Simonetto, A. Ghiotti, S. Bruschi</b> Compaction behaviour of magnesium alloy-based fiber metal laminates at varying forming parameters	<b>C.Y.C Chan, L. Rath, U.F.H. Suhuddin, B. Klusemann</b> Chan friction extrusion processing of aluminum powders: microstructure homogeneity and mechanical properties	<b>D. Pino Muñoz, P.-O. Bouchard, H. Eldahshan, J. Alves, E. Perchat</b> A phase-field numerical framework to study ductile to fracture transition : an application to material forming processes	<b>M. Quarto, S. Bocchi, C. Giardini, G. D'Urso</b> An ANN based approach for the friction stir welding process intrinsic uncertainty	<b>M. C. Oliveira, D. M. Neto, J. L. Alves, Luís F. Menezes</b> Considering the stiffness of the forming tools in the numerical analysis of the ironing process	<b>L. Boccarusso, D. De Fazio, M. Durante, A. Formisano, A. Langella</b> Unconventional method for recycling CFRPs by using a milling process
12:10 - 12:30	<i>M. Andreozzi, S. Gentili, T. Mancia, M. Simoncini, A. Vita</i> Multicriteria decision model of sustainable industrial production: a case study on 3D printed carbon PA	<b>M. Perin, G. A. Berti, T. Lee, L. Quagliato</b> Gate design algorithm to maximize the fiber orientation effectiveness in thermoplastic injection-molded components	<b>S. Lechner, S. Müller</b> Progression of plastic die deformation during copper extrusion	<b>G. Vuga, B. Mavrič, U. Hanoglu, B. Šarler</b> A meshless numerical solution of thermo-mechanics of hot-rolled steel bars on a cooling bed	<b>C.V. Ince, F. Katz, A. Raatz</b> Comparative Investigation of partial cooling methods for induction heating of hybrid bulk components for hot forming	<b>M. Sajjad, G. Plata, J. Lozares, J. Mendiguren</b> Digital Twin (DT) Development for the sensitivity analysis of near solidus forming (NSF) process	<b>A. Hrițuc, O. Dodun, A.M. Mihalache, L. Slătineanu, G. Nagîț</b> The sound insulation capacity of some panels made of polymeric materials manufactured by 3D printing

