

17th International Conference on Metal Forming (METAL FORMING 2018)

Procedia Manufacturing Volume 15

Toyohashi, Japan
16-17 September 2018

Part 1 of 3

Editors:

Ken-Ichiro Mori
Tomoyoshi Maeno

Yohei Abe

ISBN: 978-1-5108-6956-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V.
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Elsevier B.V.
at the address below.

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

EXPERIMENTAL AND MODELLING TECHNIQUES FOR HOT STAMPING APPLICATIONS	6
<i>Zhutaao Shao, Jianguo Lin, Mani Ganapathy, Trevor Dean</i>	
INNOVATION APPLICATIONS OF ELECTROMAGNETIC FORMING AND ITS FUNDAMENTAL PROBLEMS	14
<i>Jianjun Li, Liang Li, Min Wan, Haiping Yu, Lin Liu</i>	
APPLICATION OF SERVO PRESSES TO METAL FORMING PROCESSES	31
<i>Kiichiro Kawamoto, Hiroyuki Ando, Ken Yamamichi</i>	
RECENT ADVANCES IN FINITE ELEMENT MODELLING OF DUCTILE FRACTURE AT MESOSCALE	39
<i>P.-O. Bouchard, Victor Trejo Navas, Modesar Shakoor, Thilo Morgeneyer, Ante Buljac, Lukas Helfen, Francois Hild, Marc Bernacki</i>	
MECHANISM OF OXIDE SCALE TO DECREASE FRICTION IN HOT STEEL ROLLING	46
<i>Hiroshi Utsunomiya, Tsubasa Nakagawa, Ryo Matsumoto</i>	
INFLUENCE OF COILING TEMPERATURE ON MECHANICAL PROPERTIES IN HOT ROLLING C-MN-SI-AL STEEL	52
<i>Fei Peng, Xingli Gu, Yuan Wang, Yunbo Xu, Yongmei Yu</i>	
THERMAL PROPERTIES OF OXIDE SCALE ON SURFACE OF WORK ROLL IN HOT ROLLING MILL	59
<i>Nobuki Yukawa, Eiji Abe, Shohei Fujiwara</i>	
COUPLED MULTISCALE AND MULTIPHYSICAL ANALYSIS OF HOT STEEL STRIP MILL AND MICROSTRUCTURE FORMATION DURING WATER COOLING	65
<i>Joonas Ilmola, Arne Pohjonen, Oskari Seppälä, Olli Leinonen, Jari Larkiola, Juha Jokisaari, Eero Putaansuu, Pasi Lehtikangas</i>	
EFFECTS OF ROLLING CURVE ON RECRYSTALLIZATION EVOLUTION DURING HOT RADIAL-AXIAL RING ROLLING OF SUPER LAGER ALLOY STEEL RING	72
<i>Lin Hua, Jiadong Deng, Dongsheng Qian, Zhe Chen, Jun Shao</i>	
ANALYSIS OF DEFECTS IN L-SECTION PROFILE RING ROLLING	81
<i>Il Yeong Oh, Tae Woo Hwang, Young Yoon Woo, Hye Jeong Yun, Young Hoon Moon</i>	
PERIPHERAL SPEED OF STEEL RING DURING HOT RING ROLLING	89
<i>Tomohiro Uchibori, Ryo Matsumoto, Hiroshi Utsunomiya</i>	
MOTION CONTROL OF GUIDE ROLLS IN INTELLIGENT SIMULATION FOR PROFILED RING ROLLING PROCESS	97
<i>Xuechao Li, Lianggang Guo, Lei Liang, Wenrong Yang</i>	
INTELLIGENT SIMULATION FOR REAL-TIMELY FORCE-CONTROLLED RADIAL-AXIAL ROLLING PROCESS OF SUPERSIZED ALUMINIUM ALLOY RINGS	105
<i>Lei Liang, Lianggang Guo, Xuechao Li, Wenrong Yang</i>	
ONLINE CONTROL SYSTEM FOR EVO 2+4ROLL BAR REDUCING AND SIZING MILL OF PRIMETALS TECHNOLOGIES	113
<i>Filippo Avellino, Luigi Langellotto, Mauro Bogliani, Alberto G. Lainati, Francesco Toschi</i>	
ROLLING SIMULATION SYSTEM FOR NON-SYMMETRIC GROOVE TYPES	121
<i>Umut Hanoglu, Božidar Šarler</i>	
FINITE ELEMENT ANALYSIS OF STRAIN GRADIENTS IN ALUMINIUM ALLOY SHEETS PROCESSED BY ASYMMETRIC ROLLING	129
<i>Denis Pustovoytov, Alexander Pesin, Olesya Biryukova</i>	
NOVEL TECHNIQUE FOR PHYSICAL SIMULATION OF ASYMMETRIC ROLLING	137
<i>Alexander Pesin, Denis Pustovoytov</i>	
VISUALIZATION OF METAL FLOW AND ADHERING OF ALUMINUM ALLOY IN THREE-LAYER CLAD ROLLING	144
<i>Gaku Torikai, Yoshinori Yoshida, Mineo Asano, Akio Niikura</i>	
INFLUENCE OF THERMOMECHANICAL PROCESSING SEQUENCE ON PROPERTIES OF AA6082-IF STEEL COLD ROLL BONDED COMPOSITE SHEET	152
<i>Siri Marthe Arbo, Tina Bergh, Harald Solhaug, Ida Westermann, Bjørn Holmedal</i>	
DEVELOPMENT OF INTERNAL INHOMOGENEOUS PLASTIC STRAIN DURING COLD ROLLING OF AL-MG ALLOYS	161
<i>Masakazu Kobayashi, Tomoya Aoba, Hiromi Miura</i>	
INVESTIGATION ON EVOLUTION OF THE ALPHA PHASE DURING CROSS WEDGE ROLLING OF TC6 BLADE PERFORM	168
<i>Junling Li, Baoyu Wang, Jianguo Lin, Shuang Fang, Shunyun Wang, Chuanbao Zhu</i>	
PREDICTION OF CRACK INDUCED FAILURE PHENOMENA IN ROLLING OPERATIONS	176
<i>T. Komischke, P. Hora, G. Domani, M. Plamondon, R. Kaufmann</i>	
COIL MODEL FOR MAGNESIUM ALLOY STRIPS AND ITS HEAT TRANSFER ANALYSIS	185
<i>Alexander Nam, Uwe Prüfert, Maciej Pietrzyk, Rudolf Kawalla</i>	
MATERIAL FLOW COST ACCOUNTING ANALYSIS OF TWIN-ROLL CASTING MAGNESIUM STRIPS	193
<i>Claudia Kawalla, Wiebke Berkel, Rudolf Kawalla, Michael Höck, Mariusz Ligarski</i>	
INFLUENCE OF CHOKED ANGLE OF BEARING CHANNEL ON PROFILE GRAIN STRUCTURE DURING MULTI-HOLE EXTRUSION OF ALUMINUM ALLOY	201
<i>Soeren Mueller, Vidal Sanabria</i>	

DEVELOPMENT OF SHAPED COPPER MAGNET WIRE FOR HYBRID MOTOR BY DRAWING	209
<i>Ryo Nagashima, Kazunari Yoshida</i>	
INVESTIGATION OF SURFACE CRACKING OF HOT-EXTRUDED AA7075 BILLET	217
<i>Sukunthakan Ngernbamrung, Yudai Suzuki, Norio Takatsuji, Kuniaki Dohda</i>	
ROLE OF DIE STRUCTURES ON METAL FLOW BALANCE IN MULTI-OUTPUT PORTHOLE EXTRUSION OF THIN-WALLED PROFILE	225
<i>Xin Xue, Gabriela Vincze, António B. Pereira, Juan Liao, Jianyi Pan</i>	
REALISTIC REPRESENTATION AND INVESTIGATION OF CHARGE WELD EVOLUTION DURING DIRECT PORTHOLE DIE EXTRUSION PROCESSES THROUGH FE-ANALYSIS	232
<i>Michele Crosio, David Hora, Christoph Becker, Pavel Hora</i>	
FORWARD EXTRUSION OF ALUMINIUM ALLOY BILLET USING OIL CONTAINING FINE CERAMIC PARTICLES	240
<i>Yohei Abe, Kai Sugiura, Takahiro Yamashita, Ken-Ichiro Mori</i>	
DIE STRUCTURE OPTIMIZATION FOR HOLLOW ALUMINUM PROFILE	249
<i>Shumei Lou, Yongxiao Wang, Shuai Lu, Chunjian Su</i>	
CONTINUOUS ROTARY EXTRUSION OF AZ81 MAGNESIUM ALLOY	257
<i>Monika Mitka, Maciej Gawlik, Mariusz Bigaj, Wojciech Szymanski, Wojciech Z. Misiolek</i>	
EFFECT OF TOOL GEOMETRY ON THE VELOCITY AND STRAIN RATE FIELDS IN CONTINUOUS ROTARY EXTRUSION OF MAGNESIUM AZ91 ALLOY	264
<i>Nijenthana Rajendran, Monika Mitka, Marzena Lech-Grega, Wojciech Z. Misiolek</i>	
ANALYSIS OF COMBINED EXTRUSION MICRO COINING PROCESS TO MANUFACTURE MICROSTRUCTURED TAPPETS	272
<i>Michael Zahner, Marion Merklein</i>	
DESIGN OF CONTINUOUS FRICTION STIR EXTRUSION MACHINES FOR METAL CHIP RECYCLING: ISSUES AND DIFFICULTIES	280
<i>Dario Baffari, Gianluca Buffa, Davide Campanella, Livan Fratini</i>	
INTEGRATED COMPUTATIONAL MATERIAL ENGINEERING MODEL DEVELOPMENT FOR TUBE DRAWING PROCESS	287
<i>Farzad Foadian, Adele Carradó, Heinz Günther Brokmeier, Heinz Palkowski</i>	
HIGH TEMPERATURE OXIDATION BEHAVIOR IN DIELESS DRAWING OF TITANIUM ALLOY WIRES	294
<i>Yeong-Maw Hwang, Guan-Wei Kuo, Han-Hsuan Liu</i>	
COMPUTER AIDED DESIGN OF THE LASER DIELESS DRAWING PROCESS OF TUBES FROM MAGNESIUM ALLOY WITH TAKE INTO ACCOUNT DUCTILITY OF THE MATERIAL	302
<i>Andrij Milenin, Piotr Kustra, Peihua Du, Shusaku Furusawa, Tsuyoshi Furushima</i>	
OPTIMIZATION OF PRODUCTION PROCESS OF MG TUBES PRODUCED WITH LASER DIELESS DRAWING METHOD AND RELATED MICROSTRUCTURAL ANALYSIS	311
<i>Matej Lepš, Eliška Janouchová, Aleš Jäger, Jirí Nemeček, Andrij Milenin</i>	
NUMERICAL SIMULATION OF COLD DRAWING OF STEEL TUBES WITH STRAIGHT INTERNAL RIFLING	320
<i>Peter Bella, Roman Durcik, Martin Ridzon, Ludovit Parilak</i>	
COATING OF TOOLS USED FOR PRODUCTION OF STEEL SEAMLESS REDUCERS	327
<i>Pavol Beraxa, Ludovit Parilak</i>	
NUMERICAL ANALYSIS OF TWISTED PROFILE DRAWING PROCESS USING ROTATING DIE	335
<i>Jeong Hun Kim, Byung Min Kim</i>	
EFFECTS OF CHEMICAL COMPOSITION ON DRAWABILITY AND MECHANICAL PROPERTIES OF MAGNESIUM ALLOY WIRES	341
<i>Vladimir Stefanov Hristov, Kazunari Yoshida</i>	
INFLUENCE OF UNEVEN INTERFACE BETWEEN STEEL AND OXIDE SCALE ON DEFORMATION BEHAVIOR OF OXIDE SCALE IN HOT RING COMPRESSION	349
<i>Ryo Matsumoto, Yosuke Akiyama, Hiroaki Deguchi, Hiroshi Utsunomiya</i>	
PREDICTION ON MICROSTRUCTURE AND MECHANICAL PROPERTIES OF HOT FORGED NI-BASED SUPER ALLOY BY OPTIMIZATION USING GENETIC ALGORITHMS	356
<i>Takayuki Yamada, Eiji Abe, Chihiro Osawa, Nobuki Yukawa</i>	
EVOLUTION OF HIGH TEMPERATURE YIELD STRENGTH OF ALCOCRFENITI HIGH ENTROPY ALLOYS	364
<i>Bing Chuen Hu, Yao Jen Chang, An Chou Yeh, Yen Ju Chen</i>	
INTRODUCTION OF MATERIALS MODELLING INTO METAL FORMING SIMULATION	372
<i>Zhanli Guo, Patrice Lasne, Nigel Saunders, Jean-Philippe Schillé</i>	
INFLUENCING FACTORS OF GLOBAL AND LOCAL DEFORMATION IN HOT COMPRESSION	381
<i>Baohui Tian, Siegfried Kleber, Silvia Schneller, Peter Markiewicz</i>	
EFFECT OF RELIEF-HOLE DIAMETER ON MICROSTRUCTURE EVOLUTION OF 20CRMN1H STEEL DURING HOT UPSETTING	388
<i>Wei Feng, Ling Mao, Mengjuan Zhou</i>	
INFLUENCE OF APPLICATION OF GN+CR/CRN HYBRID LAYER ON DURABILITY IMPROVEMENT OF DIE INSERTS USED IN HOT FORGING PROCESS OF WHEEL FORGING	396
<i>Zbigniew Gronostajski, Marek Hawryluk, Pawel Widomski, Slawomir Polak, Jacek Ziemia, Maciej Zwierzchowski</i>	
MICROSTRUCTURE CONTROL OF FERROUS DRIVEN PART FABRICATED BY WARM PRECISION FORGING	404
<i>Youngseon Lee, Eunyo Yoon, Taedoo Nho, Younghoon Moon</i>	

EFFECT OF FORGING TEMPERATURE ON THE MICROSTRUCTURE AND PROPERTIES OF REX 734 IMPLANTABLE STAINLESS STEEL	411
<i>Anna Dziubinska, Krzysztof Majerski, Ewa Siemionek</i>	
CORROSION RESISTANCE OF MG4ALZN ALLOY AIRCRAFT BRACKETS PRODUCED BY NEW FORGING METHODS	419
<i>Anna Dziubinska, Monika Ostapiuk, Ewa Siemionek</i>	
NUMERICAL INVESTIGATION OF KEY STAMPING PROCESS PARAMETERS INFLUENCING TOOL LIFE AND WEAR	427
<i>Shiva Shankar Mangalore Babu, Stuart Berry, Michael Ward, Michal Krzyzanowski</i>	
HYBRID THIXOFORMING – A NEW PROCESS TO PRODUCE HYBRID COMPONENTS	436
<i>Christoph Seyboldt, Mathias Liewald</i>	
PROCESS DESIGN AND CONTROL OF GREENSAND MOLD PRESS CASTING USING ESTIMATION OF METAL FILLING BEHAVIOR	443
<i>Ryosuke Tasaki, Hideto Seno, Kazuhiko Terashima</i>	
EFFECT OF TOOL TEMPERATURE DEVIATIONS ON THE STRESS DISTRIBUTION OF HOT DIE FORGING TOOL FOR GEAR BLANKS	451
<i>Jun Ni, Chun Ping Cao, Yu Li</i>	
INTELLIGENT FAULT DIAGNOSIS OF HOT DIE FORGING PRESS BASED ON BINARY DECISION DIAGRAM AND FAULT TREE ANALYSIS	459
<i>Chunping Cao, Meng Li, Yu Li, Yu Sun</i>	
SIMULATION-BASED TOOL DEVELOPMENT FOR STRUCTURING OF SURFACES FOR SHEET BULK METAL FORMING TOOLS	467
<i>Dennis Freiburg, Dirk Biermann</i>	
FRICITION LAW IN DRY METAL FORMING OF MATERIALS WITH WORK HARDENING	475
<i>Zhigang Wang, Tatsuhiro Suzuki</i>	
DETERMINATION OF SHRINK FITTING RATIO TO IMPROVE FATIGUE LIFE OF 2-LAYER COMPOUND FORGING DIE BY CONSIDERING ELASTO-PLASTIC DEFORMATION OF OUTER RING	481
<i>Chanchin Wang, Hengkeong Kam, Xin Wang</i>	
EFFECT OF CONTACT PRESSURE APPLIED ON TOOL SURFACE DURING COLD FORGING ON FATIGUE LIFE OF TOOL STEEL	488
<i>Nuwan Karunathilaka, Naoya Tada, Takeshi Uemori, Ryota Hanamitsu, Masahiro Kawano</i>	
NUMERICAL ANALYSIS ON EFFECT OF SURFACE ASPERITY OF PISTON SKIRT ON LUBRICATION PERFORMANCE	496
<i>Hideaki Aoki, Kunio Hayakawa, Naoyuki Suda</i>	
INFLUENCES OF KEY FORGING PARAMETERS ON GEAR-TOOTH DEVIATION OF COLD FORGED SPUR BEVEL GEAR	504
<i>Wuhao Zhuang, Lin Hua, Xinghui Han</i>	
MANUFACTURE OF FACE GEARING – A NEW PRODUCTION METHOD BY MEANS OF DETERMINED MATERIAL PRE-DISTRIBUTION	511
<i>André Weiß, Mathias Liewald, Alexander Weiß, Nadja Missal</i>	
PREDICTION OF FRACTURE IN COLD FORGING WITH MODIFIED COCKCROFT-LATHAM CRITERION	519
<i>Sergey Stebunov, Andrey Vlasov, Nikolai Biba</i>	
EVALUATION OF MICRO-DAMAGE BY ACOUSTIC METHODS	527
<i>Gregory Gerstein, Arkadii Briukhanov, Florian Gutknecht, Natalia Volchok, Till Clausmeyer, Florian Nurnberger, A. Erman Tekkaya, Hans Jurgen Maier</i>	
X-RAY CT ASSISTED DAMAGE IDENTIFICATION IN WARM FORGING	535
<i>Xian Zheng Lu, Luen Chow Chan</i>	
MONITORING OF PROCESS AND TOOL STATUS IN FORGING PROCESS BY USING BOLT TYPE PIEZO-SENSOR	542
<i>Soo-Young Kim, Akifumi Ebina, Asuka Sano, Satoshi Kubota</i>	
PREVENTION OF SEIZURE IN EJECTION OF COMPACT BY CONTROL OF INTERNAL DIAMETER OF CONTAINER	550
<i>Tomoyoshi Maeno, Katsuya Hirayama, Ken-Ichiro Mori, Hiroki Homma</i>	
IMPROVEMENT OF PRODUCT STRENGTH OF BONDED MAGNETS BY EXTRUSION WITH COUNTER PRESSURE	557
<i>Tomoyoshi Maeno, Toshiya Taniguchi, Ken-Ichiro Mori</i>	
FABRICATION OF FINE WIRES USING DIRECT LASER MELTING PROCESS	564
<i>Taewoo Hwang, Sangwook Han, Youngyun Woo, Ilyeong Oh, Younghoon Moon</i>	
A PREDICTIVE MODEL FOR DIE ROLL HEIGHT IN FINE BLANKING USING MACHINE LEARNING METHODS	570
<i>Joachim Stanke, Andreas Feuerhack, Daniel Trauth, Patrick Mattfeld, Fritz Klocke</i>	
A CHARACTERIZATION OF QUALITY OF SHEARED EDGE IN FINE BLANKING USING EDGE-COMPUTING APPROACH	578
<i>Daniel Trauth, Joachim Stanke, Andreas Feuerhack, Thomas Bergs, Patrick Mattfeld, Fritz Klocke</i>	
CONTROL OF ROLLOVER OF SHEARED EDGE IN PUNCHING OF HIGH STRENGTH STEEL SHEETS	584
<i>Kohzoh Katoh, Kazuyoshi Kondo</i>	
WEAR RESISTANCE EVALUATION OF HARD-COATINGS FOR SHEET BLANKING DIE	590
<i>Ömer Necati Cora, Muammer Koç</i>	

SHEARING OF ULTRA-HIGH STRENGTH STEEL SHEETS WITH STEP PUNCH	597
<i>Yohei Abe, Ryuji Yonekawa, Kyouhei Sedoguchi, Ken-Ichiro Mori</i>	
THICKENING PROCESS OF CONCAVE EDGE FOR INCREASING STIFFNESS AND FATIGUE STRENGTH OF ULTRA-HIGH STRENGTH STEEL SHEETS	605
<i>Yohei Abe, Yuya Fujisawa, Yusuke Murai, Ken-Ichiro Mori</i>	
THICKENED HOLES EDGE INCLUDING COMPRESSED ROLLOVER FOR IMPROVING TENSILE FATIGUE STRENGTH OF THICK SHEET	612
<i>Zamzuri Hamedon, Yohei Abe, Ken-Ichiro Mori, Naoya Nakagawa</i>	
SIMULATED ANALYSIS AND EXPERIMENTAL INVESTIGATION ON EDGE QUALITIES OF HIGH STRENGTH STEELS HOT BLANKING PARTS	619
<i>Zhongwen Xing, Lixia Chen, Chengxi Lei, Tingjun Cai, Haiping Yu</i>	
SHEARING CHARACTERISTICS IN ULTRASONIC VIBRATION-ASSISTED PIERCING OF FINE-GRAINED STAINLESS STEEL FOILS	627
<i>Ken Mita, Jun Hu, Tetsuhide Shimizu, Ming Yang</i>	
IMPROVEMENT OF GEOMETRIC ACCURACY IN PROGRESSIVE SLOT PIERCING WITH SMALL PITCH	633
<i>Kenji Hirota, Yudai Watanabe, Keisuke Kuriya, Yorifumi Mori</i>	

PART 2

SHEARING PROCESS OF COPPER ALLOY WIRE FOR METAL ZIPPER	639
<i>Chikako Hiromi, Shigeru Tsuchida, Futoshi Kozato, Hiroko Mikado, Shingo Kawamura, Kazuhiko Kita, Takeshi Yoneyama</i>	
INVESTIGATION OF SHEAR DROOP FORMATION AROUND CONVEX PORTIONS OF BLANKED COMPONENTS	647
<i>Yudai Watanabe, Kenji Hirota</i>	
EFFECT OF USE OF PROTRUSION PUNCH ON LENGTH OF BURNISHED SURFACE IN PIERCING AFTER HALF PUNCHING	653
<i>Masahiro Sasada, Syuu Katou</i>	
PREDICTION AND REDUCTION OF SPRINGBACK IN 3D HAT SHAPE FORMING OF AHSS	660
<i>Stefan Konzack, Ranko Radonjic, Mathias Liewald, Taylan Altan</i>	
FINITE ELEMENT BASED ANALYSIS OF TWO-STAGE FORMING FOR ADVANCED HIGH STRENGTH STEEL PART	668
<i>Weerapong Julsri, Surasak Suranumchai, Vitoon Uthaisangsuk</i>	
SUPERIOR BENDABILITY OF DIRECT-QUENCHED 960 MPA STRIP STEELS	676
<i>Antti Kaijalainen, Vili Kesti, Lars Troive, Anna-Maija Arola, Tommi Liimatainen, Mikko Hemmila, Jukka Komi, David Porter</i>	
INTEGRATION PROCESS OF STAMPING AND WELDING FOR DP600 ADVANCED HIGH STRENGTH STEEL SHEETS	684
<i>Baowei Ma, Dean Meng, Xi Gu, Xu Ma, Dawei Zhang, Qi Zhang</i>	
EXTENSION OF GEOMETRIC LIMITS IN DRAWING OF STRINGER SHEETS	693
<i>Stefan Köhler, Christoph Rohnert, Peter Groche</i>	
IDENTIFICATION OF TWO ALUMINUM ALLOYS AND SPRINGBACK BEHAVIORS IN COLD BENDING	701
<i>Yong Liu, Liang Wang, Bin Zhu, Yilin Wang, Yisheng Zhang</i>	
DEVELOPMENT OF RUBBER-ASSISTED STRETCH BENDING METHOD FOR IMPROVING SHAPE ACCURACY	709
<i>Takayuki Muranaka, Yusuke Fujita, Masaaki Otsu, Osamu Haraguchi</i>	
INFLUENCE OF DUCTILE DAMAGE ON SPRINGBACK PREDICTION OF ALUMINUM ALLOY SHEET UNDER CHANGING LOADING PATHS	716
<i>Zhenming Yue, Xingrong Chu, Jun Gao</i>	
ELECTROMAGNETIC SUPERPOSED FORMING OF PRE-STRESSED ALUMINUM ALLOY SHEET	722
<i>Xuexi Cui, Min Wan, Xiangdong Wu, Wenping Wang, Anlin Long</i>	
NUMERICAL STUDY ON SPRINGBACK PREDICTION OF AGED STEEL BASED ON QUASI-STATIC STRAIN-HARDENING MATERIAL MODEL	730
<i>Yong Sun, Feijun Qu, Ziliu Xiong, Shichao Ding</i>	
BENDING OF SHEET METALS USING PLASTIC TOOLS MADE WITH 3D PRINTER	737
<i>Naotaka Nakamura, Ken-Ichiro Mori, Fumie Abe, Yohei Abe</i>	
END FLARE OF PROFILES WITH MULTIPLE BENDING ZONES	743
<i>Matthias Moneke, Peter Groche</i>	
FRACTURE SIMULATION OF COLD ROLL FORMING PROCESS FOR ALUMINUM 7075-T6 AUTOMOTIVE BUMPER BEAM USING GISSMO DAMAGE MODEL	751
<i>Sang-Kyo Lee, Jong-Sup Lee, Jung-Han Song, Ji-Young Park, Seogou Choi, Wooram Noh, Geun-Ho Kim</i>	
ROLL FORMING OF ALUMINUM ALLOY PROFILE WITH HAT-SHAPED SECTION	759
<i>Zhaoxuan Hou, Min Wan, Xiangdong Wu, Xiaomeng Xu</i>	
3D ROLL FORMING CENTER FOR AUTOMOTIVE APPLICATIONS	767
<i>Albert Sedlmaier, Thomas Dietl</i>	
FLEXIBLE ROLL FORMING OF DOUBLE LAYERED BLANK	775
<i>Youngyun Woo, Pilgyu Kang, Ilyeong Oh, Younghoon Moon</i>	
FLEXIBLE ROLL FORMING OF U-SECTION PRODUCT WITH CURVED BENDING PROFILE USING ADVANCED HIGH STRENGTH STEEL	782
<i>Jinn-Jong Sheu, Chan-Fu Liang, Cheng-Hsien Yu, Wei-Chung Hsu, Pin-Kun Lee</i>	

INDUSTRIAL VALIDATION OF STRAIN IN COLD ROLL FORMING OF UHSS	788
<i>Kwun Sing Tsang, William Ion, Paul Blackwell, Martin English</i>	
ROLL FORMING PROCESS OF AUTOMOTIVE SEAT RAIL WITH 980 DP STEEL USING YOSHIDA-UEMORI KINEMATIC HARDENING MODEL	796
<i>Jong-Sup Lee, Sun-Yong Choi, Sang-Kyo Lee, Jung-Han Song, Wooram Noh, Seogou Choi, Geun-Ho Kim</i>	
ROTARY-DRAW-BENDING USING TOOLS WITH REDUCED GEOMETRIES	804
<i>Christopher Heftrich, Rainer Steinheimer, Bernd Engel</i>	
INFLUENCE OF MANDREL PARAMETERS ON CROSS-SECTIONAL DEFORMATION OF H96 DOUBLE-RIDGED RECTANGULAR TUBE WITH RIDGE GROOVE FILLERS IN H-TYPED ROTARY DRAW BENDING	812
<i>Xiaohong Sun, Chunmei Liu, Yuli Liu, Heng Li</i>	
EFFECT OF INNER RIDGE GROOVE FILLER ON DEFORMATION OF DOUBLE-RIDGED RECTANGULAR TUBE IN E-TYPED ROTARY DRAW BENDING	820
<i>Chunmei Liu, Xiaohong Sun, Yuli Liu</i>	
PREVENTION OF DEFECTS BY OPTIMIZING MANDREL POSITION AND SHAPE IN ROTARY DRAW BENDING OF COPPER TUBE WITH THIN WALL	828
<i>Shohei Kajikawa, Guanghui Wang, Takashi Kuboki, Masato Watanabe, Akinori Tsuichiya</i>	
NUMERICAL SIMULATION AND EXPERIMENTAL STUDY ON MECHANISM AND CHARACTERISTICS OF TUBE FREE-BENDING FORMING PROCESS	836
<i>Xunzhong Guo, Hao Xiong</i>	
INVESTIGATION OF CORRELATION BETWEEN MATERIAL PROPERTIES, PROCESS PARAMETERS AND RESIDUAL STRESSES IN ROLLER LEVELLING	844
<i>Markus Grüber, Gerhard Hirt</i>	
A LIGHTWEIGHT METHOD OF THIN-WALLED BEAMS BASED ON CROSS-SECTIONAL CHARACTERISTIC	852
<i>Ye Lin, Hong Bai, Jianping Lin, Manxiang Wang, Hongzhou Lu, Junying Min</i>	
PREDICTION OF PLASTIC FLOW LOCALIZATION WITH SHELL ELEMENT IN THICK AHSS SHEETS	861
<i>Minsu Wi, Jae Hyun Choi, Frédéric Barlat</i>	
FRACTURE-STRAIN MEASUREMENT OF STEEL SHEETS UNDER HIGH HYDROSTATIC PRESSURE	869
<i>Takashi Matsuno, Hiroto Shoji, Mitsuru Ohata</i>	
EFFECT OF STRAIN-RATE ON FORMING LIMIT IN BIAXIAL STRETCHING OF ALUMINUM SHEET	877
<i>Minoru Yamashita, Makoto Nikawa, Takayoshi Kuroda</i>	
FLANGE BULGING TEST OF ZINC ALLOY: COMPARISON OF ANALYSES WITH ANALYTICAL MODELS AND WITH STEREO-CORRELATION TECHNIQUE	884
<i>Ludovic Vitu, Nicolas Laforge, Pierrick Malécot, Nathalie Boudeau, Marc Milesi, Stephan Manov</i>	
EXPERIMENTAL AND FINITE ELEMENT OPTIMIZATION ANALYSIS ON HYDROFORMING PROCESS OF RUPTURE DISC	892
<i>Xiangwei Kong, Jiancong Zhang, Xuqing Li, Zhibo Jin, Hai Zhong, Yu Zhan, Fengjuan Han</i>	
FABRICATION OF RING GROOVE ON INNER SURFACE OF CYLINDRICAL BLANK BY IRONING FROM OUTER SURFACE	899
<i>Tatsunori Ozawa, Takashi Kuboki, Shohei Kajikawa, Akira Yamauchi, Akira Gunji, Katsuyuki Onishi</i>	
COMBINED PROCESS OF HYDROFORMING AND ELECTRO HYDRAULIC PRECISION RESHAPING FOR ALUMINIUM ALLOY	907
<i>Xin Lu, Hong Jin</i>	
SIMULATION BASED APPROACH FOR LIGHT WEIGHTING OF TRANSMISSION COMPONENTS USING TUBE HYDROFORMING	915
<i>Ankit Kumar Pandey, Bhushan S. Walunj, Prashant P. Date</i>	
WEAR INVESTIGATION OF SELECTIVE α-Fe_2O_3 OXIDE LAYERS GENERATED ON SURFACES FOR DRY SHEET METAL FORMING	923
<i>Bernd-Arno Behrens, Deniz Yilkiran, Simon Schöler, Fahrettin Özkaya, Sven Hubner, Kai Möhwald</i>	
FORMING LIMIT DIAGRAM WITH ANISOTROPY CONSIDERING OF TI-6AL-4V SHEETS AND PREDICTION OF DUCTILE FRACTURE BY EXPERIMENT AND FEA	931
<i>Yusuke Okude, Yasuyoshi Saito, Taku Iwaoka</i>	
MANUFACTURING OF LIGHT AUTOMOBILE ENGINE PISTON HEAD USING SHEET METAL	940
<i>Kanhu Charan Nayak, Prashant P. Date</i>	
EXPERIENCES WITH INLINE FEEDBACK CONTROL AND DATA ACQUISITION IN DEEP DRAWING	949
<i>Pascal Fischer, Jörg Heingärtner, Yasar Renkci, Pavel Hora</i>	
A NEW FORMING METHOD OF FLANGE ON A DRAWN CUP BY PLATE FORGING	955
<i>Zhi Gang Wang, Wen Zheng Dong, Hiroyasu Yato</i>	
THEORETICAL AND EXPERIMENTAL INVESTIGATION ON DEFORMATION MODES IN CYLINDRICAL CUP DRAWING WITH CENTRAL PRE-HOLE	961
<i>Wenzheng Dong, Yantao Li, Qiuan Lin, Zhigang Wang, Zhen Huang</i>	
EFFECTS OF PERIODIC WAVEFORM WRINKLES ON ULTRASONIC REFLECTION CHARACTERISTICS IN PRESS FORMING	969
<i>Tengzi Ma, Yuji Segawa, Yuta Miyazaki, Yasuo Marumo, Yasuhiro Imamura, Tomohiro Nonaka, Yutaka Sakata</i>	
IMPROVEMENT OF DEEP DRAWABILITY OF ULTRA-FINE GRAINED 6000 SERIES ALUMINUM ALLOY BY TAILORED HEAT TREATMENT	976
<i>Jürgen Herrmann, Marion Merklein</i>	

EXPERIMENTAL AND FINITE ELEMENT INVESTIGATION ON WRINKLING BEHAVIOUR IN DEEP DRAWING PROCESS OF AL3105/POLYPROPYLENE/STEEL304 SANDWICH SHEETS	984
<i>Amir Atrian, Hamed Panahi</i>	
INFLUENCES OF PROCESS AND MATERIAL PARAMETERS ON QUALITY OF SMALL-SIZED THIN SHEET-METAL PARTS DRAWN WITH MULTIPOINT TOOLING	992
<i>Song Yang, Michael McPhillimy, Taufik Bin Mohamed Supri, Yi Qin</i>	
FORMING CHARACTERISTICS OF AA2219 INTEGRALLY-STIFFENED PLATE SUBJECTED TO CREEP AGE FORMING	1000
<i>Youliang Yang, Lihua Zhan</i>	
CREEP FORMING OF VERY THIN ALMGSC SHEETS FOR AERONAUTICAL APPLICATIONS	1008
<i>Frieder Zimmermann, Alexander Brosius, Ralf-Eckhard Beyer, Jens Standfuß, Axel Jahn, David Banke</i>	
EXPERIMENTAL AND NUMERICAL STUDY OF CREEP AGE FORMING OF AA2050 PLATES WITH SPARSE MULTI-POINT FLEXIBLE FORMING TOOL	1016
<i>Yong Li, Zhusheng Shi, Yo-Lun Yang, Jianguo Lin, Rajab Said</i>	
CONTRIBUTION TO CHARACTERIZATION OF METAL FORMING MACHINES: APPLICATION TO SCREW PRESSES	1024
<i>Camille Durand, Régis Bigot, Cyrille Baudouin</i>	
VISUALIZED PRESS WORKING AND NEW FEEDBACK CONTROL FOR SERVO PRESS	1033
<i>Chikara Murata, Yuichi Hashimoto, Hiroki Sunagawa, Kazuhiro Ichikawa</i>	
ADHESION BEHAVIOR OF ALUMINUM-COATED 22MNB5 STEEL IN HOT FLAT DRAWING TEST UNDER DRY CONDITION WITH COATED TOOLS	1041
<i>Akira Yanagida, Tomonori Mukai, Kenji Matsumoto</i>	
COUPLED THERMAL-ELECTRICAL FINITE ELEMENT ANALYSIS OF ELECTRICAL RESISTANCE HEATING IN HOT STAMPING OF ULTRA-HIGH STRENGTH STEEL TUBES	1047
<i>Mohsen Loh-Mousavi, Mehdi Ahmadi, Tomoyoshi Maeno, Denis J. Politis, Liliang Wang</i>	
EFFECT OF RAPID HEATING PROCESS IN HOT STAMPING ON COMPACT STRIP PRODUCTION HOT ROLLED PLATE	1055
<i>Bin Zhu, Jia Zhu, Zhoujie Zhu, Yilin Wang, Yisheng Zhang</i>	
PHASE TRANSFORMATIONS IN A BORON-ALLOYED STEEL AT HIGH HEATING RATES	1062
<i>Illia Hordych, Konrad Bild, Viacheslav Boiarkin, Dmytro Rodman, Florian Nürnberger</i>	
SPRINGBACK BEHAVIOUR AND QUENCHABILITY IN HOT STAMPING OF THICK SHEETS	1071
<i>Yuki Nakagawa, Ken-Ichiro Mori, Satoru Yashima, Tomoya Kaido</i>	
CONSTITUTIVE AND FRACTURE MODELS OF HOT STAMPED PARTS WITH MULTIPHASE USING DIGITAL IMAGE CORRELATE TECHNOLOGY	1079
<i>Zijian Wang, Fei Xue, Bin Zhu, Yilin Wang, Yisheng Zhang</i>	
TAILORED PROPERTIES OF HOT STAMPING STEEL BY RESISTANCE HEATING WITH LOCAL TEMPERATURE CONTROL	1087
<i>Kai Wang, Bin Zhu, Liang Wang, Yilin Wang, Yisheng Zhang</i>	
INVESTIGATION OF MASKING CONCEPTS FOR INFLUENCING THE AUSTENITIZATION PROCESS DURING PRESS HARDENING	1095
<i>Bernd-Arno Behrens, Sven Hübnner, Alexander Chugreev, Florian Bohne, Andreas Seel, Masood Jalanesh, Kai Wölki</i>	
LABORATORY TRIALS AND DESIGN OF INDUSTRIAL APPLICATION OF HOT STAMPING OF 22MNB5 TAILORED COMPONENTS BY PARTITION HEATING	1103
<i>Yanhong Mu, Baoyu Wang, Jing Zhou, Enrico Simonetto, Andrea Ghiotti, Stefania Bruschi</i>	
REDUCTION IN HOLDING TIME AT BOTTOM DEAD CENTRE IN HOT STAMPING BY WATER AND DIE QUENCHING	1111
<i>Yuki Nakagawa, Ken-Ichiro Mori, Tomoyoshi Maeno, Yoshitaka Nakao</i>	
IMPROVEMENT OF FORMABILITY USING PARTIAL COOLING DURING TRANSFER IN HOT STAMPING OF ULTRA-HIGH STRENGTH STEEL PARTS	1119
<i>Yasutaka Suzuki, Ken-Ichiro Mori, Tomoyoshi Maeno, Kazuki Sakakibara, Yohei Abe</i>	
EFFECT OF TOOL COATING ON INTERFACIAL HEAT TRANSFER COEFFICIENT IN HOT STAMPING OF AA7075 ALUMINIUM ALLOYS	1127
<i>Xiaochuan Liu, Omer El Fakir, Mohammad M. Gharbi, Liliang Wang</i>	
NUMERICAL STUDY ON NOZZLE-FIELD COOLING OF HEATED ALUMINIUM BLANKS FOR HOT-STAMPING	1134
<i>Yankang Tian, Yihui Zhao, Daniel Melville, Yi Qin</i>	
IDENTIFICATION OF MODIFIED SWIFT CONSTITUTIVE MODEL AND ITS APPLICATION IN PREDICTING FLDS OF AA5083 AT ELEVATED TEMPERATURES	1142
<i>Cunsheng Zhang, Fangjie Xie, Ying Yang, Yubao Wang</i>	
HOT STAMPING OF TITANIUM ALLOY SHEETS USING PARTIAL CONTACT HEATING	1149
<i>Tomoyoshi Maeno, Masayuki Tomobe, Ken-Ichiro Mori, Yuto Ikeda</i>	
PREDICTION OF MICROSTRUCTURE EVOLUTION DURING HOT GAS FORMING OF Ti2AlNb-BASED ALLOY TUBULAR COMPONENT WITH SQUARE CROSS-SECTION	1156
<i>Zhiqiang Liu, Xiaosong Wang, Xueyan Jiao, Yong Wu, Gang Liu</i>	
GEOMETRY-DEPENDENT PARAMETERIZATION OF LOCAL SUPPORT IN ROBOT-BASED INCREMENTAL SHEET FORMING	1164
<i>Denis Daniel Störkle, Dennis Möllensiepe, Lars Thyssen, Bernd Kuhlenkötter</i>	
INCREMENTAL SHEET METAL FORMED SQUARE-CUP OBTAINED THROUGH MULTI-STEPPED PROCESS	1170
<i>Shigekazu Tanaka</i>	

FORMING ACCURACY IMPROVEMENT BY DOUBLE-SIDE INCREMENTAL FORMING	1177
<i>Masaaki Otsu, Shun-Ya Nagai, Takuya Miura, Masato Okada, Hidenori Yoshimura, Ryo Matsumoto, Takayuki Muranaka</i>	
DEVELOPMENT OF ELASTOMER-BASED INCREMENTAL SHEET FORMING METHOD FOR CURVED PRODUCTS	1184
<i>Hiroki Ichihara, Akio Sekiguchi</i>	
EXPERIMENTAL STUDY ON INCREMENTAL SHEET FORMING OF MAGNESIUM ALLOY AZ31 WITH HOT AIR HEATING	1192
<i>André Leonhardt, Gerrit Kurz, José Victoria-Hernández, Verena Kräusel, Dirk Landgrebe, Dietmar Letzig</i>	
EFFECTS OF NECK LENGTH ON OCCURRENCE OF CRACKING IN TUBE SPINNING	1200
<i>Yoichi Takahashi, Shigefumi Kihara, Takuo Nagamachi, Kozi Higaki</i>	
DEFORMATION CHARACTERISTICS OF TI-6AL-4V PLATE IN MANDREL-FREE HOT SPINNING	1207
<i>Yoshihide Imamura, Ken Ikawa, Kojiro Motoyama, Hayato Iwasaki, Takeo Hirakawa, Hiroshi Utsunomiya</i>	
EFFECTS OF FLOW FORMING PARAMETERS ON DIMENSIONAL ACCURACY IN CR-MO-V STEEL TUBES	1215
<i>Jill Miscandlon, Martin Tuffs, Steven T. Halliday, Alastair Conway</i>	
MANUFACTURING OF PROCESS ADAPTED TAILORED BLANKS BY FLEXIBLE ROLLING PROCESS USING ALUMINUM ALLOY AA6016	1224
<i>Manfred Vogel, Michael Lechner</i>	
CYLINDER FORMING BY DIE-LESS SHEAR SPINNING WITH SHEET THICKNESS CONTROLLING OF ITS WALL	1232
<i>Satoshi Tokuhira, Nobuyuki Suzuki, Osamu Takeuchi</i>	
FLOW FORMING PROCESS OF THIN-WALLED TUBULAR PARTS WITH CROSS INNER RIBS	1239
<i>Xiang Zeng, Xiaoguang Fan, Hongwei Li, Shuhui Li</i>	
NON-AXISYMMETRIC TUBE SPINNING BY OFFSET ROTATION	1247
<i>Steve Wilson, Hui Long, Georgy Garter</i>	
CONCEPTUAL DESIGN OF MULTIPURPOSE FORMING MACHINE AND EXPERIMENTS ON FORCE-CONTROLLED SHEAR SPINNING OF TRUNCATED CONE	1255
<i>Satoshi Hatori, Akio Sekiguchi, Abdullah Özer</i>	
HOT SPINNING FORMABILITY OF ALUMINUM ALLOY TUBE	1263
<i>Shunichiro Nakasato, Junya Kobayashi, Goroh Itoh</i>	
DOUBLE CYLINDER FORMING BY DIE-LESS SHEAR SPINNING FOR AIR INTAKE LIP SKIN OF AERO JET ENGINE NACELLE	1270
<i>Nobuyuki Suzuki, Satoshi Tokuhira, Osamu Takeuchi</i>	

PART 3

FUNDAMENTAL BURNISHING CHARACTERISTICS OF NI-BASED ALLOY USING COATED CARBIDE TOOL	1278
<i>Masato Okada, Shin Terada, Takuya Miura, Yoshiro Iwai, Takuya Takazawa, Yuki Kataoka, Takeshi Kihara, Masaaki Otsu</i>	
EVALUATION OF MATERIAL DEFORMABILITY AND PRESSURE DISTRIBUTION ON DIE SURFACE AROUND CENTERLINE OF TOOL TRAVEL IN FRICTION-STIR FORMING	1284
<i>Takahiro Ohashi, Hamed Mofidi Tabatabaei, Tadashi Nishihara</i>	
EXPERIMENTAL STUDY OF SPRINGBACK BEHAVIOR IN INCREMENTAL BENDING PROCESS	1290
<i>Feifei Zhang, Jianbin Ruan, Ji Zhang, Kai He, Ruxu Du</i>	
A NEW FLEXIBLE SHEET METAL FORMING METHOD OF INCREMENTAL BENDING	1298
<i>Xiaobing Dang, Kai He, Feifei Zhang, Ruxu Du</i>	
MECHANISMS AND FORMING RULES OF LARGE THIN-WALLED ALUMINUM ALLOY COMPONENTS IN ELECTROMAGNETIC INCREMENTAL FORMING	1306
<i>Si-Liang Yan, Hong-Wei Li, Ping Li, Ke-Min Xue</i>	
EFFICIENCY IMPROVEMENT OF THIN-SHEET-METAL BENDING BY FEMTOSECOND LASER PEEN FORMING	1314
<i>Yoshihiro Sagisaka, Kiyomitsu Yamashita, Hiroyasu Ueta</i>	
JOINING BY SHEET-BULK FORMING OF TUBES TO SHEETS	1322
<i>Luis M. Alves, Rafael M. Afonso, Carlos M. A. Silva, Paulo A. F. Martins</i>	
EXPERIMENTAL STUDY OF LANCING PARAMETERS ON STACKING STRENGTH FOR LAMINATED SHEET	1330
<i>Varunee Premanond, Jiraporn Sripraserd</i>	
TOOL SETUP TO INVESTIGATE SCALABILITY OF ROLLER CLINCHING PROCESSES	1338
<i>Simon Vitzthum, Maria Hiller, Duc Thien Dinh, Wolfram Volk</i>	
INVESTIGATION OF THE INFLUENCE OF TOOL-SIDED PARAMETERS ON DEFORMATION AND OCCURRING TOOL LOADS IN SHEAR-CLINCHING PROCESSES	1346
<i>Daxin Han, Réjane Hörhold, Sebastian Wiesenmayer, Marion Merklein, Gerson Meschut</i>	
RECTANGULAR SHEAR CLINCHING FOR JOINING OF ULTRA-HIGH STRENGTH STEEL SHEETS	1354
<i>Yohei Abe, Takato Saito, Kazuma Nakagawa, Ken-Ichiro Mori</i>	
MECHANICAL CLINCHING PROCESS USING PREFORMING OF LOWER SHEET FOR IMPROVEMENT OF JOINABILITY	1360
<i>Yohei Abe, Shinnosuke Ishihata, Takato Maeda, Ken-Ichiro Mori</i>	

EFFECT OF PROBE SHAPE OF JOINING TOOL ON ROTATING TOOL JOINING OF 5052 ALUMINUM ALLOY	1368
<i>Hiroshi Kawakami, Shoki Komada</i>	
FRICITION STIR GIRTH WELDING BETWEEN ALUMINUM AND STEEL RODS	1376
<i>Toshiaki Yasui, Tian Wu-Bian, Atsuhiko Hanai, Tatsuya Mori, Katashi Hirose, Masahiro Fukumoto</i>	
LINEAR FRICTION WELDING PROCESS SIMULATION OF TI-6AL-4V ALLOY: A HEAT TRANSFER ANALYSIS OF THE CONDITIONING PHASE	1382
<i>Samuel Bertrand, Davood Shahriari, Mohammad Jahazi, Henri Champlaud</i>	
MICROSTRUCTURE AND MECHANICAL PROPERTIES OF MULTI-LAYERED AL/TI COMPOSITES PRODUCED BY EXPLOSIVE WELDING.....	1391
<i>Henryk Paul, Lukasz Maj, Mariusz Prazmowski, Aleksander Galka, Magdalena Miszczyk, Pawel Petrzak</i>	
STRENGTHENING MECHANISM OF WELDBONDED HIGH STRENGTH STEEL JOINTS	1399
<i>Naoki Kimoto, Takahiro Aito, Takeshi Kawachi, Shunji Hiwatashi</i>	
DFT CALCULATIONS BASED INSIGHT INTO BONDING CHARACTER AND STRENGTH OF FE2AL5 AND FE4AL13 INTERMETALLICS AT AL-FE JOINTS	1407
<i>Muhammad Zeeshan Khalid, Jesper Friis, Per Harald Ninive, Knut Marthinsen, Are Strandlie</i>	
NANO-ANCHOR EFFECT BY ANODIC OXIDATION OF ALUMINUM SHEETS IN JOINING BY ELECTRODEPOSITION	1416
<i>Masataka Hakamada, Naoki Miyazawa, Yohei Kohashi, Yuriko Yamano, Mamoru Mabuchi</i>	
DEFORMATION BEHAVIOR OF METAL FOIL IN MICRO PNEUMATIC DEEP DRAWING PROCESS	1422
<i>Zicheng Zhang, Ning Chen, Tsuyoshi Furushima, Bin Li</i>	
MICRO FORMING OF METALLIC COMPOSITES.....	1429
<i>Hang Yin, Zhengyi Jiang, Haibo Xie, Fanghui Jia, Xiaogang Wang, Cunlong Zhou</i>	
HOT MOLD STAMPING OF OPTICAL PLASTICS AND GLASSES WITH TRANSCRIPTION OF SUPER-HYDROPHOBIC SURFACES	1437
<i>Tomoki Hasegawa, Tatsuhiko Aizawa, Tadahiko Inohara, Kenji Wasa, Masahiro Anzai</i>	
PRECISION STAMPING PROCESS OF METAL MICRO GEARS	1445
<i>Yohei Suzuki, Tomomi Shiratori, Masao Murakawa, Ming Yang</i>	
DEFORMATION AND TRANSFORMATION BEHAVIOR IN MICROPIERCING OF SUS304	1452
<i>Tomomi Shiratori, Tomoaki Yoshino, Yohei Suzuki, Masahito Katoh, Shizuka Nakano, Ming Yang</i>	
FINE PIERCING OF ELECTROMAGNETIC STEEL SHEETS BY MICRO-PUNCHES UNDER NEARLY ZERO CLEARANCE	1459
<i>Etsuro Katsuta, Tatsuhiko Aizawa, Hiroshi Morita, Kuniaki Dohda, Masahiro Anzai</i>	
ANALYSIS OF CONTACT MECHANICS IN MICRO FLEXIBLE ROLLING.....	1467
<i>Mingshuai Huo, Jingwei Zhao, Haibo Xie, Zhengyi Jiang</i>	
MICRO-JOINING OF MULTI STAINLESS STEEL SHEETS INTO MECHANICAL ELEMENT BY LOW TEMPERATURE DIFFUSION PROCESS	1475
<i>Tomoki Satoh, Tatsuhiko Aizawa, Tomomi Shiratori, Yoshio Sugita, Masahiro Anzai</i>	
FRACTURE AND SURFACE ROUGHENING BEHAVIORS IN MICRO METAL FORMING.....	1481
<i>Tsuyoshi Furushima, Hitomi Tsunozaki, Yutaro Hirose</i>	
STRAIN EFFECT ON GRAIN REFINEMENT AND THERMAL STABILITY OF ULTRAFINE-GRAINED MOLYBDENUM PROCESSED BY SEVERE PLASTIC DEFORMATION	1487
<i>Xue Wang, Ping Li, Kemin Xue</i>	
MECHANICAL PROPERTIES AND PLASTIC DEFORMATION BEHAVIOR OF SEVERELY DEFORMED PURE FE	1495
<i>Nozomu Adachi, Hirokazu Sato, Yoshikazu Todaka, Takuya Suzuki</i>	
CIRCULAR SIMPLE SHEAR EXTRUSION AS AN ALTERNATIVE FOR SIMPLE SHEAR EXTRUSION TECHNIQUE FOR PRODUCING BULK NANOSTRUCTURED MATERIALS.....	1502
<i>Ramin Ebrahimi, Alireza Rezvani, Ebad Bagherpour</i>	
EXPERIMENTAL STUDY ON EFFECT OF REVERSE ROTATION ON MICRO-HARDNESS VALUE OF HIGH-PRESSURE TORSION PROCESSED SAMPLES	1509
<i>Hamid Montazerolghaem, Mahmood Mohammadzadeh</i>	
CHARACTERIZATION OF DOUBLE ALUMINIUM ALLOY SPECIMENS AFTER ECAP	1517
<i>Carlo Bruni, Marcello Cabibbo, Daniele Ciccarelli, Chiara Paoletti</i>	
EFFECT OF THERMOMECHANICAL TREATMENT ON MECHANICAL AND ELECTRICAL PROPERTIES OF CU-CR-ZR ALLOY IN CONTINUOUS HYBRID PROCESS.....	1525
<i>Ho Seon Joo, Sun Kwang Hwang, Yong-Taek Im</i>	
MICROSTRUCTURE AND MECHANICAL PROPERTIES OF PLATES WARM EXTRUDED AZ80MG ALLOY FABRICATED BY MULTI-DIRECTIONAL FORGING IN ADVANCE.....	1533
<i>Hiromi Miura, Keiichiro Minami, Tomoya Aoba, Masakazu Kobayashi</i>	
MICROSTRUCTURE CONTROL OF PURE IRON BY UTILIZING METAL CUTTING METHOD	1541
<i>Fumihisa Nagashima, Masahiko Yoshino, Motoki Terano</i>	
EFFECT OF DEFORMATION HISTORY ON DYNAMIC RESPONSE OF AUSTENITE – EXPERIMENTAL AND MODELING POSSIBILITIES	1549
<i>Krzysztof Muszka, Paulina Lisiecka-Graca, Danuta Szeliga, Marcin Gliwinski</i>	
DAMAGE MECHANISMS IN MULTIPHASED STEELS WITH A BAINITIC MATRIX UNDER VARIOUS MECHANICAL LOADING PATHS	1557
<i>Pauline Martin, Klaus Unruh, Jérôme Chottin, Eric Hug</i>	

TEXTURE EVOLUTION IN SINGLE CRYSTAL IRON STATIC RECRYSTALLIZATION THROUGH IN-SITU EBSD OBSERVATION	1565
<i>Zichao Luo, Masahiko Yoshino, Motoki Terano, Akinori Yamanaka</i>	
PREDICTION ON FLOW BEHAVIORS OF INDIVIDUAL GRAINS IN DP600 STEEL WITH GRAIN FEATURES	1573
<i>Rui-Bin Gou, Wen-Jiao Dan, Wei-Gang Zhang, Min Yu</i>	
HYDROGEN EMBRITTLEMENT PROPERTIES OF NITROGEN ADDED ULTRA-HIGH-STRENGTH TRIP-AIDED MARTENSITIC STEELS EVALUATED BY USING CONVENTIONAL STRAIN RATE TECHNIQUE	1581
<i>Tomohiko Hojo, Kiattada Chanvichitkul, Hiroyuki Waki, Fumihito Nishimura, Eiji Akiyama</i>	
OXIDATION BEHAVIOR OF CERIUM AND TUNGSTEN-CONTAINING FERRITIC STAINLESS STEELS AT 1200°C IN AIR	1588
<i>Liangliang Wei, Liqiang Han, Liqing Chen, Yang Zhao</i>	
EXPERIMENTAL STUDY OF IN-LINE HEAT TREATMENT OF 1.0577 STRUCTURAL STEEL	1596
<i>Milan Hnizdil, Martin Chabicovsky</i>	
EFFECT OF PRECIPITATES ON MECHANICAL PROPERTIES FOR ANNEALED FE-19CR-2MO-NB-TI FERRITIC STAINLESS STEEL	1604
<i>Changsheng Li, Guojun Cai, Dongge Wang, Yongkang Zhou</i>	
MICROSTRUCTURE AND MECHANICAL PROPERTIES OF FE-CR-2NI-MO-V STEEL IN CARBURIZING PROCESS	1612
<i>Binzhou Li, Changsheng Li, Zhenxing Li, Jingbo Dong</i>	
TEXTURE EVOLUTION OF ANNEALED FE-19CR-2MO-NB-TI FERRITIC STAINLESS STEEL	1619
<i>Guojun Cai, Changsheng Li, Dongge Wang, Yongkang Zhou</i>	
MICROSTRUCTURE CHARACTERISATION IN ALLOY 825	1626
<i>Munir Al-Saadi, Fredrik Sandberg, Andrey Kasarav, Stefan Jonsson, Pär Jönsson</i>	
EXPERIMENTAL INVESTIGATIONS ON MICRO SCALED PLASTIC DEFORMATION OF BIO-ABSORBABLE MAGNESIUM AZ80 ALLOY	1635
<i>Duraiwamy Rajenthirakumar, Nagarajan Srinivasan, Ramasamy Sridhar</i>	
IMPROVEMENT OF STRENGTH WITH MAINTAINING DUCTILITY OF HARMONIC STRUCTURE PURE COPPER BY COLD ROLLING AND ANNEALING PROCESS	1641
<i>Guodong Li, Shuichi Morinaka, Mie Kawabata, Chaoli Ma, Kei Ameyama</i>	
INFLUENCE OF DEFORMATION CONDITIONS ON THE INHOMOGENEITY OF PLASTIC FLOW OF STRUCTURALLY GRADED BIMETAL SYSTEMS	1649
<i>Marcin Kwiecien, Mateusz Kopyscianski, Remigiusz Bloniarz, Krzysztof Muszka, Janusz Majta</i>	
VISUALIZATION OF STRAIN DISTRIBUTION IN TENSILE TEST OF FERRITE + MARTENSITE MULTILAYERED STEEL SHEET BY DIGITAL IMAGE CORRELATION METHOD	1656
<i>Norimitsu Koga, Masayuki Suzuki, Osamu Umezawa</i>	
EFFECT OF DC PULSED-CURRENT ON DEFORMATION BEHAVIOR OF MAGNESIUM ALLOY THIN SHEETS	1663
<i>Ichsan Indhiarto, Tetsuhide Shimizu, Tsuyoshi Furushima, Ming Yang</i>	
MICROSTRUCTURE AND POROSITY FORMATION OF SPRAY-FORMED GCR15 STEEL BILLETS	1671
<i>Mingxiang Liu, Zhenshan Cui, Dashan Sui</i>	
MICRO-BEAM PLASMA POLISHING OF GROUND ALLOY STEEL SURFACES	1678
<i>Tian-Tian Deng, Jian-Jun Li, Zhi-Zhen Zheng</i>	
STRUCTURAL AND MECHANICAL CHARACTERISTICS OF IRON-NICKEL-CARBON ALLOY ELECTRODEPOSITS FOR FORGING DIE	1687
<i>Kentaro Nishiyama, Masanobu Izaki</i>	
EFFECT OF GRAIN SIZE ON FRICTION COEFFICIENT UNDER OIL LUBRICATION IN NANOSTRUCTURED FE FABRICATED BY PVD AND SPD METHODS	1693
<i>Naoya Hyodo, Nozomu Adachi, Masahiro Hino, Yoshikazu Todaka, Yojiro Oba</i>	
T6 HEAT-TREATED ALSI10MG ALLOYS ADDITIVE-MANUFACTURED BY SELECTIVE LASER MELTING	1701
<i>Xianglong Yu, Lianfeng Wang</i>	
EVALUATION OF MECHANICAL PROPERTIES OF RANDOMLY COMPRESSION MOLDED CARBON FIBER REINFORCED THERMOPLASTIC SHEET MADE OF UNIDIRECTIONAL TAPE	1708
<i>Takashi Yamamoto, Kunio Hayakawa</i>	
MULTI-MATERIAL FORMING USING DP780 AND CFRTP	1716
<i>Jeong-Min Lee, Byung-Min Kim, Dae-Cheol Ko</i>	
HIGH CYCLE DEEP DRAWING OF PA6 MATRIX CARBON FIBER REINFORCED THERMOPLASTICS BY SERVO-DRIVEN SCREW PRESS	1722
<i>Sachihiro Isogawa, Yoshio Enomoto, Hisao Kobayashi, Shougo Nasu</i>	
HOT PRESS FORMING OF THERMOPLASTIC CFRP SHEETS	1730
<i>Daichi Tatsuno, Takeshi Yoneyama, Kiichirou Kawamoto, Masayuki Okamoto</i>	
ENHANCEMENT OF MECHANICAL PROPERTIES OF CARBON FIBER REINFORCED THERMOPLASTIC USING COLLOIDAL TECHNIQUES	1738
<i>Tetsuya Yamamoto, Katsumasa Uematsu, Syo Yabushita</i>	
TIME AND FLOW STRESS DEPENDENCES OF INTERNAL STRESS DURING STRESS RELAXATION	1746
<i>Yoshinori Kusuda, Kodai Murasawa, Yurina Suzuki, Shinsuke Suzuki, Masato Takamura, Tomoyuki Hakoyama, Yoshimasa Ikeda, Yoshie Otake, Takayuki Hama</i>	
TRIALS TO EVALUATE DISTRIBUTION OF LANKFORD VALUE USING HOLE EXPANSION TEST	1754
<i>Wuyang Liu, Takashi Iizuka</i>	

EVALUATION OF NECK SHAPE OF NOTCHED ROUND-BAR SPECIMENS DURING TENSILE TEST	1762
<i>Takeshi Nishiwaki, Masanobu Murata, Yoshinori Yoshida</i>	
MECHANICAL PROPERTIES IN CYCLIC TENSION-COMPRESSION LOADING PROCESS ON SHEET METAL	1769
<i>Gaochao Yu, Rui Ma, Ruixue Zhai, Jun Zhao</i>	
WORK HARDENING DURING ALTERNATING LOAD DIRECTIONS OF 316L SS	1777
<i>Yagiz Azizoglu, Mattias Gärdsback, Akinori Yamanaka, Toshihiko Kuwabara, Lars-Erik Lindgren</i>	
CYCLIC SIMPLE SHEAR TEST OF MATERIAL FOR COLD FORGING	1785
<i>Tatsuya Fujii, Kunio Hayakawa, Takafumi Harada, Shinobu Narita</i>	
CYCLIC STRESS AND STRAIN RESPONSES OF AZ31 MAGNESIUM ALLOY SHEET METAL AT ELEVATED TEMPERATURES	1792
<i>Takeshi Uemori, Takashi Katahira, Tetsuo Naka, Naoya Tada, Fusahito Yoshida</i>	
STATIC RECRYSTALLIZATION STUDY ON PURE ALUMINIUM USING CRYSTAL PLASTICITY FINITE ELEMENT AND PHASE-FIELD MODELLING	1800
<i>Qinmeng Luan, Junyi Lee, Zebang Zheng, Jianguo Lin, Jun Jiang</i>	
PREDICTION OF DIFFERENTIAL WORK-HARDENING BEHAVIOR UNDER BIAxIAL TENSION OF STEEL SHEET USING CRYSTAL PLASTICITY MODELS	1808
<i>Takayuki Hama, Hitoshi Fujimoto, Hirohiko Takuda</i>	
FORMING LIMITS OF DUAL PHASE STEELS USING CRYSTAL PLASTICITY IN CONJUNCTION WITH MK APPROACH	1816
<i>Youngung Jeong, Sansot Panich</i>	
DISLOCATION-BASED CRYSTAL PLASTICITY FE ANALYSIS FOR KINK BAND FORMATION IN MG-BASED LPSO PHASE CONSIDERING HIGHER-ORDER STRESS	1825
<i>Yuichi Kimura, Ryo Ueta, Kazuyuki Shizawa</i>	
NUMERICAL MATERIAL TESTING USING FINITE ELEMENT POLYCRYSTALLINE MODEL BASED ON SUCCESSIVE INTEGRATION METHOD	1833
<i>Shin Onoshima, Tetsuo Oya</i>	
NUMERICAL ANALYSIS OF VOID CLOSURE IN METAL FORMING	1841
<i>Jong-Jin Park</i>	
APPLICATION OF STATISTICAL REPRESENTATION OF THE MICROSTRUCTURE TO MODELING OF PHASE TRANSFORMATIONS IN DP STEELS BY SOLUTION OF THE DIFFUSION EQUATION	1847
<i>Krzysztof Bzowski, Lukasz Rauch, Maciej Pietrzyk</i>	
SIMULATION OF BAINITE AND MARTENSITE FORMATION USING A NOVEL CELLULAR AUTOMATA METHOD	1856
<i>Oskari Seppälä, Aarne Pohjonen, Antti Kaijalainen, Jari Larkiola, David Porter</i>	
COMPUTER SIMULATIONS OF AUSTENITE DECOMPOSITION OF HOT FORMED STEELS DURING COOLING	1864
<i>Aarne Pohjonen, Antti Kaijalainen, Juho Mourujärvi, Jari Larkiola</i>	
SIMULATION OF AUSTENITE FORMATION OF 60Si2CRA STEEL USING INTERNAL STATE VARIABLE MODEL	1872
<i>He Huang, Baoyu Wang, Jianguo Lin, Chuanbao Zhu</i>	
EVALUATION OF CODE PARALLELIZATION SOLUTIONS IN THE STATIC RECRYSTALLIZATION CELLULAR AUTOMATA MODEL	1879
<i>Mateusz Sitko, Lukasz Madej</i>	
MATERIAL MODELING OF PURE TITANIUM SHEET AND ITS APPLICATION TO BULGE TEST SIMULATION	1886
<i>Quoc Tuan Pham, Seok Hwan Oh, Kee Cheol Park, Young Suk Kim</i>	
MODELING OF MICROSCOPIC STRAIN HETEROGENEITY DURING WIRE DRAWING OF PEARLITE	1893
<i>Laurent Delannay</i>	
COMPARISON OF SOLVERS FOR TWO FORMULATIONS OF CAHN-HILLIARD EQUATIONS	1900
<i>Maciej Paszynski, Grzegorz Gurgul, Adriano Cortes, Danuta Szeliga</i>	
EXPERIMENTAL AND ANALYTICAL INVESTIGATIONS ON A FUNCTION FOR THE NON-ASSOCIATED FLOW RULE MODEL	1908
<i>Tetsuo Oya, Jun Yanagimoto, Koichi Ito, Gen Uemura, Naomichi Mori</i>	

Author Index