

12th International Conference on the Mechanical and Physical Behaviour of Materials under Dynamic Loading (DYMAT 2018)

EPJ Web of Conferences Volume 183 (2018)

Arcachon, France
9 - 14 September 2018

Editors:

**E. Buzaud
A. Cosculluela**

**H. Couque
E. Cadoni**

ISBN: 978-1-5108-7083-3

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.

This work is licensed under a Creative Commons Attribution 4.0 International Licence. Licence details:
<http://creativecommons.org/licenses/by/4.0/>.

Printed by Curran Associates, Inc. (2018)

For additional information, please contact EDP Sciences – Web of Conferences
at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

contact-edps@webofconferences.org

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

EXPERIMENTAL AND NUMERICAL STUDIES ON THE DYNAMIC BEHAVIORS OF CONCRETE MATERIAL BASED ON THE WAVEFORM FEATURES IN SHPB TEST	1
<i>Weintu Chen Xiao, Lv Taihong, Chen Gang</i>	
MODELING STRESS UPTURN AT HIGH STRAIN RATES FOR DUCTILE MATERIALS	7
<i>Partom Yehuda</i>	
IMPACT PERFORATION OF ALUMINUM CYMAT FOAM	11
<i>Elnasri Ibrahim, Zhao Han</i>	
FLOW STRESS OF BERYLLIUM: ATTEMPT FOR A BAYESIAN CROSSED-DATA ANALYSIS FROM HOPKINSON BARS TO RAYLEIGH-TAYLOR INSTABILITIES	17
<i>Seisson Gabriel, Dubois Vincent, Bolis Cyril, Denoual Christophe</i>	
DYNAMIC FAILURE OF VISCOPLASTIC STRUCTURES UNDER ASB AND MICRO-VOIDING	23
<i>Lois Dorothy Hannah, Longere Patrice</i>	
IMPROVING DATA INTERPRETATION FROM SHTB TESTS ON DUCTILE METALS	29
<i>Lindenfeld Avishay, Partom Yehuda</i>	
BIRD STRIKE ON AIRCRAFT RADOME: DYNAMIC CHARACTERISATION OF QUARTZ FIBRE COMPOSITE SANDWICH FOR ACCURATE, PREDICTIVE IMPACT SIMULATIONS	34
<i>Heimbs Sebastian, Wagner Tim, Meister Heinz, Brand Clemens, Calomfirescu Mircea</i>	
STRAIN-RATE EFFECTS ASSOCIATED WITH THE HJC CONCRETE MODEL	40
<i>Johnson Gordon, Holmquist Timothy, Gerlach Charles</i>	
DEFORMATION OF EPS FOAM UNDER COMBINED COMPRESSION-SHEAR LOADING: EXPERIMENTAL AND COMPUTATIONAL ANALYSIS	45
<i>Ling Chen, Ivens Jan, Cardiff Philip, Gilchrist Michael D.</i>	
MICROSPALLING PROCESS OF AN EXPLOSIVELY-DRIVEN METAL TIN: EXPERIMENTS AND NUMERICAL SIMULATIONS	51
<i>Li Qingzhong, Wang Peng, Ren Guowu, Liu Wentao, Chen Yongtao</i>	
MECHANICAL BEHAVIOUR OF GRAPHDIYNE FILM: EXPERIMENTAL AND MOLECULAR DYNAMICS SIMULATION	56
<i>Xiao Kailu, Wu Xianqian, Yin Qiuyun, Huang Chenguang</i>	
CONSTITUTIVE MODELING OF HIGH-STRENGTH STEEL DESIGNED FOR BALLISTIC PROTECTION	61
<i>Zochowski Pawel, Zielenkiewicz Mariusz</i>	
PREDICTING THE HIGH STRAIN RATE RESPONSE OF PLASTICISED POLY(VINYL CHLORIDE) USING A FRACTIONAL DERIVATIVE MODEL	67
<i>Trivedi Akash, Siviour Clive</i>	
EXPERIMENTAL ANALYSIS AND MODELLING OF THE STRAIN-RATE SENSITIVITY OF SHEET NIOBIUM	73
<i>Peroni Lorenzo, Scapin Martina</i>	
STRENGTH MODEL EVALUATION BASED ON EXPERIMENTAL MEASUREMENTS OF NECKING PROFILE IN DUCTILE METALS	79
<i>Peroni Lorenzo, Scapin Martina</i>	
THREE-DIMENSIONAL CONSTITUTIVE MODEL FOR THE DESCRIPTION OF HIGH MOLECULAR WEIGHT SEMICRYSTALLINE POLYMERS OVER A LARGE RANGE OF TEMPERATURES AND STRAIN RATES: APPLICATION TO ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE	85
<i>Bernard Chrystelle A., Deplancke Tiana, Lame Olivier, Ogawa Kazuhiro, Cavaillé Jean-Yves</i>	
PLATE IMPACT SHOCK EXPERIMENTS AND NUMERICAL MODELING OF LIGHTWEIGHT ADOBE MASONRY MATERIAL	88
<i>Sauer Christoph, Bagusat Frank, Heine Andreas, Werner Riedel</i>	
DYNAMIC BEHAVIOUR OF CORE-SHELL STRUCTURED SI NANOPARTICLES DURING LITHIATION/DELITHIATION CYCLING AT DYNAMIC LOADINGS	93
<i>Gao Xiang, Yuan Chunhao, Xu Jun</i>	
NUMERICAL SIMULATION OF CRACK INITIATION AND GROWTH IN PBX HIGH EXPLOSIVE SUBJECT TO COMPRESSION	97
<i>Xicheng Huang, Shangkun Li, Wei Qiang, Gang Chen, Rong Tian, Lixiang Wang</i>	
NUMERICAL SIMULATION ON THE SPECIMEN DYNAMIC PLASTIC DEFORMATION BEHAVIOUR IN THE TORSIONAL SPLIT HOPKINSON BAR TEST	103
<i>Gang Chen, Xicheng Huang, Junhong Chen, Weizhou Zhong</i>	

DYNAMIC RESISTANCE OF MULTI-LAYERED PROTECTIVE ELEMENTS UNDER IMPACT LOADS	109
<i>Kruszka Leopold, Vorobiov Iurii, Ovcharova Nataliia</i>	
HIGH STRAIN RATE AND HIGH TEMPERATURE RESPONSE OF TWO ARMOUR STEELS: EXPERIMENTAL TESTING AND CONSTITUTIVE MODELLING	113
<i>McDonald Brodie, Bornstein Huon, Ameri Ali, Escobedo-Diaz Juan P., Orifici Adrian C.</i>	
AN IMPROVEMENT OF THE LAGRANGIAN ANALYSIS METHOD BASED ON PARTICLE VELOCITY PROFILES	119
<i>Ding Yuanyuan</i>	
CREATION OF DATABASE FOR STRENGTH CALCULATION OF CONSTRUCTIONS	123
<i>Bragov Anatoly, Isaev Sergey, Kapustin Sergey, Konstantinov Alexander, Lomunov Andrey</i>	
BOUNDARY ELEMENT MODELING OF DYNAMIC BENDING OF A CIRCULAR PIEZOELECTRIC PLATE	128
<i>Igunnov Leonid, Markov Ivan, Konstantinov Alexandr</i>	
ASSESSING THROUGH-THICKNESS DAMAGE PROPAGATION, IMPACT TESTS ON LAYERED COMPOSITE BEAMS - EXPERIMENTAL WORK AND NUMERICAL SIMULATION	133
<i>Vidal-Pérez Ignacio, Eriksen Rasmus, Berggreen Christian, Kepler Jørgen</i>	
LASER-INDUCED CRATERING OF A 3DCC MATERIAL AT MESOSCALE: EXPERIMENTS AND SIMULATIONS	138
<i>Jaulin Vincent, Hébert David, Aubert Bertrand, Rullier Jean-Luc, Malaise Frédéric, Lescoute Emilien</i>	
STUDY OF WAVE PROPAGATION IN POROVISCOELASTIC HALFSPACE UNDER NORMAL HARMONIC LOAD VIA BEM	143
<i>Ipatov Aleksandr, Litvinchuk Svetlana</i>	
AN ACCURATE SPH SCHEME FOR DYNAMIC FRAGMENTATION MODELLING	148
<i>Collé Anthony, Limido Jérôme, Vila Jean-Paul</i>	
HYPERELASTIC MODELLING OF YARN STRUCTURES FOR DYNAMIC APPLICATIONS	154
<i>del Sorbo Pietro, Girardot Jeremie, Dau Frederic, Iordanoff Ivan</i>	
ALUMINIUM PLATES WITH PRE-FORMED SLITS SUBJECTED TO BLAST LOADING	158
<i>Granum Henrik, Aune Vegard, Børvik Tore, Sture Hopperstad Odd</i>	
NUMERICAL ANALYSIS AND EXPERIMENT FOR STRESS WAVE PROPAGATION IN TWO CONNECTED CYLINDRICAL BODIES WITH DIFFERENT CROSS-SECTIONAL AREA AND SAME MECHANICAL IMPEDANCE	164
<i>Kobayashi Hidetoshi, Seo Yuya, Ogawa Kinya, Horikawa Keitaro, Tanigaki Ken-ichi</i>	
SHOCK TUBE TESTING AND MODELLING OF ANNEALED FLOAT GLASS	170
<i>Osnes Karoline, Børvik Tore, Sture Hopperstad Odd</i>	
ANALYSIS OF FRACTURE BEHAVIOUR OF EXPLODED METAL CYLINDERS WITH VARIED CHARGE	176
<i>Dong Xinlong, Yu Xinlu, Pan Shunjie</i>	
CALIBRATION OF JOHNSON'S DAMAGE MODEL BY A BAYESIAN APPROACH	181
<i>Perrin Guillaume, Pillon Laurianne</i>	
CHARACTERISATION OF THE BEHAVIOUR OF WELDED ALUMINIUM STRUCTURES UNDER DYNAMIC LOADING	184
<i>Bornstein Huon, McDonald Brodie, Frain Emily, De Oliveira Damas Daniel, Yang Eric, Herzig Norman</i>	
THERMO-ELASTIC-PLASTIC MODEL FOR NUMERICAL SIMULATION OF FASTENERS DESTRUCTION UNDER GASODYNAMIC IMPULSIVE PRESSURE	190
<i>Chernobryvko Marina, Avramov Konstantin, Uspensky Boris, Tonkonogenko Anatoly, Kruszka Leopold</i>	
MODELLING AND CHARACTERISATION OF THE HIGH-RATE BEHAVIOUR OF ROCK MATERIAL	196
<i>Larsson Simon, Nishida Masahiro, Kurano Shuhei, Moroe Tomoki, Gustafsson Gustaf, Häggblad Hans-Åke, Jonsén Pär</i>	
MODELLING OF THE BEHAVIOUR OF METAL FOAMS UNDER SHOCK COMPRESSION	200
<i>Jacques Nicolas, Barthélémy Romain</i>	
DEVELOPMENT OF BOUNDARY-ELEMENT TIME-STEP SCHEME IN SOLVING 3D POROELASTODYNAMICS PROBLEMS	206
<i>Vorobtsov Igor, Belov Aleksandr, Petrov Andrey</i>	
EXPERIMENTAL AND NUMERICAL ANALYSES OF THE DYNAMIC FAILURE PROCESSES OF SYMMETRIC TAYLOR IMPACT SPECIMENS	210
<i>Couque Hervé</i>	
EXPERIMENTAL AND NUMERICAL ANALYSIS OF HIGH AND LOW VELOCITY IMPACTS AGAINST NEAT AND SHEAR THICKENING FLUID (STF) IMPREGNATED WEAVE FABRICS	215
<i>Eddine Tria Djalel, Hemmouche Larbi, Allal Abdelhadi, Benouali Abdelkader</i>	

LASER-DRIVEN SHOCK EXPERIMENTS TO INVESTIGATE MITIGATION ABILITY OF POLYMERIC FOAMS	221
<i>Pradel Pierre, Malaise Frédéric, de Rességuier Thibaut</i>	
PREDICTION PROCEDURE FOR HAIL IMPACT	226
<i>Doussset Simon, Girardot Jérémie, Dau Frédéric, Gakwaya Augustin</i>	
SHOCK WAVE SPEED AND STRESS-STRAIN RELATION OF ALUMINIUM HONEYCOMBS UNDER DYNAMIC COMPRESSION	232
<i>Wang Peng, Zhang Jun, Huang Haiying, Zheng Zhijun, Yu Jilin</i>	
MATERIAL TESTS AND MESOSCALE COMPUTER MODEL FOR BALLISTIC IMPACT ON CARBON FIBER COMPOSITE	237
<i>Chocron Sidney, Carpenter Alexander, Bigger Rory, Scott Nikki, Warren Kyle, Bayraktar Harun</i>	
INVESTIGATION OF THE BEHAVIOUR OF FUNCTIONALLY GRADED MATERIALS UNDER IMPACT LOADS	243
<i>Orlov Maxim, Orlov Yuri, Glazyrin Viktor, Orlova Yulia</i>	
STRUCTURAL RESPONSE AND STOCHASTIC IMPACT MODELING	249
<i>Troian Renata, Dallali Manel, Lemosse Didier, Khalij Leila</i>	
STUDY OF THE BALLISTIC BEHAVIOUR OF UHMWPE COMPOSITE MATERIAL: EXPERIMENTAL CHARACTERIZATION AND NUMERICAL SIMULATION	253
<i>Abdulhamid Hakim, Deconinck Paul, Hérel Pierre-Louis, Mespoulet Jérôme</i>	
BENEFITS OF USING LODE ANGLE DEPENDENT FRACTURE MODELS TO PREDICT BALLISTIC LIMITS OF ARMOR STEEL	260
<i>Roth Christian C., Fras Teresa, Faderl Norbert, Mohr Dirk</i>	
LARGE DEFORMATION BEHAVIOR OF HIGH STRENGTH STEEL UNDER EXTREME LOADING CONDITIONS: HIGH TEMPERATURE AND HIGH STRAIN RATE EXPERIMENTS AND MODELING	266
<i>Li Xueyang, Roth Christian C., Mohr Dirk</i>	
A MESOSCOPIC MODEL FOR COMPRESSION OF GRANULAR MATERIALS	271
<i>Rejovitzky Elisha</i>	
ON THE RATE-DEPENDENT PLASTICITY MODELLING OF UNIDIRECTIONAL FIBRE-REINFORCED POLYMERIC MATRIX COMPOSITES	277
<i>Erice Borja, Thomson Daniel, Ponnusami Sathiskumar A., Pathan Mehtab V., Petrinic Nik</i>	
MECHANICAL BEHAVIOUR MODELLING UNDER DYNAMIC CONDITIONS: APPLICATION TO STRUCTURAL AND HIGH STRENGTH STEELS	283
<i>Simon Pierre, Demarty Yaël, Rusinek Alexis</i>	
BLAST LOADING OF CONCRETE PIPES USING SPHERICAL CENTRICALLY PLACED C-4 CHARGES	288
<i>Kristoflersen Martin, Ove Hauge Knut, Valsamos Georgios, Børvik Tore</i>	
TENSILE PROPERTIES OF AM MARAGING STEEL	294
<i>Church Philip, Reynolds Mark, Gould Peter, Oakley Robin, Harrison Nigel, Williamson Dave, Braithwaite Chris, Taylor Nick</i>	
DEVELOPMENT OF A CONSTITUTIVE MODEL FOR DPX2 EXPLOSIVE	300
<i>Church Philip, Gould Peter, Williamson David</i>	
NUMERICAL SIMULATIONS OF LASER-DRIVEN CRATERING EXPERIMENTS INTO POROUS GRAPHITE	306
<i>Aubert Bertrand, Hebert David, Rullier Jean-Luc, Chevalier Jean-Marc, Berthe Laurent, Brambrink Erik, Lescoute Emilien, Videau Laurent, Franzkowiak Jean-Eloi, Jodar Benjamin, Loison Didier, Nivard Mariette</i>	
DESIGN AND OPTIMIZATION OF DYNAMIC TEST SAMPLES FOR DUCTILE DAMAGE ASSESSMENT	311
<i>Sasso Marco, Mancini Edoardo, Cortese Luca, Nalli Filippo</i>	
ENERGY ABSORBING PROPERTIES OF A STEEL PROFILE MADE OF DUAL PHASE STEEL	316
<i>Mocko Wojciech, Brodecki Adam</i>	
EVOLUTION OF PENETRATION MECHANISM INDUCED BY STRAIN RATE EFFECT	320
<i>Li Gan, Song Chunming, Wang Mingyang</i>	
ANALYSIS OF THE LOCALIZATION PROCESS LEADING TO FRAGMENTATION OF DYNAMICALLY EXPANDED RINGS	324
<i>El Maï Skander, Mercier Sébastien, Molinari Alain</i>	
MODELING OF A DYNAMIC THERMAL LOAD GENERATED BY A 7TEV PROTON BEAM IMPACTING THE BEAM DUMP OF THE LARGE HADRON COLLIDER AT CERN	330
<i>Polzin Tobias, Peillo-Marccone Antonio, Bianchi Laura, Calviani Marco, Frankl Matthias, Guinchard Michael, Lechner Anton</i>	

NUMERICAL ANALYSIS OF DAMAGE KINETICS IN ALUMINIUM UNDER AXISYMMETRIC LOADING	336
<i>Tyupanova Olga, Nadezhin Sergey, Duday Pavel, Ivanovsky Andrey</i>	
TEMPERATURE DEPENDENT CRACK INITIATION OF 42CRMO4 STEEL AT HIGH LOADING RATES	341
<i>Henschel Sebastian, Kruger Lutz</i>	
DYNAMIC CRACK ARREST CAPABILITY OF SOME METALLIC ALLOYS AND POLYMERS	347
<i>Manar Gunasilan, Mat Jali Norazrina, Longère Patrice</i>	
HYBRID COMPOSITE SANDWICH PANELS UNDER BLAST AND IMPACT LOADING	351
<i>Rolfe Emily, Arora Hari, Hooper Paul A., Dear John P.</i>	
DEVELOPMENT OF “DROPKINSON” BAR FOR INTERMEDIATE STRAIN-RATE TESTING	356
<i>Song Bo, Sanborn Brett, Heister Jack, Everett Randy, Martinez Thomas, Groves Gary, Johnson Evan, Kenney Dennis, Knight Marlene, Spletzer Matthew</i>	
BEHAVIOUR OF UHPFRCS IN COMPRESSION UNDER HIGH STRESS-RATES	361
<i>Cadoni Ezio, Dotta Matteo, Forni Daniele</i>	
COMPRESSION, TENSION AND SHEAR TESTING OF FIBROUS COMPOSITE WITH THE SPLIT HOPKINSON BAR TECHNIQUE	366
<i>Gilat Amos, Seidt Jeremy D.</i>	
POISSON’S RATIO INDUCED RADIAL INERTIA CONFINEMENT DURING DYNAMIC COMPRESSION OF HYPERELASTIC FOAMS	371
<i>Sanborn Brett, Song Bo, Lu Wei-Yang</i>	
THE MECHANICAL BEHAVIOURS OF THE TI-10V-2FE-3AL ALLOY UNDER THE HIGH-TEMPERATURE AND DYNAMIC LOADING CONDITIONS	376
<i>Li Lintao, Zhang Xiaoying, Li Zhiqiang, Wang Zhihua, Ma Wei</i>	
EXPERIMENTAL STUDY OF THE MECHANICAL STRENGTH AND THE FAILURE OF MULTI-SHEET, MULTI-MATERIAL SPOT-WELDED ASSEMBLIES UNDER PURE AND COMBINED LOADING CONDITIONS	382
<i>Chtourou Rim, Chaari Fahmi, Haugou Gregory, Leconte Nicolas, Markiewicz Eric, Zouari Bassem</i>	
THE MECHANICAL RESPONSE OF PRE-SHOCKED ALUMINIUM SINGLE CRYSTALS	387
<i>Millett Jeremy, Gray George. III, Whiteman Glenn, Fensin Saryu., Owen Gareth</i>	
HIGH STRAIN-RATE COMPRESSIVE PROPERTIES OF CARBON/EPOXY LAMINATED COMPOSITES – EFFECTS OF LOADING DIRECTION AND TEMPERATURE	392
<i>Nakai Kenji, Fukushima Tsubasa, Yokoyama Takashi, Arakawa Kazuo</i>	
HIGH STRAIN RATE BEHAVIOUR OF FIBER REINFORCED CONCRETE	398
<i>Popovic Miloslav, Buchar Jaroslav, Drdlová Martina</i>	
VARIATIONS IN HARDNESS WITH POSITION IN ONE DIMENSIONALLY RECOVERED SHOCK LOADED METALS	404
<i>Whiteman G., Higgins D.L., Pang B., Millett J.C.F., Chiu Y-L., Jones I.P.</i>	
DYNAMIC BEHAVIOUR OF AN EARTHEN MATERIAL UNDER DIFFERENT IMPACT LOADING CONDITIONS	409
<i>Fenu Luigi, Aymerich Francesco, Francesconi Luca, Forni Daniele, Tesio Nicoletta, Cadoni Ezio</i>	
DYNAMIC TENSILE BEHAVIOUR OF STRAIN-HARDENING CEMENT-BASED COMPOSITES (SHCC)	415
<i>Curosu Iurie, Mechtcherine Viktor, Forni Daniele, Cadoni Ezio</i>	
HIGH STRAIN RATE COMPACTION OF POROUS MATERIALS – EXPERIMENTS AND MODELLING	421
<i>Cotton Matthew, Maw John</i>	
THE SHEAR RESPONSE OF BERYLLIUM AS A FUNCTION OF TEMPERATURE AND STRAIN RATE	426
<i>Cady Carl M., Liu Cheng, Trujillo Carl P., Brown Donald W., Gray III George T.</i>	
INTRALAMINAR FRACTURE TOUGHNESS OF UD GLASS FIBER COMPOSITE UNDER HIGH RATE FIBER TENSION AND FIBER COMPRESSION LOADING	432
<i>Kuhn Peter, Koerber Hannes, Catalanotti Giuseppe, Xavier José</i>	
EXPERIMENTAL CHARACTERIZATION OF DYNAMIC DEFORMATION BEHAVIOUR FOR SCM440 STEEL AT HIGH STRAIN RATES	438
<i>Lee Keunho, Lee Yerim, Woo Sanghyun, Lee Changsoo, Park Leeju</i>	
LOW ENERGY SHOCK RESPONSE OF A MELT CAST SIMULANT MATERIAL	443
<i>Drouet David, Bailly Patrice, Pavier Julien, Eches Nicolas, Hanus Jean-Luc</i>	
CHALLENGES RELATED TO TESTING OF COMPOSITE MATERIALS AT HIGH STRAIN RATES USING THE SPLIT HOPKINSON BAR TECHNIQUE	449
<i>Elmahdy Ahmed, Verleysen Patricia</i>	

RATE-DEPENDENT DUCTILE FRACTURE UNDER PLANE STRAIN TENSION: EXPERIMENTS AND SIMULATIONS	455
<i>Grolleau Vincent, Lafilé Vincent, Roth Christian C., Galpin Bertrand, Mahéo Laurent, Mohr Dirk</i>	
HIGH RATE LOADING OF HYBRID JOINTS IN A SPLIT HOPKINSON TENSION BAR	461
<i>Ledford Noah, Paul Hanna, Isakov Matti, Hiermaier Stefan</i>	
VARIABILITY OF THE EFFECTIVE STRAIN RATE IN SHTB TESTS AND RELATED EFFECTS ON THE DYNAMIC STRESS AMPLIFICATION	467
<i>Mirone Giuseppe, Barbagallo Raffaele</i>	
COMPARISON OF STRESS-INDUCED MARTENSITIC TRANSFORMATION UNDER TENSION AND COMPRESSION IN FE-28MN-6SI-CR SHAPE MEMORY ALLOY	473
<i>Cao Bo, Iwamoto Takeshi</i>	
STRAIN RATE JUMP TESTS ON AN AUSTENITIC STAINLESS STEEL WITH A MODIFIED TENSILE HOPKINSON SPLIT BAR	478
<i>Vazquez Fernandez Naiara I., Isakov Matti, Hokka Mikko, Kuokkala Veli-Tapani</i>	
TOWARDS STANDARDISING SHPB TESTING - A ROUND ROBIN EXERCISE	484
<i>Govender Reuben, Kariem Muhammad, Ruan Dong, Santiago Rafael, Wei Shu Dong, Alves Marcilio, Lu Guoxing, Nurick Gerald, Langdon Genevieve</i>	
DYNAMIC BEHAVIOUR OF AL-MG ALUMINUM ALLOY AT A WIDE RANGE OF STRAIN RATES	490
<i>Kami Tsuyoshi, Yamada Hiroyuki, Ogasawara Nagahisa</i>	
ULTRASONIC DETECTION OF SPALL DAMAGE DISTRIBUTION SUBJECTED TO PLATE IMPACT TEST WITH DIFFERENT THICKNESS	495
<i>Nishimura Naoya, Ito Toshihiro, Watanabe Takeru</i>	
NONLINEAR SPATIAL LOCALIZED STRAIN WAVES	500
<i>Erofeev Vladimir I., Gerasimov Sergey I., Malkhanov Alexey O.</i>	
DYNAMIC COMPRESSIVE BEHAVIOUR OF CLOSED-CELL FOAM MATERIALS USING LOAD-MEASURING APPARATUS WITH OPPOSITE LOAD-CELLS	505
<i>Yamada Hiroyuki, Tateyama Kohei, Ogasawara Nagahisa, Watanabe Keiko</i>	
IMAGE-BASED HIGH STRAIN-RATE TESTING FOR THE CHARACTERIZATION OF VISCOPLASTICITY	509
<i>Bouda Pascal, Langrand Bertrand, Notta-Cuvier Delphine, Markiewicz Eric, Pierron Fabrice</i>	
HYPERVELOCITY IMPACT PHENOMENA OF LPSO-MAGNESIUM ALLOYS	512
<i>Nishida Masahiro, Kodama Fumiya, Hayashi Koichi, Akahoshi Yasuhiro, Hokamoto Kazuyuki, Kawamura Yoshihito</i>	
EXPERIMENTAL TECHNIQUE FOR DYNAMIC FRAGMENTATION OF LIQUID-DRIVING EXPANDING RING	515
<i>Zhang Jia, Zheng Yuxuan, Zhou Fenghua, Liu Jun</i>	
DYNAMIC PROPERTIES OF STAINLESS STEEL UNDER DIRECT TENSION LOADING USING A SIMPLE GAS GUN	520
<i>Bragov Anatoly, Konstantinov Alexander, Kruszka Leopold, Lomunov Andrey, Filippov Andrey</i>	
DYNAMIC TENSION OF ALUMINUM ALLOY AMG-6 IN A FACILITY OF SPLIT HOPKINSON BAR	525
<i>Pushkov Victor, Yurlov Alexey, Leonov Valery, Tsibikov Andrew, Naydanova Tatiana</i>	
STRAIN RATE AND THERMAL SOFTENING EFFECTS IN SHEAR TESTING OF AA7075-T6 SHEET	528
<i>Rahmaan Taamjeed, Zhou Ping, Butcher Cliff, Worswick Michael J.</i>	
EXPERIMENTAL INVESTIGATION OF LOW VELOCITY IMPACT RESPONSE OF REINFORCED CONCRETE BEAMS WITHOUT STIRRUPS	534
<i>Fu Yingqian, Yu Xinlu, Dong Xinlong, Zhou Fenghua</i>	
NUMERICAL ANALYSIS OF A TESTING TECHNIQUE TO INVESTIGATE THE DYNAMIC CRACK PROPAGATION IN ARMOUR CERAMIC	539
<i>Duplan Yannick, Forquin Pascal, Lukic Bratislav, Saletti Dominique</i>	
EXPERIMENTAL INVESTIGATION OF THE IMPACT RESPONSE OF NOVEL STEEL/BIOCOMPOSITE HYBRID MATERIALS	543
<i>Ramakrishnan KarthikRam, Hokka Mikko, Sarlin Essi, Kanerva Mikko, Kouhia Reijo, Kuokkala Veli-Tapani</i>	
COMBINED SHEAR/TENSION TESTING OF FIBRE COMPOSITES AT HIGH STRAIN RATES USING AN IMAGE-BASED INERTIAL IMPACT TEST	549
<i>Fletcher Lloyd, Van-Bliitterswyk Jared, Pierron Fabrice</i>	
AN IMAGE-BASED IMPACT TEST FOR THE HIGH STRAIN RATE TENSILE PROPERTIES OF BRITTLE MATERIALS	554
<i>Fletcher Lloyd, Pierron Fabrice</i>	

EXPERIMENTAL STUDY OF THE DYNAMIC BEHAVIOUR OF HIGH PERFORMANCE CONCRETE (HPC) UNDER TENSILE LOADING	559
<i>Lukic Bratislav, Saletti Dominique, Forquin Pascal</i>	
EFFECT OF STRAIN RATE ON COMPRESSIVE BEHAVIOUR OF SILICONE RUBBER	563
<i>Tateyama Kohei, Yamada Hiroyuki, Ogasawara Nagahisa</i>	
TESTING OF AUXETIC MATERIALS USING HOPKINSON BAR AND DIGITAL IMAGE CORRELATION	567
<i>Fíla Tomáš, Zlámál Petr, Falta Jan, Doktor Tomáš, Koudelka Petr, Kytýr Daniel, Adorna Marcel, Luksch Jutta, NeuhäuserovTomá Michaela, Valach Jaroslav, Jiroušek Ondrej</i>	
CHARACTERISATION OF THE HIGH STRAIN RATE BEHAVIOUR OF TUBULAR MATERIALS	573
<i>Caisso Camille, Jacques Nicolas, El Malki Alaoui Aboulghit, Fresnel Harold, Demmouche Younes</i>	
DYNAMIC FRACTURE OF A DUAL PHASE AUTOMOTIVE STEEL	579
<i>Chandran Sarath, Verleysen Patricia, Lian Junhe, Liu Wenqi, Münstermann Sebastian</i>	
DYNAMIC PROPERTIES OF REACTOR STEELS KH16N15M3T1 AND KH13V2 UNDER SHOCK-WAVE LOADING OF SUBMICROSECOND SCALE	585
<i>Mokrushin Sergey S., Mayorova Anna S., Malyugina Svetlana N., Pavlenko Alexander V., Sagaradze Victor V., Kataeva Natalya V., Volkova Elena G.</i>	
A NOVEL EXPERIMENTAL METHOD TO CHARACTERISE THE SHEAR STRENGTH OF CONCRETE BASED ON PRE-STRESSED SAMPLES. A COMPARISON WITH EXISTING TECHNIQUES	589
<i>Forquin Pascal, Abdul-Rahman Reem, Saletti Dominique</i>	
A TESTING TECHNIQUE TO INVESTIGATE THE TENSILE BEHAVIOR OF PROPELLANT REPRESENTATIVE MATERIAL	593
<i>Viant Thibaut, Forquin Pascal, Saletti Dominique, Imbault Didier, Brunet Pierre, Moriceau Julien, Poirey Gilles</i>	
INERTIAL IMPACT TESTS TO IDENTIFY THE PLASTIC PROPERTIES OF METALS	595
<i>Davis Frances, Fletcher Lloyd, Pierron Fabrice</i>	
A WEDGE-DCB TEST METHODOLOGY TO CHARACTERISE HIGH RATE MODE-I INTERLAMINAR FRACTURE PROPERTIES OF FIBRE COMPOSITES	600
<i>Ponnusami Sathiskumar A., Cui Hao, Erice Borja, Pathan Mehtab V., Petrinic Nik</i>	
EXPERIMENTAL CHARACTERISATION OF RATE-DEPENDENT COMPRESSION BEHAVIOUR OF FIBRE REINFORCED COMPOSITES	605
<i>Pathan Mehtab V., Erice Borja, Ponnusami Sathiskumar A., Petrinic Nik</i>	
NICKEL-TITANIUM PSEUDO-ELASTIC BEHAVIOR UNDER EQUI-BIAXIAL DYNAMIC LOADING CONDITIONS	611
<i>Quillery Pierre, Durand Bastien, Hubert Olivier, Zhao Han</i>	
DYNAMIC PERFORATION AND COMPRESSION TESTS OF PMMA FOR A WIDE RANGE OF TEMPERATURES - EXPERIMENTAL AND PRELIMINARY NUMERICAL ANALYSIS	616
<i>Klosak Maciej, Rusinek Alexis, Jankowiak Tomasz, Qoubba Zakaria El, Matadi Boumbimba Rodrigue, Bendarma Amine</i>	
EXPERIMENT AND FINITE ELEMENT ANALYSIS OF U-PROFILE SUBJECTED TO DYNAMIC LOADING	622
<i>Rund Martin, Mašek Martin, Džugan Jan, Konopík Pavel, Janovec Jiří</i>	
CHARACTERIZATIONS OF DYNAMIC MATERIAL PROPERTIES ON COMPACT PULSED POWER GENERATOR CQ-4	628
<i>Wang Guiji, Luo Binqiang, Zhang Xuping, Cai Jintao, Chong Tao, Zhao Jianheng, Chen Xuemiao, Tan Fuli, Sun Chengwei, Liu Cangli, Wu Gang</i>	
RESEARCH ON PHASE TRANSITION AND STRENGTH UNDER RAMP COMPRESSION WITH GRADED DENSITY IMPACTOR	634
<i>Tan Ye, Li Xuemei, Yu Yuying, Jin Ke</i>	
EXPERIMENTAL STUDY ON COUNTERINTUITIVE BEHAVIOR OF THIN ALUMINIUM PLATES UNDER FREE AIRBLAST LOADING	637
<i>Xu Zixi, Liu Yan, Huang Fenglei</i>	
HIGH RATE CHARACTERIZATION OF THREE DP980 STEELS	643
<i>Zhumagulov Amir, Abedini Armin, Rahmaann Taamjeed, Imbert José, Butcher Clifford, Worswick Michael, Malcolm Skye, Dykeman Jim, Ezzat Hesham</i>	
DYNAMIC CHARACTERIZATION OF TUNGSTEN CARBIDE BEHAVIOUR AT VERY HIGH STRAIN-RATES	649
<i>Erzar Benjamin, Zinszner Jean-Luc</i>	
COMPRESSION BEHAVIOR AND ENERGY ABSORPTION CAPACITY OF WOVEN FLAX-EPOXY COMPOSITE UNDER VARIOUS STAIN RATES	653
<i>Hu Jianxing, Yin Sha, Xu Jun</i>	

EXPERIMENTAL METHODOLOGY FOR THE MEASUREMENT OF PLASTICITY ON METALS AT HIGH STRAIN-RATES.....	658
<i>Sancho Alexander, Cox Mike J., Aldrich-Smith Giles, Cartwright Tim, Davies Catrin M., Hooper Paul A., Dear John P.</i>	
A CONSTANT ACOUSTIC IMPEDANCE MOUNT FOR SHEET-TYPE SPECIMENS IN THE TENSILE SPLIT-HOPKINSON BAR.....	663
<i>Ganzenmüller Georg. C., Langhof Timo, Hiermaier Stefan</i>	
MEASUREMENT OF FRACTURE ENERGY OF CONCRETE AT HIGH STRAIN RATES.....	667
<i>Rey-de-Pedraza V., Gálvez F., Cendón Franco D.</i>	
STRAIN RATE INFLUENCE ON MECHANICAL BEHAVIOR OF A SINGLE WIRE ENTANGLED MATERIAL.....	673
<i>Guérard Sandra, Girardot Jérémie, Viot Philippe</i>	
STRUCTURE / PROPERTY (CONSTITUTIVE AND DYNAMIC STRENGTH / DAMAGE) BEHAVIOR OF ADDITIVELY MANUFACTURED TANTALUM.....	677
<i>Gray George.T. III, Livescu Veronica, Knapp Cameron, Jones David R., Fensin Saryu, Chen Shuh-Rong, Cady Carl M., Trujillo Carl P., Martinez Daniel</i>	
STUDY OF FLOW STRESS AND SPALL STRENGTH OF ADDITIVELY MANUFACTURED Ti-6-4 ALLOY.....	683
<i>Paris Vitaly, Cohen Amitai, Gudinetzky Eli, Hevroni Refael, Samuha Shmuel, Osovsky Shmuel, Tiferet Eitan, Yosef-Hai Arnon</i>	
COMPARISON OF DYNAMIC TENSILE EXTRUSION BEHAVIOUR OF WCU COMPOSITES MADE BY DIFFERENT PROCESSES.....	689
<i>Park Leeju, Woo Sanghyun, Lee Yerim, Lee Keunho, Sun Yi Young</i>	
MICROSTRUCTURE BASED FAILURE CRITERION FOR DUCTILE MATERIALS.....	693
<i>Fensin Saryu, Gray George III, Bourne Neil, Hixson Robert</i>	
STATIC AND DYNAMIC BEHAVIOUR OF ECAPED COPPER ALLOY.....	698
<i>Lee Yerim, Lee Keunho, Woo Sanghyun, Lee Changsoo, Park Leeju</i>	
DEFORMATION MECHANISMS AND MICROPLASTICITY OF AUSTENITIC TRIP/TWIP STEEL UNDER FLYER PLATE IMPACT.....	702
<i>Eckner Ralf, Krüger Lutz, Motylenko Mykhaylo, Savinykh Andrey S., Razorenov Sergey V., Garkushin Gennady V.</i>	
A NOVEL METHOD FOR SEVERE PLASTIC DEFORMATION AT HIGH STRAIN RATE.....	708
<i>Lanjewar Harishchandra, Kestens Leo, Verleysen Patricia</i>	
EFFECTS OF MICROSTRUCTURE ON THE DYNAMIC STRAIN AGING OF FERRITICPEARLITIC STEELS AT HIGH STRAIN RATES.....	713
<i>Mardoukhi Ahmad, Rämö Jari, Vuoristo Taina, Roth Amandine, Hokka Mikko, Kuokkala Veli-Tapani</i>	
DYNAMIC DEFORMATION BEHAVIOUR AND DISLOCATION SUBSTRUCTURE OF AZ80 MAGNESIUM ALLOY OVER A WIDE RANGE OF TEMPERATURES.....	719
<i>Lee Woei-Shyan, Chou Cheng-Wen</i>	
DYNAMIC DEFORMATION EVOLUTION OF THE ADIABATIC SHEAR BANDS IN ZIRCONIUM ALLOY FORMED AT A STRAIN RATE OF ABOUT 2300 S⁻¹.....	723
<i>Zou Dongli, Xiao Dawu, Lu Chao, He Lifeng, Zhao Yawen</i>	
INVESTIGATING THE DYNAMIC TENSILE RESPONSE OF LEAN DUPLEX STAINLESS STEEL AND THE EFFECTS OF RADIAL WAVES USING THE RECOVERED PLAT-IMPACT EXPERIMENT.....	727
<i>Ameri Ali A.H., Brown Andrew D., Quadir Zakaria, Hazell Paul J., Logos Con, Escobedo-Diaz Juan P.</i>	
PROBE EMBRYONIC DAMAGE EVOLUTION IN BULK METALLIC GLASSES UNDER PLATE-IMPACT LOADING.....	733
<i>Ling Zhong, Huang Xin, Dai Lanhong</i>	
MECHANICAL PROPERTIES OF HIGH-DENSITY TRIP STEEL HONEYCOMB STRUCTURES WITH VARYING CELL PROFILES UNDER DIFFERENT LOADING CONDITIONS.....	739
<i>Baumgart Christine, Weigelt Christian, Aneziris Christos G., Krüger Lutz</i>	
EFFECT OF STRAIN RATE ON THE HYDROGEN EMBRITTLEMENT OF A DP STEEL.....	745
<i>Depover Tom, Elmahdy Ahmed, Vercruyssen Florian, Verleysen Patricia, Verbeken Kim</i>	
MODELING DYNAMIC DEFORMATION AND FAILURE OF THIN-WALLED STRUCTURES UNDER EXPLOSIVE LOADING.....	751
<i>Volkov Ivan, Igumnov Leonid, Litvinchuk Svetlana, Vorobtsov Igor</i>	
STATIC AND DYNAMIC RESPONSE OF ULTRA-FAST ANNEALED ADVANCED HIGH STRENGTH STEELS.....	757
<i>Vercruyssen Florian, Castro Cerda Felipe M., Petrov Roumen, Verleysen Patricia</i>	
STRAIN RATE EFFECT ON THE COMPRESSIVE BEHAVIOUR OF REINFORCED CORK AGGLOMERATES.....	763
<i>Le Barbenchon Louise, Girardot Jérémie, Kopp Jean-Benoît, Viot Philippe</i>	

THE MECHANICAL RESPONSE OF UFG AND NANOSTRUCTURED MICROALLOYED STEELS SUBJECTED TO DYNAMIC LOADING CONDITIONS	769
<i>Bloniarz Remigiusz, Majta Janusz, Trujillo Carl P., Cerreta Ellen K.</i>	
IN-SITU EXPERIMENTS TO CAPTURE THE EVOLUTION OF MICROSTRUCTURE DURING PHASE TRANSFORMATION OF TITANIUM UNDER DYNAMIC LOADING	773
<i>Morrow Benjamin M., Jones David R., Rigg Paulo A., Gray George T. III, Cerreta Ellen K.</i>	
STRESS AND STRAIN RATE EFFECTS ON INCIPIENT SPALL IN TANTALUM	778
<i>Jones David R., Fensin Saryu J., Trujillo Carl P., Martinez Daniel T., Gray George T. III</i>	
INCIPIENCE AND DEVELOPMENT OF SPALL FRACTURE IN 30KHGSA STEEL, $\alpha \leftrightarrow \epsilon$ TRANSFORMATION, SPALL FRACTURE AND DAMAGE RECOVERY	784
<i>Malyugina Svetlana, Mokrushin Sergey, Mayorova Anna, Kazakov Dmitry, Kozelkov Oleg, Pavlenko Alexander, Belyaev Dmitry</i>	
ANALYSIS OF DYNAMIC PLASTIC DEFORMATION PROCESS ON AN ELECTROLYTIC TOUGH - PITCH COPPER (CU-ETP): FROM MATERIAL CHARACTERIZATION TO MODELS IMPROVEMENT	790
<i>Mespoulet Jérôme, Beucia Bermene, Tingaud David, Hereil Pierre-Louis, Couque Hervé, Dirras Guy</i>	
INVESTIGATION OF SPALLING DAMAGE IN ULTRA-HIGH PERFORMANCE CONCRETE THROUGH X-RAY COMPUTED TOMOGRAPHY	796
<i>Celeste Blasone Maria, Saletti Dominique, Andò Edward, Baroth Julien, Forquin Pascal</i>	
STRUCTURE OF U-ZR-MO ALLOY SHELL AFTER EXPLOSIVE LOADING	800
<i>Belyaev Dmitry, Aleksandrov Alexey, Zuyev Yuri, Kozlov Eugene, Svyatov Igor, Levi Catherine</i>	
ELASTIC BEHAVIOR OF ZIRCONIA UNDER RAMP COMPRESSION	806
<i>Luo Binqiang, Mo Jianjun, Wang Guiji, Tan Fuli, Zhao Jianheng, Sun Chengwei</i>	
SHOCK-INDUCED AMORPHIZATION IN COVALENTLY BONDED SOLIDS	808
<i>Zhao Shiteng, Kad Bimal, Hahn Eric, Chen Laura, Opachi Yekaterina., More Karren, Remington Bruce, Wehrenberg Christopher, LaSalvia Jerry, Yang Wen, Quan Haocheng, Meyers Marc</i>	
SHEAR LOCALIZATION OF FCC HIGH-ENTROPY ALLOYS	812
<i>Meyers Marc A., Li Zezhou, Zhao Shiteng, Wang Bingfeng, Liu Yong, Liaw Peter K.</i>	
SHOCK-INDUCED MARTENSITE PHASE TRANSFORMATION AND ITS EFFECTS OF METASTABLE NEAR β TI-5553 TITANIUM ALLOY	815
<i>Wang Lin, Liu Anjin, Dai Huaxiang, Xu Feng, Min Xinhua</i>	
ENERGY ABSORPTION DUE TO OBLIQUE IMPACT CRUSHING OF THIN-WALLED TUBES	819
<i>Umeda Tsutomu, Mimura Koji</i>	
MECHANICAL PROPERTIES AND STRAIN RATE SENSITIVITY OF 3D LASERDEPOSITED TI-6AL-4V ALLOY	825
<i>Woo Sanghyun, Lee Yerim, Park Leeju</i>	
RESPONSE OF UHPRCS IN TENSION UNDER HIGH STRESS RATE	829
<i>Dobruský Svatopluk, Forni Daniele, Cadoni Ezio</i>	
EXPERIMENTAL CHARACTERIZATION OF B500A AND RB500W BUILDING STEELS IN COMPRESSION AND IN TENSION	835
<i>Kruszka Leopold, Janiszewski Jacek</i>	
STUDY ON THE DYNAMIC PROPERTIES OF AM-SLM ALSH10MG ALLOY USING THE SPLIT HOPKINSON PRESSURE BAR (SHPB) TECHNIQUE	838
<i>Nurel Bar, Nahmany Moshe, Stern Adin, Frage Nahum, Sadot Oren</i>	
IMPACT TENSILE PROPERTIES OF NOTCHED TITANIUM ALLOY BOLT FOR FAIRING SEPARATION OF LAUNCH VEHICLE	843
<i>Shimanuki Hiroto, Yamada Hiroyuki, Kami Tsuyoshi, Yamasaki Yoshihiro, Ikaida Hiroshi, Kamita Toru, Amakawa Hiroaki, Nishimoto Miki, Kobayashi Hidetoshi</i>	
ADDITIVELY MANUFACTURED PENETRATING WARHEADS	847
<i>Limido Jérôme, Deconinck Paul, Beaucamp Aurélien, Paintendre Frédéric, Hereil Pierre-Louis</i>	
HIGH-SPEED IMPACT EXPERIMENT FOR EVALUATION OF MAGNETORHEOLOGICAL FLUID'S SHOCK-ABSORPTION PERFORMANCE	853
<i>Mitani Yuya, Yano Takahiro, Hagi Takuyoh, Watanabe Keiko, Fukudome Koji</i>	
MODEL OF SEGMENTATION OF ROCKET FAIRINGS DUE TO THE ACTION OF A CUMULATIVE CHARGE	858
<i>Chernobryvko Marina, Avramov Konstantin, Uspensky Boris, Tonkonogenko Anatoly, Kruszka Leopold</i>	
CONNECTIONS BETWEEN STEEL AND ALUMINIUM USING ADHESIVE BONDING COMBINED WITH SELF-PIERCING RIVETING	861
<i>Reil Matthias, Morin David, Langseth Magnus, Knoll Octavian</i>	
TIME TEMPERATURE EQUIVALENCE FOR A MINERAL FILLED POLYMER FOR AUTOMOTIVE APPLICATIONS	866
<i>Dorleans Vincent, Lauro Franck, Delille Rémi, Treutenaere Sylvain, Notta-Cuvier Delphine, Bennani Bruno, Haugou Grégory, Bourel Benjamin, Michau Eric, Thoby Jean-David</i>	

TEMPERATURE AND STRAIN RATE DEPENDENT MECHANICAL RESPONSE OF METCO 601 ALUMINIUM-POLYESTER ABRADABLE SEAL COATING	871
<i>Pellegrino Antonio, Maria Jesus Perez-Martin, Dragnevski Kalin, Zumpano Giuseppe, Petrinic Nik</i>	
FIBER REINFORCED MORTARS BASED ON FREE PORTLAND-CSA BINDERS UNDER HIGH STRESS RATE	876
<i>Coppola Luigi, Coffetti Denny, Crotti Elena, Forni Daniele, Cadoni Ezio</i>	
IMAGE-BASED HIGH STRAIN RATE TESTING OF ORTHOPAEDIC BONE CEMENT.....	881
<i>Fletcher Lloyd, Regal Xavier, Seghir Rian, Pierron Fabrice, Browne Martin</i>	
THE PERFORMANCE OF ARMOUR STEELS WITH PRE-LAYERS AGAINST FRAGMENT SIMULATING PROJECTILES.....	886
<i>van der Wal Rogier, Carton Erik, Hilvers Frits</i>	
Author Index	