

MULTIPHYSICS 2017

14-15 DEC 2017

BEIJING, CHINA

WWW.MULTIPHYSICS.ORG

FINAL PROGRAM

Thursday 14 December 2017

09:00 – 09:30 Registration

09:30 – 09:45 Conference Opening

Opening of The 12th International Conference of Multiphysics 2017

Pengwan Chen, Dean, Beijing Institute of Technology, China

09:45 – 11:00 Session 1.1

Keynote Address & Synopsis

Chair: Moji Moatamedi, The International Society of Multiphysics

Design Evolution of Large Airliners

Thurai Rahulan, Senior Lecturer in Aeronautics, University of Salford, United Kingdom

Synopsis Part 1: The International Journal of Multiphysics

Hassan Khawaja, Editorial Manager of The International Journal of Multiphysics

Synopsis Part 2: The International Conference of Multiphysics 2018

Jakub Roemer, AGH University of Science and Technology, Poland

11:00-11:30 Tea/Coffee Break & Group Photograph

11:30-13:00 Session 1.2

Industrial Applications

Chair: P Chen, Beijing Institute of Technology, China

Invited Speaker: Trends in Advanced Manufacturing

Athanasios G. Mamalis

Project Center for Nanotechnology and Advanced Engineering, NCSR "Demokritos". Greece

Experiments and Simulations on loads of Close-Proximity Underwater Explosion

Fengjiang An, Xu Li, Jinhe Li, Cheng Wu

School of Mechatronical Engineering, Beijing Institute of Technology, China

Experimental study on the Gas Foil Bearings air cooling based thermal management method

Jakub Roemer, Michal Lubieniecki, Adam Martowicz

AGH University of Science and Technology, Poland

Analysis of stresses and surface topology of dynamically agitated fluids

Daniel Brunner^(a), Mirjam Clemens^(b), Fabian Sager^(b), Heike Cremer^(b), Gernot Boiger^(a)

a: ICP Institute of Computational Physics, School of Engineering, Zurich University of Applied Sciences

b: F. Hoffmann-La Roche Ltd

13:00-14:00 Lunch

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Session 1.3

Advanced Simulation Techniques

Chair: B Alzahabi, Al Ghurair University, UAE

Invited Speaker: Dual-Horizon Peridynamics

Timon Rabczuk^(a), Huilong Ren^(a), Xiaoying Zhuang^(b)

a. Bauhaus University Weimar, Institute of Structural Mechanics, Germany

b. University of Hannover, Institute of Continuum Mechanics, Hannover, Germany

Ozone layer Thickness Calculations Based on Atmospheric Radiative Transfer Modelling: A case study of radiation measurements from Tromsø, Norway (69.7 N, 18.9E)

Kåre Edvardsen

UiT-The Arctic University of Norway, Tromsø, Norway

Numerical simulation for soil surface explosion problem by SPH method

Yoshikazu HIGA^(a), Hirofumi IYAMA^(b), Ken SHIMOJIMA^(a), Osamu HIGA^(c) and Shigeru ITOH^(d)

a. Dept. Mech. Sys. Eng., Nat. Inst. Tech., Okinawa College

b. Dept. Mech. Intel. Sys. Eng., Nat. Inst. Tech., Kumamoto College

c. Sci. Tech. Div., Nat. Inst. Tech., Okinawa College

d. Emeritus Prof., Kumamoto Univ. & Nat. Inst. Tech., Okinawa College, Japan

Dynamic modeling of ionized oxygen distribution within powder coating pistols

Gernot Boiger

Zurich University of Applied Sciences, Switzerland

15:30-16:00

Tea / Coffee Break

16:00-17:30

Session 1.4

Posters

Numerical simulation led design of the planar shock recovery assembly

Tan Zhen, Chen Pengwan, Zhou Qiang

Beijing Institute of Technology, China

Behavior of Bubble Jetting and Loading on Air-backed Plate Subjected to Near-Field Underwater Explosion: Experiments and Simulations

Fengjiang An, Lihui Dai, Dongyu Xue, Yuxia Zhang

School of Mechatronics Engineering, Beijing Institute of Technology, China

Development of shock wave generating device using high-voltage pulsed discharge

Kazuki Tokeshi, Osamu Higa, Shoichi Tanifuji, Shigeru Itoh

National Institute of Technology, Okinawa College, Japan

Numerical Simulation on Structure Effects of Gas Explosions in Vessels

Chen Yan, Zhirong Wang, Chi Ma, Weidong Ma

College of Safety Science and Engineering, Nanjing Tech University, China

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Comparison of Cell Transferability in Shockwave Molded Replica Specimen

A. Takemoto^(a), S. Tanaka^(b), O. Higa^(a), A. Mori^(c), K. Hokamoto^(b), S. Itoh^(a,b)

a. National Institute of Technology, Okinawa College, Nago, Okinawa, Japan

b. Kumamoto University, Japan

c. Sojo University, Japan

Development of food processing equipment using underwater shock wave

Yudai Uezato, Ken Shimojima, Osamu Higa, Shigeru Itoh

National Institute of Technology, Okinawa College, Japan

Shock-induced phase transition of iron studied with phase field method

Guo Xianghua, Wang Zhaolong

School of Mechatronical Engineering, Beijing Institute of Technology, China

FSI of viscosity measuring mechanical resonators: theoretical and experimental analysis

Daniel Brunner^(a), Klaus Häusler^(b), Sunil Kumar^(b), Gernot Boiger^(a), Hassan Abbas Khawaja^(c), Moji Moatamedi^(c)

a. Zurich University of Applied Sciences, Switzerland

b. Rheonics GMBH, Switzerland

c. UiT-The Arctic University of Norway

Fluorescent Marking of Roads in High-North

H. Khawaja, B. Varughese, K. Edvardsen

UiT-The Arctic University of Norway

Detection of Cracks and Potholes in Roads using Infrared Thermography

T. Ahmad, H. Khawaja

UiT The Arctic University of Norway

Modelling and Simulation of the HDPE Pyrolysis Process

H. Eidesen, H. Khawaja, S Jackson

UiT The Arctic University of Norway

Detection, Identification and size distribution of micro-plastic particles

Bindu Sara Varughese, Kåre Edvardsen

UiT The Arctic University of Norway, Norway

An FEM-based AI approach to parameter identification for low vibration modes of HAWT composite rotor blades

N. Navadeh^(b), I.O. Gorshko^(b), Y.A. Zhuk^(b), A.S. Fallah^(c)

a. Imperial College London

b. Taras Shevchenko

c. Brunel University London

SPH simulation of annular jet formation and penetration associated with underwater explosion

Zhifan Zhang, Cheng Wang

State Key Lab of Explosion Science and Technology, Beijing Institute of Technology, China

Study of Grooved Warhead Structure on Performance of Warhead Fragment Distribution Pattern

JING Qingbo

Xi'an Modern Chemistry Research Institute, China

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An Improved Gurney Model to Predict Initial Velocity of Parallel-moving Rod-shaped Fragments

Xue Biao, Jing Qingbo

Xi'an Modern Chemistry Research Institute, China

Dynamic Response of a Double Cylindrical Shell under Internal Explosive Loading

Cai Ze, Long Renrong

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

The response characteristics of warhead fragment impact on shielded H6 explosive

Jun Peng, Baohui Yuan, Xingyun Sun, Qingbo Jing

Xi'an Modern Chemistry Research Institute, China

Simulation and Evaluation of Damage Effect of Ring Damage Unit to Kinetic Energy Interceptor

Shengao Wang, Maohua Du, Dengjian Fang

Naval University of Aeronautics, Naval University of Engineering, China

Effects of Crystal Morphology on Impact Sensitivity of LLM-105 Based Explosives

Yanqing Wu

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

Laser ignition and combustion mechanisms of magnesium single particles

Lu Sun, Shi Yan, Yachen Wu, Jinggu Cao, Jinlong Zhang

State Key Laboratory of Explosive Science and Technology, Beijing Institute of Technology, China

Mechanical and ignition of PBX explosives based on micro-cracking model

Yanqing Wu

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

Optimisation and application of Hall effect Sensor

Houaria Bourbaba, Kadri Syham

LPDS laboratory, Bechar University Algeria, Algeria

Large scale and high precision numerical simulation of explosion problem on the Sunway supercomputer platform

Haitao Zhao^(a), Cheng Wang^(b)

a. Laboratory of Parallel Software & Computational Science, Institute of Software, Chinese Academy of Sciences, Beijing, China

b. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, Beijing, China

19:30

Conference Banquette

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09:30-11:00

Session 2.1

Impact and Explosions

Chair: T Rahulan, University of Salford, United Kingdom

Invited Speaker: Advancement in Numerical Simulation Investigation on Explosion and Impact Problems

Cheng Wang

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

Effects of Micro-bubble on Underwater Shock Wave Generation using Spark Discharge

Osamu Higa, Kazuki Tokeshi, Shoichi Tanifuji, Shigeru Itoh

National Institute of Technology, Okinawa college, Japan

CFD Simulation on Study of Structural Effects of a Methane-Air Mixtures Explosion in Linked Vessels

Yaya Zhen, Zhirong Wang, Chen Yan, Fei Jiao

Jiangsu Key Laboratory of Urban and Industrial Safety, College of Safety Science and Engineering, Nanjing Tech University, China

Computational simulation and production of pressure vessels for food processing Using Underwater Shockwave

Ken Shimajima, Osamu Higa, Yoshikazu Higa, Shigeru Itoh

Okinawa College, Japan

11:00-11:30

Tea / Coffee Break

11:30 – 13:00

Session 2.2

Composite Modelling

Chair: G Boiger, ZHAW, Switzerland

Invited Speaker: Impact Testing and Modelling an E-Glass Fiber Reinforced Polymer Composite

Mustafa Güden, Kutlay Odacı, Alper Tasdemirci

Dynamic Testing and Modelling Laboratory, Mechanical engineering Department, İzmir Institute of Technology, Urla, Turkey

Numerical Simulation on Discarding Sabot of Hyper-velocity Projectile Perforating Laminated Pine Wood Target

Chu Yunlin^(a), Shen Chao^(b), LIU Liu^(c), Wu Wenyong^(a), PI Aiguo^(a),

a. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

b. Beijing HIWING Science and Technology Information Institute

c. Southern Sichuan Machinery

State-of-the-art techniques in crack detection and utilizing innovative materials for the repair and maintenance of roads

H Khawaja,

UiT The Arctic University of Norway, Tromsø, Norway

Dynamic mechanical property study of a typical CFRP laminate under high impact compressive loads

WU Wenyong^(a), LIU Liu^(b), CHU Yunlin^(a), PI Aiguo^(a),

a. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, Beijing 100081, China

b. Southern Sichuan Machinery

13:00-14:00

Lunch

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Session 2.3

Micromechanics and Materials

Chair: H Khawaja, UiT-The Arctic University of Norway

Invited Speaker: Synthesis and Densification of Heterogeneous Ultrafine and Nanostructured Materials by High Rate Energy Processes: Materials and Devices

Fernand D S Marquis

Department of Mechanical Engineering, San Diego State University, USA

Wider strain-rate dependent damage constitutive model for PBX explosive and its application in penetrating concrete target simulations

Yanqing Wu

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

Microjetting from a grooved Pb surface under supported and unsupported shock conditions

Jian-Li Shao^(a), Pei Wang^(b), Cheng Wang^(a)

a. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

b. Institute of Applied Physics and Computational Mathematics, Beijing 100094, China

High-rate squeezing process of bulk metallic glasses

Jitang Fan

State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

15:30-16:00

Tea / Coffee Break

16:00-17:30

Session 2.4

Development in Multiphysics

Chair: C Wang, Beijing Institute of Technology, China

Effects of Heat Loss at Walls on Flame Acceleration and Deflagration-to-Detonation Transition

Han Wenhui

Key Laboratory of Light-Duty Gas-Turbine, Institute of Engineering Thermophysics, Chinese Academy of Sciences, China

Investigation on Multi-Medium Flows and Explosions by Finite Difference Moment of Fluid Method

Hao Li, Tao Li, Cheng Wang

State Key Lab of Explosion Science and Technology, Beijing Institute of Technology Beijing, China

High resolution simulation of coal methane hybrid detonation

Xinzhuang Dong^(a), Cheng Wang^(b)

a. Chinese People's Armed Police Forces Academy, China

b. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China

Motional characteristic of underwater explosion bubble near circular hole of solid wall

Jian Xue, Cheng Wang

State Key Lab of Explosion Science and Technology, Beijing Institute of Technology, China

17:30

Close of Conference