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
Thursday 14 December 2017

14:00-15:30 Session 1.3
Advanced Simulation Techniques
Chair: B Alzahabi, Al Ghurair University, UAE

Invited Speaker: Dual-Horizon Peridynamics
Timon Rabczuk(a), Huilong Ren(b), 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(b), Osamu HIGA(b) and Shigeru ITOH(d)
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 Mechatrical Engineering, Beijing Institute of Technology, China

Development of shock wave generating device using high-voltage pulsed discharge
Kazuki Takeshi, 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
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(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(b), Hassan Abbas Khawaja(d), Mojil 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
b. Brunel University London

Study of Grooved Warhead Structure on Performance of Warhead Fragment Distribution Pattern
JING Qingbo
Xi’an Modern Chemistry Research Institute, China
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
Friday 15 December 2017

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

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 Wenyou(d), Pi Aiguo(e),
  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 Wenyou(a), LIU Liu(b), CHU Yunlin(c), PI Aiguo(d),
  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
Friday 15 December 2017

14:00-15:30 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(c)
1. State Key Laboratory of Explosion Science and Technology, Beijing Institute of Technology, China
2. 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 Wenhu
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)
1. Chinese People’s Armed Police Forces Academy, China
2. 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