

QIRT
Asia 2019

Tentative Program as of May 11, 2019

tentative

Monday, July 1, 2019

The Basic Course of Thermography (Associate Open Event)

10:55–11:00 **Opening Remarks**

Prof. Xavier Maldague, Laval University, Canada

11:00–12:30 **Basics of IR Thermography I**

Prof. Vladimir Vavilov, Tomsk Polytechnic University, Russia

12:30–14:00 **Lunch**

14:00–15:30 **Basics of IR Thermography II**

Prof. Xavier Maldague, Laval University, Canada

15:30–15:45 **Break**

15:45–16:45 **Thermography applied to thermophysical properties assessment / Thermography applied to buildings and cultural heritage**

Dr. Paolo Bison, CNR Padua, Italy

16:45–17:00 **Break**

17:00–18:00 **IR for inspection and/or thermal monitoring of infrastructures: scope of application, technical solutions and analysis methods**

Dr. Jean Dumoulin, Inria-Ifsttar Nantes, France

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Tuesday, July 2, 2019

Opening Ceremony

9:00–9:15 Prof. Xavier Maldague
Chair, The QIRT Steering Committee
Laval University, Canada

Prof. Kazuya Masu
President, Tokyo Institute of Technology

To be determined
President, Japanese Society for Non-Destructive Inspection

Plenary Lecture 1

9:15–10:15 **New imaging methods related to the mapping of in-plane thermal properties with active thermography**
Prof. Jean-Christophe Batsale, Arts et Métiers ParisTech, France

10:15–10:35 **Break**

Session 1

10:35–10:55 **[Keynote] Thermography on moving samples: recent developments for quantitative evaluation**

Arantza Mendioroz, University of the Basque Country, Spain

10:55–11:15 **[Keynote] Multispectral and multiscale infrared imaging for the study of heat and mass transfer in heterogeneous media**

Christophe Pradere, CNRS Bordeaux, France

11:15–11:30 **Micro-scale infrared thermography and its application to the electronic and bio-medical applications**

Junko Morikawa, Tokyo Institute of Technology, Japan

11:30–11:45 **New measurement method of thermal contact resistance by periodic heating method using lock-In thermography**

Takuya Ishizaki, Nagoya University, Japan

11:45–12:00 **Simultaneous measurement of temperature and flow fields around a small heated sphere in water using near-infrared absorption imaging method and particle tracking velocimetry**

Zhenlei Wang, Tokyo Metropolitan University, Japan

12:00–13:40 **Lunch**

Session 2

13:40–14:00 **[Keynote] Thermal wave imaging for NDT&E: methods, experiments and applications**

Junyan Liu, Harbin Institute of Technology, China

14:00–14:20 **[Keynote] Data fusion analysis based active thermography for SNR enhancement**

Wontae Kim, Kongju National University, Republic of Korea

14:20–14:40 **[Keynote] Artificial intelligence-based defect detection and classification using pulsed infrared thermography**

Yuxia Duan, Central South University, China

14:40–14:55 **New approach for layer thickness measurements using pulsed lock-in thermography**

Daniel Hoffmann, SKZ - German Plastics Center, Germany

14:55–15:10 **Detection of micro-cracks in metal elements by laser excited thermography**

Waldemar Swiderski, Military Institute of Armament Technology, Poland

15:10–15:30 **Break**

Tuesday, July 2, 2019 (Cont'd)

Session 3 (Poster)

- 15:30–16:30 **Use of a low-cost infrared sensor for educational purpose: statistical analysis of results obtained by students**
Massimiliano Zamengo, Tokyo Institute of Technology, Japan
- Using near infrared spectroscopy (NIRS) to measure cerebral and muscle tissues oxygenations after two-week altitude training**
Chen-Chan Wei, University of Taipei, Chinese Taiwan
- The application of using near-infrared spectroscopy (NIRS) to examine prefrontal cerebral blood distribution under hypoxic during strenuous exercise**
Shiow-Chwen Tsai, University of Taipei, Chinese Taiwan
- Mechanical bio-compatibility evaluation of stem design in total hip arthroplasty —a thermoelastic stress imaging study—**
Hironori Takehashi, University of Tsukuba, Japan
- High speed infrared thermography of freezing onion-skin cells**
Junko Morikawa, Tokyo Institute of Technology, Japan
- Thermal effect on dispersive spectroscopic infrared imaging of prostate cancer tissue**
Junko Morikawa, Tokyo Institute of Technology, Japan
- Separation of defects and background reflections using polarization theory for metal**
Soshi Suzuki, National Defense Academy, Japan
- Influence of cover depth towards quantitative size estimation of delaminations in external wall using passive infrared thermography**
Sin Yau Chiu, The Hong Kong Polytechnic University, China
- Effects of thermal contrast on size estimation of debonds in external wall's composite finishes via passive infrared thermography and a modified gradient algorithm**
Fung Chu Janet Sham, The Hong Kong Polytechnic University, China
- Reducing inspection time of active thermographic non-destructive testing based on thermal wave theory**
Masashi Ishikawa, Tokushima University, Japan
- Application of sparse non-negative matrix factorization in infrared non-destructive testing**
Bardia Yousefi, Laval University, Canada

Session 4

- 16:30–16:45 **Raising safety and productivity in underground mining via thermal imaging**
Sebastian Graszak, RWTH Aachen University, Germany
- 16:45–17:00 **A novel experimental setup for the stress test of geopolymer-based hydronic radiant panels using infrared thermography**
Giovanni Ferrarini, Consiglio Nazionale delle Ricerche, Istituto per le Tecnologie della Costruzione (CNR-ITC), Italy
- 17:00–17:15 **Detection of structural damage of infrared thermal image using computer vision**
Junghyun Im, Sungkyunkwan University, Republic of Korea
- 17:15–17:30 **Study and designed of an active infrared system for in-situ characterization of thermal resistance of building envelopes**
Jean Dumoulin, IFSTTAR & Inria, France
- 17:30–17:45 **Detection of back-surface crack based on temperature gap infrared thermography**
Yui Izumi, The University of Shiga Prefecture, Japan
- 17:45–19:00 **Reception**

Wednesday, July 3, 2019

Plenary Lecture 2

9:00–10:00 **Development of NDE techniques for the maintenance of long-span steel bridges based on infrared measurement**
Prof. Takahide Sakagami, Kobe University, Japan

10:00–10:20 **Break**

Session 5

10:20–10:40 **[Keynote] Thermography of asteroid Ryugu by Hayabusa2**
Tatsuaki Okada, Japan Aerospace Exploration Agency, Japan

10:40–11:00 **[Keynote] Robotized line-scan thermography combined with a new compressed sensing technology for investigating a painting on canvas artwork**
Xavier Maldague, Laval University, Canada

11:00–11:15 **Quantitative measurement of cast metal relics by pulsed thermal imaging**
Ning Tao, Capital Normal University, China

11:15–11:35 **[Keynote] Improved temperature measurement with thermal imagers**
Yoshiro Yamada, National Institute of Advanced Industrial Science and Technology, Japan

11:35–11:50 **Simultaneous determination of emissivity and temperature of titanium at high temperature**
Sumeet Kumar, Indian Institute of Technology Madras, India

11:50–12:05 **Novel free emissivity dual color physics methodology at CIRA in the infrared ranges: applicabilities study from low to high temperature**
Mario De Cesare, Italian Aerospace Research Center, Italy

12:05–13:40 **Lunch**

Session 6

13:40–14:00 **[Keynote] Virtual wave concept for 3D thermographic imaging**
Guenther Mayr, University of Applied Sciences Upper Austria, Josef Ressel Centre for Thermal NDE of Composites, Austria

14:00–14:15 **Numerical simulation on thermal and mechanical response of weak bonds in composite material**
Yew Li Hor, A*STAR Institute of High Performance Computing, Singapore

14:15–14:30 **Virtual wave concept for thermographic parameter estimation using modulated laser excitation**
Holger Plasser, University of Applied Sciences Upper Austria, Josef Ressel Centre for Thermal NDE of Composites, Austria

14:30–14:45 **1D and 3D defect characterization in IR thermographic NDT**
Arsenii Chulkov, Tomsk Polytechnic University, Russia

14:45–15:00 **Fiber orientation evaluation of CFRP/CFRTP based on 3-D thermal diffusivity measurement using lock-in thermography**
Hosei Nagano, Nagoya University, Japan

15:00–15:20 **Break**

Wednesday, July 3, 2019 (Cont'd)

Session 7 (Poster)

- 15:20–16:20 **Evaluation the fatigue crack closure in metal using eddy current pulsed thermograph**
Jianping Peng, Southwest Jiaotong University, China
- Temperature distribution in ultrafast chip-nanocalorimeters measured by micro-scale infrared thermography**
Junko Morikawa, Tokyo Institute of Technology, Japan
- Comparative study of pulsed IR thermography and ultrasonic testing to obtain a porosity mapping of oxide/oxide CMC specimens**
Ludovic Gaverina, ONERA, France
- Modeling of crack detecting in turbine blades using vibrothermography technique**
Abbasali - Saboktakin, University of Sistan and Baluchestan, Iran
- 3D reconstruction of gas leak image based on computed tomography processing of infrared data**
Masaki Uchida, Kobe University, Japan
- In situ thermo-imaging of local thermal non-equilibrium formed during microwave-enhanced heterogeneous catalytic reactions**
Shuntaro Tsubaki, Tokyo Institute of Technology, Japan
- Merit and important point of Near InfraRed (NIR) thermography**
Hideyuki Uemura, FLIR Systems Japan, Japan
- Fatigue limit estimation for FSW joints of aluminum alloy based on dissipated energy measurement**
Yusuke Tanaka, Kobe University, Japan
- Thermoelastic stress and dissipation energy measurement with optical-infrared synchronous measurement system**
Kazuki Kobayashi, Kobe University, Japan
- Observation of the temperature field dynamics by the thermospectroscopic imaging**
Meguya Ryu, Tokyo Institute of Technology, Japan
- Fatigue strength evaluation for CFRP Based on thermoelastic stress analysis**
Tasuku Yamaguchi, Kobe University, Japan

Session 8

- 16:20–16:35 **Near-infrared imaging and analysis of acid-base neutralization reactions**
Takato Uema, Tokyo Metropolitan University, Japan
- 16:35–16:50 **Application of polarized IR / NIR spectroscopic imaging for analysis of polymer products**
Yuta Hikima, Kyoto University, Japan
- 16:50–17:05 **Fatigue strength evaluation for aluminum alloy based on dissipated energy measurement**
Daiki Shiozawa, Kobe University, Japan
- 17:05–17:20 **Frequency dependence of estimated fatigue limit by lock-in infrared thermography for commercially pure Ti**
Takehiro Nojima, National Institute of Materials Science, Japan
- 17:20–17:35 **An analysis of experimental techniques for estimation of stored energy evolution in Grade2 titanium alloy samples under plastic deformation**
Oleg Anatolievich Plekhov, Institute of Continuous Media Mechanics of the UB RAS, Russia
- 17:35–17:50 **Temperature variation of rubber under uniaxial cyclic tension**
Tam Hoai Le, Tokyo Institute of Technology, Japan

Thursday, July 4, 2019

Plenary Lecture 3

9:00–10:00 **Composite Thermal Nondestructive Evaluation Research at NASA Langley**
Joseph N. Zalameda, NASA Langley Research Center, USA

10:00–10:20 **Break**

Session 9

10:20–10:40 **[Keynote] Advances in uncooled infrared focal plane array technology**
Masafumi Kimata, Ritsumeikan University, Japan

10:40–11:00 **[Keynote] Infrared vision system for spectral monitoring of dynamic phenomena at over 1000 fps: Application to combustion**
Marija Strojnik, Optics Research Center, Mexico

11:00–11:20 **[Keynote] Induction thermography — a non-destructive testing method**
Beate Oswald-Tranta, University of Leoben, Austria

11:20–11:40 **[Keynote] Numerical and experimental investigation of eddy current thermography technique on metallic samples**

Ilham Mukriz B. Zainal Abidin, Malaysian Nuclear Agency, Malaysia

11:40–11:55 *Visualization applications of the infrared image by the high-speed infrared thermography*
Tatsuya Yaoita, Ken Automation, Japan

11:55–12:10 **Binning for infrared camera series ImageIR**
Sven-A. Wode, InfraTec GmbH Infrarotsensorik und Messtechnik, Germany

12:10–12:25 **Visible and thermal camera system for 360-degree dynamic panorama**
Thapanapong Rukkanchanunt, Tokyo Institute of Technology, Japan

12:25–13:00 **Lunch**

Excursion

13:00–17:00 Bus tour to Asakusa and Tokyo Skytree

Banquet

17:00–20:30 Banquet at Tsunamachi Mitsui Club

Friday, July 5, 2019

Session 10

- 9:00–9:15 **Bilateral comparison of forearm skin temperature during handgrip force exercise**
Ricardo Vardasca, Universidade do Porto, Portugal
- 9:15–9:30 **Feasibility study of laser lock-in thermography for micro-crack detection on dental tooth**
Chun Yong Andrew Ngo, Institute of Materials Research and Engineering, Singapore
- 9:30–9:45 **Diabetic foot monitoring using dynamic thermography and AI classifiers**
Ricardo Vardasca, Universidade do Porto, Portugal
- 9:45–10:00 **Structure of operating room to avoid perioperative complication**
Hisashi Usuki, Kagawa University, Japan

10:00–10:20 **Break**

Session 11

- 10:20–10:35 **Vacuum leak detection using infrared thermal imaging for detection of failed joints and structural integrity simulation and experimental study**
M. Menaka, Indra Gandhi Centre for Atomic Research, India
- 10:35–10:50 **Comparative study of moving train hot boxes pre-detection and axles counting by in-situ implementation of two infrared cameras**
Thibaud Toullier, IFSTTAR, Inria, France
- 10:50–11:05 **Detection and evaluation of degradation in electric wire connection using infrared thermography**
Kotaro Yamakoshi, Thermographers, Japan
- 11:05–11:20 **Thermography suitable for in-line use in metal processing**
Shuichi Ohkubo, Nippon Avionics, Japan
- 11:20–11:35 **Confocal temperature calibration for multispectral Infrared thermography and its application to polymer processing**
Junko Morikawa, Tokyo Institute of Technology, Japan
- 11:35–11:50 **Active thermography method for metallic plasma-facing components temperature measurements in the thermonuclear fusion devices**
Baurzhan Chektybayev, Semey State University named after Shakarim, & Branch Institute of Atomic Energy of National Nuclear Center of Republic of Kazakhstan, Kazakhstan

Closing Ceremony

- 11:50–12:00 Prof. Junko Morikawa
Chair, The QIRT Asia Committee
Tokyo Institute of Technology, Japan

12:00–13:00 **Lunch**