Simple Version of the Schedule

ICMSSM2019 CONFERENCE SCHEDULE

May 27, 2019 (Mondy)		
14:00-17:00	Registration at Xi'an Guangcheng Hotel	
May28, 2019 (Tuesday) at Conference room I – III		
9:00-12:15	Keynote Session	
	9:00-9:40	Keynote speech 1: Prof. Katsuyuki Kida ***Topic:*** *Magnetic microscopy observation system for health monitoring*
	9:40-10:20	Keynote speech 2: Tai Yan Kam ***Topic:*** *Impact analysis and shock absorption of drone structures made of fiber reinforced composite materials.*
10:20-10:40	Tea Break & Photo	
10:40-11:20	Keynote speech 3: Prof. Pengcheng Jiao ***Topic:*** *Plate Mechanical Metamaterials (PMMs): Mechanisms and Applications*	
11:20-12:00	Keynote speech 4: Prof. Qingsong Xu ***Topic:*** *Design and Development of Compliant Micro/Nano-Positioning Systems*	
12:00-13:00	Lunch	
13:00-17:00	Session	

Committee

Conference Secretary

Jessica Yen, Shanghai x academy Co.Ltd, China

Committees

Maochieh Chi, Wufeng University, Taiwan

Qingsong Xu, University of Macau, China

Abbas Bahrami, TNO innovation for life, Netherland

Ahmad Mujahid Ahmad Zaidi, National Defense University of Malaysia (NDUM), Malaysia

Pak Kin WONG, University of Macau, China

Stefan Talu, The Technical University of Cluj-Napoca, Romania

Farid Abed-Meraim, Arts et Metiers ParisTech, Metz, France

Ching Yern Chee, University of Malaya, Malaysia

M. Shahria Alam, The University of British Columbia, Canada

Christopher Rhys Bowen, University of Bath, UK

Mamoun FELLAH，Khenchela University，Algeria

Rajiv Kumar, Panjab University, India

Zhauyt Algazy,Almaty university of Power Engineering and Telecommunication, Kazakhstan

Subhasis Roy,University of Calcutta,India

Yasin Polat, Nevşehir Hacı Bektaş Veli University,Turkey

Siamak Hosseinzadeh, Islamic Azad University, Iran

Chih-Ta Tsai, National Cheng Kung University, Taiwan

Katsuyuki Kida, Internation Program Committee Chair, University of Toyama, Japan

Satish Kumar Sharma, Thapar University, Patiala

Soumya Mukherjee, Kazi Nazrul University, Asansol, India

Wasim M. K. Helal, Harbin Institute of Technology, China

Ankit Gupta, Shiv Nadar University, Gr. Noida, India

Syed Mushhad Mustuzhar Gilani, University Institute of Information Technology, PMAS-Arid Agriculture University Rawalpindi

Ali Hadigheh, The University of Sydney, Australia

Muhammad Zubair, University of Sharjah, UAE

Vijayan Gurumurthy Iyer, The Yorker International University (YIU)

Venue

Conference venue: Xi'an Guangcheng Hotel
Address: Middle Section of South Laodong Road (Laodong Nan Lu Zhong Duan), Xi'an Xishaomen Airport Shuttle Terminal, Xi'an 710000 China
Phone: (+86)029-89138888
Fax: 029-88750566
Web: http://www.guangcheng-hotel.com/
Accommodation
1. Please book your own accommodation in advance, you can book in Xi'an Guangcheng Hotel.
2. Also you can arrange your accommodation in other nearby hotels according to your needs.

Note:

1. All the participants are strongly advised to arrive before 8:50, May 28, 2019.

2. Certificate of Participation can be collected at the registration counter.

3. Please copy PPT files of your presentation to the secretary when registration.

4. The organizer doesn't provide accommodation, and we suggest you make an early reservation.

5. If you want to deliver oral presentation but your paper is not in the session list, please contact us by Email: cfp@icmssm.org (for ICMSSM2019)

Instruction about Oral Presentation

Devices Provided by the Conference Organizer:

Laptops

Projectors & Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF files

Duration of each Presentation:

Regular Oral Session: about 15 Minutes of Presentation and 3 Minutes of Q&A.

Keynote Speech (9:00-12:00)

Keynote Speech 1　9:00-9:40

Prof. Katsuyuki Kida

Solid Mechanics Laboratory, University of Toyama, Japan

Title: "Magnetic microscopy observation system for health monitoring"

Professor Katsuyuki Kida was born in 1968 in Osaka, where he studied mechanical engineering at Osaka University from 1988. Apart from course work, he studied rolling contact fatigue (RCF) occurring in TiC and TiN coated steels using both X-ray diffraction and scanning acoustic microscopy. After graduation he pursued his academic career and obtained a Ph.D. in engineering mechanics in 2000, investigating RCF problems of all-Si3N4 bearings. By observing cracking and flaking failure under RCF, he succeeded in explaining the material`s features from the viewpoint of fracture mechanics. From 2000 he focused his work on investigating the contact problems of several materials used in machine elements. He has also continued fundamental research on contact problems, for which he received 'The Best Paper Prize (FFEMS PRIZE)' from 'Fatigue & Fracture of Engineering Materials & Structures' journal in 2005. The awarded papers reported establishing a crack growth mechanism under contact pressure, a problem previously unsolved for over 70 years since S. Way's proposed theory. His research interests now include the development of three dimensional scanning Hall-probe microscope technologies, fatigue phenomena in polymer bearing, crack growth mechanism under contact stresses and refinement of high-carbon steels.　He holds and has held a number of prestigious leadership roles in academy-industry corroboration programs: refinement of steels, new joint system in humanoid robots and fatigue of polymer bearings in "Strategic Fundamental Technologies Strengthening Assistance Programs" (Ministry of Economics, Trade and Industry, Japan, 2009-2013); scanning Hall-probe microscopy in "Fundamental Studies on Technologies for Steel Materials with Enhanced Strength and Functions" (Consortium of the JRCM, Japan, 2008-2012); and ceramic bearing elements in the project supported by "Japanese Energy and Industrial Technology Development Organization" (NEDO, Japan, 2007-2011)." As a chairperson of department of mechanical engineering in University of Toyama, Professor Kida is heading education and research projects (2019-).

Keynote Speech 2 9:40-10:20

Prof. Tai Yan Kam

Mechanical Engineering Department, National Chiao Tung University

Title: "Impact analysis and shock absorption of drone structures made of fiber reinforced composite materials"

Dr. Tai Yan Kam earned his Ph.D. in the area of Structural Mechanics from Northwestern University, USA, 1982. He is presently professor of Mechanical Engineering Department, National Chiao Tung University, Taiwan. He served as the Chair of the Mechanical Engineering Department and Dean of the College of Engineering in 1987-1989 and 1994-2000, respectively, at National Chiao Tung University. In 1990, he was guest professor at the Department of Mechanical Engineering, University of Pretoria, South Africa. He has served as consultants at several national industrial as well as defense research institutions in Taiwan, which include Aerospace Research (Fighter planes) and Quality Assurance (Missiles) Centers of Chung Shan Institute of Technology, Precision Machine Research (Robots) Center, and Aerospace Research (Aircrafts) Center of Industrial Technology Research Institute (ITRI). He was Vice Chairman and CTO of Neosonica Technologies Co., Taiwan, in charge of the R&D on flat-panel type audio systems. He was the recipients of the following awards: 2012, Gold Prize Award, International Invention Fair, Taipei, Taiwan. 2013, Gold Prize Award, Archimedes International Invention Fair, Moscow, Russia. 2013, Gold Prize Award, International Invention Fair, Malaysia. 2003, National Invention Award, Taiwan. 2002, Excellent Product Award, Ministry of Economics, Taiwan. He has served as International Scientific Advisory Committee members of many international conferences and also organized the following international conferences: 2013, Chairman, 7th Asian-Pacific Conference on Aerospace Technology & Science, Taiwan. 2019, Chairman, 10th Asian-Pacific Conference on Aerospace Technology & Science/The 4th Asian Joint Symposium on Aerospace Engineering Joint conference, Taiwan. He was the Guest Editor for a special edition on Aerospace Technology and Science (Procedia Engineering Journal, Vol. 67) and is currently the Guest Editor of the special issue about the State-of-the-art on Vibroacoustics and Sound Radiation Control of Structures. He has been the Associate

Editors of several International Journals and the reviewers for many prestigious SCI journals. He has published over 85 prestigious SCI papers and owned over 40 patents worldwide.

10:20-10:40	Photo & Coffee Break

Keynote Speech 3 10:40-11:20

Prof. Pengcheng Jiao
Institute of Port, Coastal and Offshore Engineering Ocean College, Zhejiang University
Title: "Plate Mechanical Metamaterials (PMMs): Mechanisms and Applications"

Pengcheng Jiao, Ph.D., Research Professor, Ph.D. supervisor. Prof. Jiao's areas of research interests include advanced smart structure and multifunctional advanced materials. Particular interests are focused on mechanical metamaterials, structural stability analysis, structural health monitoring (SHM), and multiscale solid mechanics. Prof. Jiao has published up to 30 SCI papers, including 20 first/corresponding author SCI papers, as well as 5 peer-reviewed conference papers. This presentation will focus on the mechanisms and applications of mechanical metamaterials.

Keynote Speech 4 11:20-12:00

Prof. Qingsong Xu
Department of Electromechanical Engineering, Faculty of Science and Technology, University of Macau
Title: "Design and Development of Compliant Micro/Nano-Positioning Systems"

Qingsong Xu is an Associate Professor of electromechanical engineering and the Director of Smart and Micro/Nano Systems Laboratory at the University of Macau. He was a visiting scholar at the University of California, Los Angeles (UCLA), USA, the RMIT University, Melbourne, Australia, the National University of Singapore, Singapore, and the Swiss Federal Institute of Technology (ETH Zurich), Switzerland. His current research area involves micro/nano mechatronics and systems, control and automation, and applications of computational intelligence. He is a Senior Member of IEEE, a Technical Editor of IEEE/ASME Transactions on Mechatronics, and an Associate Editor of IEEE Transactions on Automation Science and Engineering. He has published 3 monographs and over 250 technical papers in international journals and conferences. According to the Citation Report of Web of Science from Clarivate Analytics, his h-index is 32.

12:00-13:00	Lunch

Session (13:00-17:00)

1- Paper ID: SM201
Title: Thermal analyses and substrate modification for improving lifetime of flexible light-emitting diodes
Authors: Hsin-Hong Huang, An-Chi Wei, Jyh-Rou Sze
Abstract: In this study, we propose a methodology to enhance the lifetime of flexible organic light-emitting diodes (FOLEDs). By means of improving the thermal conduction on the substrate, we can increase the efficiency of thermal dissipation of the FOLED and optimize its lifetime. Using self-developed model in simulation software, COMSOL, and Arrhenius equation, we estimated the lifetime firstly. Next, we measured luminance and thermal distribution of a small-area white FOLED via a luminometer and a thermographic camera. After the comparison between simulation and measuremental results, we corrected the constructed model. Furthermore, we predicted the lifetime of large-area OLED lighting panels or displays. This proposed substrate is expected to extend the lifetime and improve OLEDs' performance obviously.

2-Paper ID: 7
Title: The Effect of Hydrothermal Dewatering Temperature on Hydro-char Obtained from Oily Scum
Authors: Shuanghui Deng, Xuebin Wang, Daoyang Ma, Xuchao Lu and Houzhang Tan
Abstract: Oily scum was treated by hydrothermal dewatering (HTD) under 120-240oC. The changes of surface characteristics and physico-chemical structure of oily scum were investigated and the effect of temperature on the properties of the hydro-char obtained from oily scum was analyzed through different characterization techniques. Results show that the moisture content of HTD treated hydro-char decreases as the temperature increases, which implies that the oily scum can be dewatered and upgraded through HTD method. The morphologies of the HTD pretreated oily scum present less oil content, smaller particle size, and become darker. As the reactor temperature increases from 120 to 240oC during the HTD process, the moisture content of hydro-char obtained decreases from 35.51 to 11.31%, while the liquid content and hydro-char content increase from 58.53 to 79.76% and from 2.50 to 5.29%, respectively, and the released gas content slightly varies in the range of 3.14 - 4.31%. The breaking and gathering effects of the HTD upgrading on oily scum result in a wide particle size distribution of products, which indicates that the overall structure of raw oily scum has been destroyed. With the increase of HTD temperature, the shorten vibration of methylene groups in hydro-char products is weakened.

3-Paper ID: SM513
Title: Development of fracture surface etching (FSE) method around non-metallic inclusion of SUJ2 steel
Authors: Kenya TSUJI, Koshiro MIZOBE, and Katsuyuki KIDA

Abstract: High-carbon high-strength JIS-SUJ2 bearing steel is one of the alloys used as rolling contact applications which need high wear resistance. This high hardness material is broken from non-metallic inclusions under fatigue stress. In this work, we developed a new observation method "fracture surface etching (FSE)" in order to observe the material microstructure on the fracture surface. We succeeded to draw clear grain boundaries on the fracture surfaces and closely observed the material microstructure around the crack origins by the FSE method. We concluded that the crack initiation area boundary is not formed by only the grain boundary, and the grain size around the Al2O3 inclusion on the fracture surface was similar to that of the flat surface which does not have inclusions before fatigue testing.

4- Paper ID: SM540
Title: Observation of crack growth behavior of various cracks in 4.762mm diameter silicon nitride balls under cyclic compressive load
Authors: Takumi TORIKI, Tomoya MATSUI, Katsuyuki KIDA
Abstract: -In order to investigate the effect of pre-crack lengths on fracture of silicon nitride balls under cyclic pressure loads, growth behavior of 600~700μm pre-cracks were compared to that of 200μm~300μm and 400~500μm pre-cracks. Furthermore, the change in initial threshold limit of the maximum stress intensity factor (KImax ini) was discussed to discriminate the relation between failure and no-failure through observation of cracks during N=0 to N=1000 cycles. It was discovered that there was the threshold limit of initial increase in the KImax ini value (0.34MPam1/2~0.36MPam1/2). This value did not depend on the crack length.

5- Paper ID: SM521
Title: Weld Strength Analysis of T-joint Segments of the Metro Crossing Passage by the Shield Method Based Sub-model
Authors: Sun Longfei, Chen Zhenlei, Li Jiancheng, Lv Xiaolu, Shang Qing
Abstract: The weld of T-joint segments is the weakest link during the excavation of a metro crossing passage tunnel with the shield method. The stress on the weld is one of the key factors and should be given special attention. This paper aims to monitor the stress and strain of the weld of the T-joint segments during the construction process of the metro crossing passage tunnel of Ningbo Metro Line 3, the world first metro crossing passage tunnel by the shield method. A finite element model of the metro crossing passage tunnel is established. The CAE (Computer Aided Engineering) simulation is conducted by the sub-model approach. The calibration analysis between test data and CAE results for the strain of the weld under several key cases is performed. Based on this, the vary regulation of the stress and strain of the weld seam at various positions of the steel tube sheet under critical working conditions is obtained. Consequently, an authentic, reliable and advanced simulation process is established, and the weld strength of the T-joint segments of such kind constructions can be well assessed and predicted.

6- Paper ID: SM522
Title: Antimicrobial protection for polymeric materials
Authors: Truman Liao

Abstract: Microorganisms exist almost everywhere and are the most abundant form of life on earth. " Good" microbes – like probiotics (Bifidobacteria) – support good gastrointestinal health and play a role in the nitrogen cycle. Pathogenic, or disease-causing microbes include Salmonella, tetanus, and E. coli. Opportunistic pathogens that are usually non-harmful and only infect people who are not in good health, include C. difficile. Under the right circumstances, microorganisms can also have a negative impact on surfaces. BACTERIA: On an unprotected surface, bacteria can double in number every 20 minutes. While bacteria is invisible to the naked eye, it can spread on untreated surfaces causing stains, odors and ultimately premature product degradation. MOLD: Although mold grows more slowly, the potential impact is similar. In automotive environments where surfaces come into contact with moisture or warmth, these microorganisms can cause unsightly damage. Once an issue begins, it is nearly impossible to reverse the impact. The best protection is PREVENTION. Antimicrobials are substances that inhibit growth of microorganisms. Antimicrobials (metals or organic compounds) may inhibit the replication of—or completely kill— bacteria, fungi. Unlike antibiotics, which target specific metabolism pathway of microbial cells, antimicrobials target multiple cellular components / mechanisms, making it very difficult to build resistance. Antimicrobial technologies can be embedded in products and materials at the point of manufacture to inhibit the growth of bacteria, mold and mildew on the material surface.

7-Paper ID: 12

Title: Bending Fatigue Damage Behavior of Annealed Polycrystalline Cu Foil

Authors: Wang Ming, Zhang Xu, Cheng Lili, Zhang Qian

Abstract: The metal foils at micrometer scale are applied in micro-electromechanical systems (MEMS) and devices widely, which the mechanical behaviors of them are significantly different from that of bulk materials and thin films constrained by a substrate. In this paper the annealed polycrystalline Cu foil with two thickness (t =100, 150 μm) was applied on the cantilever beam bending fatigue testing as a model material. The fatigue properties and the damage behaviors of the annealed polycrystalline Cu foil at the total strain control was investigated. The results showed that the bending fatigue life of the polycrystalline Cu foil with the grain size (d =9.2 μm) was significantly larger than that of the Cu bulk and thin Cu films with t =3 μm under the same strain range. The fatigue damage formation of the extrusions/intrusions and cracks along grain boundaries on the Cu foil surface caused fatigue fracture and final failure.

8-Paper ID: SM538

Title: Research on Mechanism of Film Pressure Loss in Water-lubricated Bearing

Authors: WANG Lun, WANG Nan, DU Yubo, YANG Litao, WANG Peng and YUE Xiaokui

Abstract: Due to the low viscosity of water, the water film is not easy to form, and the water-lubricated bearing system has the characteristics of airtightness. Therefore, it is difficult to obtain an accurate water film pressure distribution through experiments. Aiming at the loss of water film pressure in the process of water film pressure transmission

caused by L-type pipeline in the existing wireless sensor testing methods for water film pressure, a mathematical model of water-lubricated bearing system pipeline pressure loss is established by numerical analysis method, and the corresponding physical model is established by using ANSYS software. The mechanism of pressure loss is studied by simulation. Finally, the test results were corrected and analyzed. The results show that the higher the flow rate of lubricating water at the inlet of the pipeline, the greater the pressure loss of the water film; the higher the shaft speed, the greater the local pressure loss; the longer the pipeline, the greater the pressure loss of the straight pipe section of the L-shaped pipeline, and the dynamic condition of the pipeline The pressure loss and energy loss are much more severe than static conditions.

9-Paper ID: SM542

Title: High temperature tribology of metal rolling contact

Authors: Shanhong Wan, Anh Kiet Tieu and Hongtao Zhu

Abstract: Various types of functional glass-based lubricants were developed to satisfy the green manufacturing in metal forming industry. This report focuses on the tribological performance of steel strip surface in hot rolling operation and in laboratory measurements as subjected to high temperature lubricants. The structural transformation and elemental migration across the rolling contacting interface were comprehensively characterized. Results show that an ideal hot lubricant material should be adaptive to friction and wear stimuli at the board range of temperature. The surface/interface observation of strip mill demonstrated the complex damaging process, including plastic deformation, abrasive wear, adhesive wear, thermal induced cracking and oxidation, etc. On the basis of preliminary results, in-situ coating engineering process was proposed to develop new functional protective surface with desirable toughness, yielding better performance, less cost and lower environmental impact.

10-Paper ID: SM533

Title: Evaluation of Uncertainty in Determining Average Grain Size by ASTM E112 Standard

Authors: Geping Bi, Yong Guan, Xiaoyu Chen, Wenhua Tan, Wenniu Huang, Yuqing Gao and Meimei Wang

Abstract: In this paper, the ASTM grain size number of aluminium alloy specimen was determined respectively by Abrams Three-Circle Procedure and Planimetric Procedure of ASTM E112-13 Standard, and the uncertainty of the result was evaluated. The results are as follows: 1) Using the Abrams Three-Circle Procedure determines G, G=4.13，U=0.26，k=2; Using the Planimetric Procedure determines G, G=3.94，U=0.15，k=2. 2) It is suggested that

the ASTM E112 standard should provide that the errors of counting grain boundary intersection count or number of grains should be less than or equal to 2, and the ruler that determines the diameter of test circle or scale length should be with the scale that is less than or equal to 0.10 mm. On this condition, the uncertainties caused by them in determining G can be negligible. 3) The main sources of uncertainty for the determination of G by Abrams Three-Circle Procedure and Planimetric Procedure are repetitive measurement, which depends on the uniformity of grain size of specimen. 4) The %RA limit of ASTM E112 for determining G should be redefined according to the measurement uncertainty in order to be up to the precision requirement (±0.25).

10-Paper ID: SM525

Title: Study on the Failure Trends of Overhead Traveling Crane of Dual-beam on the basis of Static Strength Analysis

Authors: Yingshi Sun

Abstract: The operating conditions of the overhead traveling crane of dual-beam have been analyzed in this paper, and all the typical conditions have been applied with the nonlinear finite element analysis of the contact, aiming to ensure the safe utilization of the overhead traveling crane of dual-beam of tooling equipment for the production of rail vehicles. The potentially risky component locations are predicted and the weak spots are discovered on the basis of the analysis results of the static strength. The anticipation of the component failure trends shows a guiding role in the failure prediction in actual production and facilitates accident prevention.

Note: If you would like to deliver oral presentation but your paper is not in the session list, please contact us by Email: cfp@icmssm.org (for ICMSSM2019) ASAP.
Thanks again for all your great attention and kind support to ICMSSM2019.

Thank you for all of your contributions!