

# International **S**ymposium on **U**pcoming **P**rominent **EN**gineering solutions

The International Symposium on Upcoming Prominent ENgineering solutions (ISUPEN) was held online on August 31 2021. The symposium aimed to strengthen cooperation with related overseas organizations and further promote the internationalization of JSPE. In this symposium, innovative R & D cases investigated by researchers and engineers in the field of precision engineering were introduced to identify prominent engineering solutions for various recent social issues. The direction in which precision engineering should move toward to form an international community in the future was also discussed. The symposium consisted of 6 invited lectures and 12 oral presentations by up-and-coming young researchers who will contribute to future precision engineering. The symposium program is posted on the next page.

There were more than 180 registrations from 10 countries and regions. There were many vigorous discussion and the symposium was successfully closed. The organizing committee would like to express our sincere gratitude to the attendees.

# International Symposium on Upcoming Prominent ENgineering solutions

August 31, 2021 Online, The Japan Society for Precision Engineering (JSPE)

Japan Time  
(GMT+9:00)

9:00 **Opening address  
and Introduction to ISUPEN** **Dr. Kazutoshi Katahira**  
Chairman of International Affair Committee of JSPE  
Senior research scientist, RIKEN

9:05 **Message from the president of JSPE**



**Prof. Kiyoshi Takamasu**

President of JSPE

Emeritus professor  
The University of Tokyo

9:10 **Special lecture: *Significance and expectation of ISUPEN  
for International Activities of JSPE***



**Prof. Hideki Aoyama**

Professor  
Department of System Design Engineering  
Keio University

9:25 **Keynote 1: *Research highlights of the BELLA Center,  
Lawrence Berkeley National Laboratory***



**Dr. Kei Nakamura**

Associate Deputy Director for Experiment  
Lead scientist for High field experiments  
  
Lawrence Berkeley National Laboratory  
Accelerator Technology and Applied Physics Division  
BELLA Center (bella.lbl.gov)

9:55 **Keynote 2: *Soft and Smart Manufacturing***



**Prof. Sung-Hoon Ahn**

Professor  
Department of Mechanical Engineering  
Seoul National University  
  
President of Academic Society for Appropriate Technology  
Conference Chair, ICEAS 2021

10:25 Break

|  
10:35

10:35 **Session1: Additive Manufacturing Trends and Latest Technologies**



***Productive and quality Directed Energy Deposition (DED) using powder flow control***

**Prof. Masakazu Soshi**

Associate Professor  
Department of Mechanical and Aerospace Engineering  
University of California Davis

10:55



***The application and future challenges for additive manufacturing***

**Dr. Yohei Oda**

Ph.D Group Manager  
IGA Global Solution Center  
AM Processing Technology Group  
DMG Mori Co., Ltd.

11:15



***Super-High Performance Metal Additive Manufacturing based on Analogy of Different Gravitational Fields***

**Prof. Ryo Koike**

Assistant Professor  
Department of System Design Engineering  
Faculty of Science and Technology  
Keio University

11:35 **Session2: JSPE Affiliate session**  
**– frontier research of JSPE young researchers –**

**Introduction of JSPE Affiliate**

**Prof. Yukie Nagai**

Associate Professor, Tokyo Metropolitan University

11:40



***Filmotics: mechatronics changing with film welding***

**Prof. Daisuke Yamaguchi**

Assistant Professor  
Natural Science and Technology  
Institute of Academic and Research  
Okayama University

12:00



***Rationalization of safety validation on the automated driving vehicles using simulation***

**Dr. Masao Nakagawa**

Researcher  
Automotive Safety Research Department  
National Traffic Safety and Environment Lab.

12:20



***Advanced machining process based on in-process measurement***

**Dr. Toru Kizaki**

Research Associate  
Department of Mechanical Engineering  
School of Engineering  
The University of Tokyo

12:40 Lunch time

|  
13:20

13:20

**Keynote 3: Smart Manufacturing in Taiwan**



**Prof. Hung-Yin Tsai**

Professor  
Department of Power Mechanical Engineering  
National Tsing Hua University

Executive Director, Board of Directors  
Taiwan Society for Precision Engineering

13:50

**Session 3: Mechanism Design and its Application for the Establishment of Sustainable Societies**



***Sensing and Processing of Visual / Tactile information based on Various Mechatronics Systems***

**Prof. Daisuke Matsuura**

Specially Appointed Associate Professor  
Department of Mechanical Engineering, School of Engineering  
Tokyo Institute of Technology

14:10



***Gravity compensation design for robotics - Minimizing the motor sizes for your powerful robot arms***

**Prof. Chin-Hsing Kuo**

Senior Lecturer  
School of Mechanical, Materials, Mechatronic and Biomedical Engineering  
Faculty of Engineering and Information Sciences  
University of Wollongong

14:30



***Robot performance evaluation for optimal mechanism design***

**Dr. Matteo Russo**

Research Fellow  
The Rolls-Royce University Technology Centre in Manufacturing and On-wing Technology  
Faculty of Engineering  
The University of Nottingham

14:50

**Break**

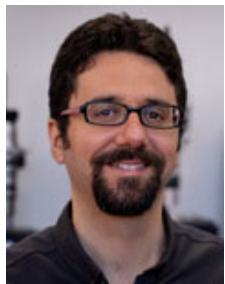
15:00

**15:00 Session 4: Biological and Medical Applications of Advanced Microsystems*****Precise analysis of single molecules and cells using microsystems*****Prof. Soo Hyeon Kim**

Lecturer  
Institute of Industrial Science  
The University of Tokyo

**15:20 *Microphysiological systems based on microfluidics for cell-based assays*****Prof. Hiroshi Kimura**

Associate professor  
Department of Mechanical Engineering  
Tokai University

**15:40 *Silicon actuators for biological applications*****Prof. Mehmet Cagatay Tarhan**

Associate professor  
Univ. Lille, CNRS, Centrale Lille, Junia,  
Univ. Valenciennes, UMR 8520-IEMN, Lille

LIMMS/CNRS-IIS IRL2820  
The University of Tokyo

16:00



***Report of euspen tallent program: Design of 3D printed cost-effective adjustment stage for CERN's particle accelerator: Challenge to "euspen talent programme"***

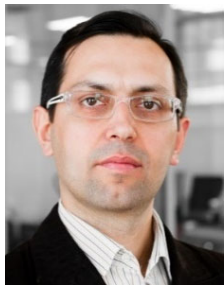
**Dr. Shuzo Masui**

Specially Appointed Researcher

The Research Center for Advanced Science and Technology  
The University of Tokyo

16:30

**Keynote 4:**



***An overview on euspen activities and recent trends in precision engineering in Europe***

**Prof. Ing. Enrico Savio**

Former president of euspen (The European Society for Precision Engineering and Nanotechnology)

Professor  
University of Padua

17:00

Closing

**Organizing committee**

Chair

<b>Kazutoshi Katahira</b>	RIKEN
<b>Yukie Nagai</b>	Tokyo Metropolitan University
<b>Takazo Yamada</b>	Nihon University
<b>Daisuke Matsuura</b>	Tokyo Institute of Technology
<b>Soo Hyeon Kim</b>	The University of Tokyo
<b>Tatsuya Sugihara</b>	Osaka University
<b>Ryo Koike</b>	Keio University
<b>Masakazu Soshi</b>	University of California Davis
<b>Atsuko Murakoshi</b>	Sumitomo Heavy Industries, Ltd.

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