Plenary Session

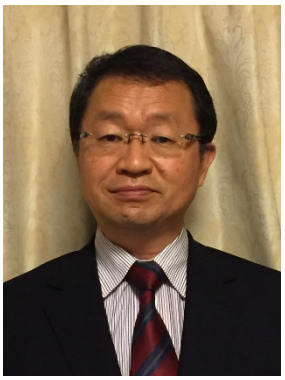
Date: Wednesday, November 20
Time: 15:00 - 17:30
Place: International Conference Hall “Himawari”

Theme

ICE and E-Motor - Which will be in the Future Mainstream of Small Powertrains?

Environmental protection and energy saving are featured topics among others in the field of transportation and mobility. Some of the powertrains, utilizing electrification technologies effectively, have reduced emission of CO_2 while they have attracted more customers in these years. In addition, you see some political movements to encourage electrification of automobiles including restriction of internal combustion engine (ICE) cars in urban areas especially in Europe. The electrification of mobility, however, involves various problems such as the lower energy density of battery, time-consuming charging, resource issues brought about by utilization of rare metals, costs, infrastructure and so on, which have prevented drastic change to replace ICEs. Why don't we discuss future main streams of small powertrains, taking all the challenging issues into consideration, with the invited guests and experts in SETC2019 at Hiroshima?

Moderator



Keiya Nishida
Professor, Department of Mechanical Systems Engineering
University of Hiroshima, Japan

Dr. Keiya Nishida is a Professor in the Department of Mechanical Systems Engineering, Graduate School of Engineering, University of Hiroshima, Japan. He received his B.S. in Mechanical Engineering in 1978, M.S. in Engineering of Transportation Phenomena in 1980, and Ph.D. in 1989, all from University of Hiroshima. From 1980 to 1982, he was a research and development engineer in the internal combustion engine department of Kubota Ltd, Osaka, Japan. He joined University of Hiroshima as a Research Associate in 1982, and has been involved in experimental and computational studies on the fuel spray and combustion in internal combustion engines. He became an Associate Professor in 1990 and a Professor in 2011. He spent one year from 1995 to 1996 at Department of Mechanical Engineering and Applied Mechanics, University of Michigan, USA, as a visiting scholar. Most of his studies focus on laser diagnostics and computer simulation of the fuel spray, mixture formation and combustion in Diesel and gasoline engines. Dr. Nishida holds more than 150 journal papers, 130 international conference papers, and 3 books. He got the awards such as the prize for the best paper in the field Diesel engines presented at 20th CIMAC Congress in 1993, SAE Horning Memorial Award in 1994, JSME best paper award in 1995, Best Paper Award of 17th Small Engine Technology Conference in 2011, and Lloyd’s Register Manson Prize from Japan Institute of Marine Engineering in 2012, etc. He was a president of Institute of Liquid Atomization and Spray Systems – Japan in 2013 to 2014, Chair of Diesel Engine Committee of Japan Society of Automotive Engineers in 2014 to 2015. He is currently a director of Research Committee for Advanced Combustion System for Diesel Engine and a vice-head of Engine Systems Division, both of Japan Society of Mechanical Engineers.

Plenary Session

Speaker

Subject: *Electric and ICE, future prospect in the field of power source for small mobility*

Johannes Scharf
Dr.-Ing. / Vice President "Gasoline Powertrain Development", FEV Europe GmbH, Germany

Career

2016-today: Vice President "Gasoline Powertrain Development", FEV Europe GmbH
- Responsible for gasoline engines, hybrid powertrains and small engines / motorcycle powertrains
- Combustion, design, mechanics, simulation, calibration, integration and validation

2010-2016: various management positions within FEV Group
- Director "Gasoline Thermodynamics", FEV GmbH
- Department Manager "Powertrain & Chassis Dyno Testing", FEV GmbH
- Team Manager "Gasoline Combustion", FEV GmbH
- Team Manager "Air & Exhaust Management", FEV GmbH

2005-2010: Engineer "Engine Concept Simulation", Institute for Combustion Engines, RWTH Aachen University

Education
- PhD on "Turbocharging & Downsizing", RWTH Aachen University (Prof. Pischinger)
- "Mechanical Engineering", RWTH Aachen University
- "Automation & Controls", Universidad Politécnica de Madrid

Awards
- „Borchers Award" for doctor thesis
- „Springorum Award" for diploma thesis
- Scholar of „German National Academic Foundation"
- Award of „German Physical Society"

Recent publications
- 2018: Scharf, J. et al.: All clean gasoline hybrid powertrains with lambda 1 for EU7, 27th Aachen Colloquium Automobile and Engine Technology
- 2017: Scharf, J. et al.: Hybrid Optimal Combustion Engines – High Tech or Low Cost?, 38th International Vienna Motoren Symposium

Subject: *Chances and Challenges for Electrification in Small Power Trains*

Markus Neumayer
Dr.-Ing. / Ph.D
Senior Scientist at Graz University of Technology, Austria

Career

2008 Master in electrical engineering, Graz University of Technology
2008 Research Scientist at Graz University of Technology
2010 Research Scientist at the University of Otago/ New Zealand
2011 Ph.D. in electrical engineering, Graz University of Technology
2014 Senior Scientist at Graz University of Technology

Awards

2012 Award of Excellence by the Austrian Government:
2012 Award for Modeling and Simulation by the Austrian Government

Current Research Fields

Sensing and signal processing for small combustion engines
Measurement systems for process measurement
Model based measurement
Power measurement in electrified drive trains

Academic Activities

Tutorials on Bayesian Methods for Measurement problems at the IEEE International Instrumentation & Measurement Technology Conference (2016, 2019)
Invited Talk on Electrical Capacitance Tomography (University of Kuopio 2011)
Invited Talk on Statistical Signal Processing Methods for Estimation (Federal University of Rio de Janeiro 2014)
Invited Talk on Inverse Problems (University of Kuopio 2016)

Plenary Session

Subject: ***Charging Infrastructure and Business model are the key successful factors of electric Scooter***

Bing-Ming Lin
Deputy Director, Div. of Energy Storage Materials & Technology, Material and Chemical Lab., Industrial Technology Research Institute, Taiwan

Education

Mechanical Engineering
Chung Yuan University

Expertise & Work Experiences

Motorcycle Technology R&D in engine design and test
Electric Vehicle Technology R&D in system design and test
Battery Technology R&D in component and system design and test
Electric Scooter Industry Promotion work for over 15 years
Lithium Battery and Electric Scooter Testing Standard setting
Lithium Battery Safety Test TAF Lab. test report signatory

Current Position

1. Deputy Director, Div. of Energy Storage Materials & Technology, Material and Chemical Lab., Industrial Technology Research Institute
2. Project Leader, Electric Scooter Industry Promotion Program, IDB, MOEA
3. Project Leader, Electric Scooter Refueling Infrastructure Development Program, IDB, MOEA
4. Member, Electrical Engineering Group, National Standard Technical Committee, BSMI, Chairman of TC3/SC5
5. Executive Chairman, Electric Scooter Common Battery Technology Consortium Subject

Subject: ***Current Status and Future Perspective of the Capability of Rechargeable Batteries for Small Mobility Application***

Kuniaki Tatsumi
Doctor of Engineering / Director, Technology Marketing Office Research & Innovation Promotion Headquarters National Institute of Advanced Industrial Science and Technology (AIST), Japan

Career

1988 Research Scientist, Inorganic Materials Div., AIST
2001 Deputy Director, New and Renewable Energy Div., Ministry of Economy, Trade & Industry (METI)
2002 Leader, Advanced Battery Research Group, AIST
2013 Deputy Director, Research Institute of Ubiquitous Energy Devices, AIST
2014 Director, Advanced Research Division, Panasonic
2017 Director, Technology Marketing Office, AIST

Education

1986 Bachelor, Dept. of Engineering, Kyoto University
1988 Master, Molecular Engineering, Graduate School, Kyoto University
2000 Doctor of Engineering (Electrochemistry and Material Science), Kyoto University

Research Subjects

- Electrochemical energy storage and conversion
- Rechargeable Lithium and lithium-ion batteries materials and reaction mechanisms
- Rechargeable lithium-ion batteries for automobile applications to enhance energy density, rate capability and cyclability/calendar life of lithium-ion batteries.

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Plenary Session

Subject: ***The Future of the Internal Combustion Engine***

- Challenge for Innovative Combustion Technology to achieve 50% thermal efficiency

Norimasa Iida
Professor Emeritus,
Keio University, Japan

Norimasa Iida is a Professor in the Faculty of Science and Technology at Keio University, Japan. He obtained his PhD in 1983 from Keio University on the topics of propagation and extinction mechanisms of premixed flames flowing into a narrow channel from a combustible-gas-charged chamber, from where he started his career.
Norimasa Iida spent a very productive year as a Visiting Assistant Professor working at the Engine Research Center, University of Wisconsin-Madison, USA.
He headed a "Gasoline Combustion Team" of Innovative Combustion Technology program, a national project is established under the Cabinet Office, Government of Japan as a part of the "Cross-ministerial Strategic Innovation Promotion Program (SIP)".
Norimasa Iida has contributed his research work in the combustion and emission of internal combustion engines with his special interests in life cycle assessment for next generation vehicles. He, as a leader in HCCI combustion research, has published more than 300 papers on the subject, most of which are presented at SAE International, JSAE and JSME.
Norimasa Iida is currently serving as Auditor of JSAE Board of Directors.

Career

1973	Graduated from Department of Mechanical Engineering, Faculty of Engineering, Keio University, Japan
1980	Earned Doctor of Engineering at Keio University
1983	Became Assistant, Faculty of Science and Technology, Keio University
1985	Became Assistant Professor, Faculty of Science and Technology, Keio University Appointed Visiting Professor in Mechanical Engineering Department, University of Wisconsin, Madison, USA
1990	Headed Ceramics Methanol Engine Project, Kanagawa Academy of Science and Technology, Japan
1991	Became Associate Professor, Faculty of Science and Technology, Keio University
1997	Became Professor, Faculty of Science and Technology, Keio University
2016	Became Project Professor, Graduate school of science and technology, Keio University
2019	Became Professor Emeritus at Keio University