

*5th Asian Conference on
Biomass Science*

ACBS2018

Aobayama East Campus, Tohoku University

January 16, 2018, Sendai, Japan

Organized by:

Biomass Division, Japan Institute of Energy

Co-organized by:

Asia Biomass Association
School of Engineering, Tohoku University
Hiroshima University

5th Asian Conference on Biomass Science (ACBS2018)

Organized by: Biomass Division, Japan Institute of Energy

Co-organized by: Asia Biomass Association, School of Engineering, Tohoku University, Hiroshima University

Date: January 16, 2018

Venue: Aobayama East Campus, Tohoku University (Center Hall (oral), Qatar Science Campus Hall (poster))

ORGANIZING COMMITTEE

Yukihiko MATSUMURA (Chair)

Takahiro YOSHIDA (Secretariat)

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Tran Dinh MAN

Yoshimitsu UEMURA

Greeting message from the Chairman of the 5th Asian Conference on Biomass Science



It is my pleasure to welcome all the participants to the 5th Asian Conference on Biomass Science. After Paris Agreement, importance of biomass is increasing. For Asian countries that has plenty of biomass, this is a good chance for biomass introduction.

Asian Conference on Biomass Science started in Kochi in 2014 so that academic discussion on international effective utilization of biomass can be effectively achieved based on the proposal of Dr. Kin-ya Sakanishi, who was the director of the Biomass Division, Japan Institute of Energy, at that time. What we discussed was that the participation fee should not be as expensive as other international conferences where they require 1,000 USD. Another thing we discussed was to establish a place to exchange biomass information continuously. Thus, the participation fee was set as cheap as possible, and presentation in this conference can be published in Journal of the Japan Institute of Energy after usual review if the authors desires.

What we wanted was to make this conference a place to gather for all biomass researchers in Asian countries, not only Japan. Thus, the conference should not be always held in Japan. To take the responsibility to organize continuously, the first 3 times and then every two years, the conference will be in Japan, but other than that, the conference will be held in countries other than Japan. Following the first one in Kochi, this conference has been held in Tsukuba, Niigata, and Penang. This time, the conference is back in Japan, and here it is in Sendai.

I do hope that this conference provides you with the good chance to present your research, exchange information, and to make good friends. Development of biomass research can never be made with only one researcher. Collaboration and mutual understanding is the key.

Finally, I would like to thank all the participants, organizing committee members, and members of the advisory board. I also appreciate the organizing activities of the Japan Institute of Energy. The success of this conference owes to the efforts and supports of these people. I hope that each of the participants will have a good time and good experience in Sendai, and this conference will be a fruitful and enjoyable one for all participants.

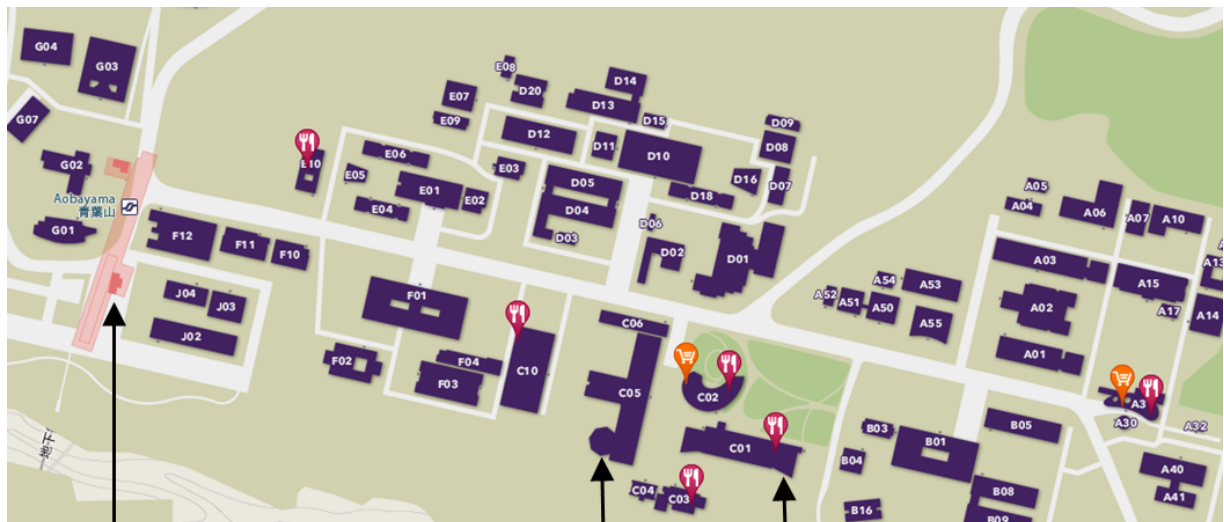


Yukihiko MATSUMURA, PhD.
Professor, Graduate School of Engineering,
Hiroshima University

ACCESS & CAMPUS map to Aobayama East Campus, Tohoku Univ.

Take the subway (Tozai Line) from Sendai Station to Aobayama Station (9 min).

Exit at South 1 for the School of Engineering.



Subway Aobayama Station

Qatar Science Campus Hall (C05, poster)

Center Hall (C01, oral) , Reception (C01, Aoba-Dining“ DOCK”)



Restaurant / Cafe



Shop

Smoking is prohibited in the campus except the designated area.

ACBS2018 Scientific Program

Plenary lecture

Chair: Yukihiko Matsumura (Hiroshima University)

- 9:15 PL1 The Potential and Utilization of Oil Palm Biomass in Indonesia
Erliza HAMBALI
(Bogor Agricultural University)

Oral presentation 9:50-12:00, 14:10-17:30

Session OA Biomass resource and pretreatment,

Chair: Dr. Yoshimitsu Uemura (Universiti Teknologi PETRONAS, Malaysia)

- 9:50 OA1 Mapping Potential of Biomass and Carbon Sequestration to Establish Forest Resilience in Indonesia
Nety NURDA^a, Tofael AHAMED^{b*}, Ryozo NOGUCHI^b
(^a Graduate School of Life and Environmental Sciences, University of Tsukuba, Japan, ^b Faculty of Life and Environmental Sciences University of Tsukuba, Japan)
- 10:05 OA2 Application of Ammonia Pretreatment towards Enzymatic Saccharification of Hardwood Biomass
Kiyoshi SAKURAGI^{a,b*}, Kiyohiko IGARASHI^a, Masahiro SAMEJIMA^b
(^a The University of Tokyo, Japan, ^b Central Research Institute of Electric Power Industry, Japan)
- 10:20 OA3 Characterization of *Herbivorax saccincola*, an Alkalithermophilic Lignocellulolytic Bacterium Isolated from Bovine Manure Compost
Phakhinee THIANHENG, Rattiya WAEONUKUL, Junjarus SERMSATHANASWADI, Umbhorn UNGKULPASVICH, Ayumi SHIKATA, Shinpei AIKAWA, Takamitsu ARAI, Akihiko KOSUGI*
(Biological Resources and Post harvest Division, Japan International Research Center for Agricultural Sciences, Japan)
- 10:35 OA4 Microalgae Oil Production: Theoretical Energy Requirements
Dhani S. WIBAWA^{a,c}, Muhammad A. NASUTION^{a,d}, Ryozo NOGUCHI^{b*}, Makoto M. WATANABE^b
(^a Graduate School of Life and Environmental Sciences, University of Tsukuba, Japan, ^b Faculty of Life and Environmental Sciences, University of Tsukuba, Japan, ^c Surfactant and Bioenergy Research Center (SBRC), Bogor Agricultural University, Indonesia, ^d Indonesian Oil Palm Research Institute (IOPRI), Indonesia)

(Break 10:50-11:00)

Session OB Gasification

Chair: Hiroshi Nonaka (Mie University, Japan)

- 11:00 OB1 Development of a Portable Ultra - Small Biomass Gasification and Power Generation System
Xin DAI*, Kunio YOSHIKAWA, Lu DING, Yuto KOWATA, Minoru FUKUHARA
(School of Environment and Society, Tokyo Institute of Technology, Japan)
- 11:15 OB2 The Catalytic Activity of AAEM Species in the Steam Gasification of Char from Indonesian Sugarcane Bagasse
Zayda Faizah ZAHARA^a, DANIYANTO^b, Shinji KUDO^a, Koyo NORINAGA^c, Jun-Ichiro HAYASHI^{a*}
(^a Institute of Materials Chemistry and Engineering, Kyushu University, Japan, ^b Department of Chemical Engineering, Gadjah Mada University, Indonesia, ^c Department of Materials Science and Engineering, School of Engineering, Nagoya University, Japan)

- 11:30 OB3 *In - situ* Pyrolysis and Catalytic Upgrading of Napier Grass over Ni - Cu Supported on Modified Carbon Microspheres Catalyst
Sang Dinh NGO^a, Suwadee KONGPARAKUL^a, Guoqing GUAN^b, Prasert REUBROYCHAROEN^c, Chanatip SAMART^{a*}
(^aDepartment of Chemistry, Faculty of Science and Technology, Thammasat University, Thailand, ^bNorth Japan Research Institute for Sustainable Energy, Hirosaki University, Japan, ^c Department of Chemical Technology, Faculty of Science, Chulalongkorn University, Thailand)
- 11:45 OB4 Fly Ash Transformation and Fouling Tendency during Co-firing Biomass with Coal
Dedy Eka PRIYANTO^{a, b*}, Chikako WADA^a, Naoki SATO^a, Shunichiro UENO^a, Kazuhiro MAE^b
(^aChemical Engineering Department, IHI Corporation, Japan, ^b Department of Chemical Engineering, Kyoto University, Japan)

(Lunch 12:00-13:00)

(Poster presentation 13:00-14:00)

Session OC Solid products

Chair: Dr. Yasutaka Wada (Chugoku Electric Power Co., Inc., Japan)

- 14:10 OC1 Detailed Product Profile for Torrefaction of Empty Fruit Bunches and Palm Kernel Shell
Varsheta SELLAPPAH^a, Yoshimitsu UEMURA^{a*}, Thanh Hoai TRINH^a, Suhaimi HASSAN^b
(^aCenter for Biofuel and Biochemical Research, Universiti Teknologi PETRONAS, Malaysia, ^b Department of Mechanical Engineering, Universiti Teknologi PETRONAS, Malaysia)
- 14:25 OC2 Characterization of Semi-Cokes Produced from Japanese Cedar by Low-Temperature Compression Heating in Air Atmosphere
Yolli FERNANDA^a, Naoto KAWAHARA^a, Hidenori HIGASHI^b, Takafumi SETO^b, Yoshio OTANI^b, Mikio KUMITA^b
(^a Graduate School of Natural Science and Technology, Kanazawa University, Japan, ^b Institute of Science and Engineering, Kanazawa University, Japan)
- 14:40 OC3 Consideration of Practical Relative Speed Range in a Vibration Mill Using Ring Media Added with Chamber Rotation
Daichi TOTSUKA^{a*}, Takehiko TAKAHASHI^b
(^a Graduate School of Systems Science and Technology, Akita Prefectural University, Japan, ^b Systems Science and Technology, Akita Prefectural University, Japan)
- 14:55 OC4 Production Test of Torrefied Woody Biomass Solid Fuel in an Original Small Scale Plant
Takahiro YOSHIDA^{a*}, Yoshitaka KUBOJIMA^a, Daisuke KAMIKAWA^a, Makoto KIGUCHI^a, Kojiro TANAKA^b, Megumi MIYAGO^b, Megumi MASUI^b, Yoshifumi OHYABU^c, Akio KOBAYASHI^c, Hironori IGARASHI^c
(^a Forestry and Forest Products Research Institute, Japan, ^b Actree Corporation, Japan, ^c Sanyo Trading Co. Ltd, Japan)

(Break 15:10-15:20)

Session OD Liquid fuels
Chair: Masaru Watanabe (Tohoku University, Japan)

- 15:20 OD1 Catalytic Upgrading of Bio-Oils Derived from Cellulose, Hemicellulose, Lignin and Sunflower Stalk over Various Zeolites
Nichaboon CHAIHAD^{a,b}, Surachai KARNJANAKOM^c, Irwan KURNIA^c, Akihiro YOSHIDA^{b,c}, Abuliti ABUDULA^c, Prasert REUBROYCHAROEN^{a*}, Guoqing GUAN^{b,c*}
(^a Program of Petrochemical and Polymer Science, and Department of Chemical Technology, Faculty of Science, Chulalongkorn University, Thailand, ^b North Japan Research Institute for Sustainable Energy (NJRISE), Hirosaki University, Japan, ^c Graduate School of Science and Technology, Hirosaki University, Japan)
- 15:35 OD2 The Combination of Mozzarella Cheese Whey and Sugarcane Molasses in the Production of Bioethanol with the Inoculation of Indigenous Yeasts
Roostita Lobo BALIA^a, Tubagus Benito Ahmad KURNANI^a, Gemilang Lara UTAMA^b
(^a Faculty of Animal Husbandry, Universitas Padjadjaran, Indonesia, ^b Faculty of Agro-Industrial Technology, Universitas Padjadjaran, Indonesia)
- 15:50 OD3 Analysis of Ethanol Tolerance in *Saccharomyces cerevisiae*
Machi KANNA*, Yukihiko MATSUMURA
(The department of mechanical science and engineering, Hiroshima University, Japan)
- 16:05 OD4 Application of CSTR System to CaO - Catalyzed Transesterification of Waste Cooking Oil
Akitoshi FUJIMORI, Masato KOUZU*
(Department of Chemistry and Energy Engineering, Tokyo City University, Japan)

(Break 16:20-16:30)

Session OE Chemical production and assessment
Chair: Dr. Gemilang Lara Utama (Universitas Padjadjaran, Indonesia)

- 16:30 OE1 Selectivity Enhancement of Lactic Acid Production from Carbohydrates in SnCl₂/Choline Chloride-Aqueous System
Asep BAYU^a, Surachai KARNJANAKOM^a, Akihiro YOSHIDA^{a,b}, Abuliti ABUDULA^{a*}, Jenny RIZKIANA^c, Guoqing GUAN^{a,b*}
(^a Graduate School of Science and Technology, Hirosaki University, ^b North Japan Research Institute for Sustainable Energy (NJRISE), Hirosaki University, Japan, ^c Department of Chemical Engineering, Institute of Technology, Indonesia)
- 16:45 OE2 Efficient Xylitol Production from Kraft Pulp by a Cell Surface Engineered Strain of *Saccharomyces cerevisiae*
Gregory GUIRIMAND^a, Kentaro INOKUMA^a, Takahiro BAMBA^b, Kengo SASAKI^a, Chiaki OGINO^b, Tomohisa HASUNUMA^a, Akihiko KONDO^{b,c}
(^a Graduate School of Science, Technology & Innovation, Kobe University, ^b Department of Chemical Science & Engineering, Kobe University, ^c Biomass Eng. Program, RIKEN)
- 17:00 OE3 Evaluation of Alternative Palm Oil Mill Effluent Treatment in North Sumatera of Indonesia by Using LCA and AHP Approach
Muhammad Ansori NASUTION^{a,b}, Dhani S. WIBAWA^{a,c}, Tofael AHAMED^d, Ryoza NOGUCHI^{d*}
(^a Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan, ^b Indonesian Oil Palm Research Institute (IOPRI), Medan, Indonesia, ^c Surfactant and Bioenergy Research Center, Bogor Agricultural University, ^d Faculty of Life and Environmental Sciences, University of Tsukuba, Japan)
- 17:15 OE4 Comparative Real-Time Assessment of Particulate Matter Emissions in Rice Husk Combustion
Emmanuel Owoicho ABAH^a, Kazuma IWAI^a, Kai SAKURAI^a, Ryoza NOGUCHI^{b*}
(^a Graduate school of life and Environmental Science, University of Tsukuba, Japan, ^b Faculty of Life and Environmental Science, University of Tsukuba, Japan)

Poster presentation 13:00-14:00

PA-Biomass resource and pretreatment

- PA1 Spatial and Temporal Analysis of Renewable Resources for a Sustainable Energy System in Rural India using GIS.
Ankit YADAV^a, Takaaki FURUBAYASHI^b, Toshihiko NAKATA^{b*}
(^a Department of Management Science and Technology, Graduate School of Engineering, Tohoku University, Japan, ^b Graduate School of Engineering, Tohoku University, Japan)
- PA2 Plant Growth Promotion by Product Gases from Aerobic Fermentation of Woody Biomass
Kento MASUDA^a, Iori SHIMADA^b, Mitsumasa OSADA^b, Hiroshi FUKUNAGA^b, Nobuhide TAKAHASHI^b
(^a Graduate School of Science and Technology, Shinshu University, Japan, ^b Faculty of Textile Science and Technology, Shinshu University, Japan)
- PA3 Cellulase Adsorption on Residue after Enzymatic Hydrolysis of Kraft Pulp
Riku INAKAGATA, Hiroshi NONAKA*
(Graduate School of Bioresources, MIE University, Japan)
- PA4 Analysis of Individual Enzyme Reactions Using Dissolved Cellulose
Kiyoto KIHARA, Kengo SHIMONISHI, Machi KANNA*, Yukihiko MATSUMURA
(Department of Mechanical Science and Engineering, Hiroshima University, Japan)
- PA5 Behavior of Organic Compounds and Kelp Cell during Hydrothermal Pretreatment
Yukihiko MATSUMURA^{a*}, Hiroshi ITO^a, Tsunehiro AKI^b, Yutaka NAKASHIMADA^b, Yoshiko OKAMURA^b, Takahisa TAJIMA^b
(^a Department of Mechanical Science and Engineering, Hiroshima University, ^b Department of Molecular Biotechnology, Hiroshima University)
- PA6 Specification and Quantitation of Fermentation Inhibitor for Hydrothermal Pulverization Pretreatment Using Disk Mill
Yukihiko MATSUMURA*, Hiroki YOKOYAMA
(Department of Mechanical Science and Engineering, Hiroshima University, Japan)
- PA7 Prediction of Yield for Maize Using Multitemporal Satellite Images - Biomass Assessments for Food and Feed Production -
Muhammad Iqbal HABIBIE^a, Tofael AHAMED^{b*}, Ryozo NOGUCHI^b
(^a Graduate School of Life and Environmental Sciences, University of Tsukuba, Japan, ^b Faculty Life and Environmental Sciences, University of Tsukuba, Japan)

PB-Gasification, Combustion

- PB1 Rapidly Temperature Rising Speed Verification for Shochu Residue SCWG Treatment
Yasutaka WADA^a, Hiroaki TANIGAWA^a, Yukihiko MATSUMURA^b, Takashi NOGUCHI^c, Takahito INOUE^d, Yoshifumi KAWAI^c
(^a Energia Economic & Technical Research Institute, Chugoku Electric Power Co., Inc., ^b Division of Energy and Environmental Engineering, Hiroshima University, ^c TOYO KOATSU Co., Ltd., ^d Fukken Co., Ltd., ^e Chuden Plant Co., Ltd.)
- PB2 Cancelled
- PB3 Mechanism of Retroaldol Conversion in Supercritical Water
Rahmat Iman MAINIL, Nattacha PAKSUNG, Yukihiko MATSUMURA*
(Department of Mechanical Science and Engineering, Hiroshima University, Japan)
- PB4 Thermogravimetric and Mass-Spectrometric Analyses of Japanese Cedar Wood (*Cryptomeria japonica*) for Basic Study of Gasification
Masakazu NAKANISHI^{a*}, Tomoko OGI^a, Takahisa TSUGOSHI^b

(^a Research Institute of Energy Frontier, National Institute of Advanced Industrial Science and Technology (AIST), Japan, ^b Physical Metrology Research Institute, AIST, Japan)

- PB5 Adsorption of H₂, CO₂, CH₄, CO and H₂S in HAS-Clay and Zeolite for bio-hydrogen production
Shohei, KURODA^a, Taira NAGANISHI^a, Mitsuto KAMEYAMA^b, Yuna SEO^a, Kisyoshi DOWAKI^a
(^a Graduate School of Science and Technology, Tokyo University of Science, Japan, ^b Japan Blue Energy Co., Ltd., Japan)
- PB6 Life Cycle Assessment of Bio-Methanol Production System in Consideration of CO₂ Sequestration
Tomoyuki ISHIYAMA^{a*}, Shohei KURODA^a, Shota KONDO^a, Teppei NUNOURA^b, Mistuo KAMEYAMA^c, Kiyoshi DOWAKI^a
(^a Graduate School of Science and Technology, Tokyo University of Science, Japan, ^b Environmental Science Center, The University of Tokyo, ^c Japan Blue Energy Co., Ltd., Tokyo, Japan)

PC-Super critical water, hydrothermal

- PC1 Cancelled
- PC2 Identification of Sewage Sludge Structure during Hydrothermal Treatment
Apip AMRULLAH, Yukihiro MATSUMURA*
(Department of Mechanical Science and Engineering, Hiroshima University, Japan)
- PC3 Supercritical Water Gasification of Tomato Residues
Nattacha PAKSUNG, Yukihiro MATSUMURA*
(Department of Mechanical Sciences and Engineering, Hiroshima University, Japan)
- PC4 Catalytic Effects of Phenol on Hydrothermal Decomposition of Glucose
Nattacha PAKSUNG, Yukihiro MATSUMURA*
(Department of Mechanical Sciences and Engineering, Hiroshima University, Japan)
- PC5 Reaction Model for Supercritical Water Gasification of Shochu Residue
Satoshi GOTO^a, Shuhei INOUE^a, Takahito INOUE^b, Yoshifumi KAWAI^c, Takashi NOGUCHI^d, Hiroaki TANIGAWA^c, Yukihiro MATSUMURA^{a*},
(^a Department of Mechanical Science and Engineering, Hiroshima University, ^b Fukken Co., ^c Chuden Plant, Co., Ltd., ^d Toyo Koatsu, Co., Ltd., ^e Chugoku Electric Power, Co., Inc.)
- PC6 Decomposition Product from Algal Biomass by Hydrothermal Treatment and the Effect of Catalyst
Yuto ICHIHARA^a, Yoshimitsu UEMURA^b, Man Kee LAM^b, Yukihiro MATSUMURA^{a*}
(^a Department of Mechanical Science and Engineering, Hiroshima University, Japan, ^b Centre for Biofuel and Biochemical Research, Universiti Teknologi Petronas, Malaysia)
- PC7 Determination of Hydrothermal Glucose Decomposition Products Using Mass Spectrometry
Yukihiro MATSUMURA*, Mutsumi KUROKI, Pattasuda DUANGKAEW, Shuhei INOUE
(Department of Mechanical Sciences and Engineering, Hiroshima University, Japan)

PD-Solid, liquid fuel and chemical, others

- PD1 Preparation of High-surface-area activated carbon via hydrothermal carbonization of biowaste and using physical & chemical activation for basic dye removal
Reza KHOSHBOUY*, Fumitake TAKAHASHI, Kunio YOSHIKAWA
(School of Environment and Society, Tokyo Institute of Technology, Japan)

- PD2 ESR Estimation of Lignin Structure of Japanese Cedar Pulverized by a Vibration Mill Using Ring Media
Kota UETAKE^a, Takehiko TAKAHASHI^{b*}
(^a Graduate school of Systems Science and Technology, Akita Prefectural University, Japan, ^b Faculty of Systems Science and Technology, Akita Prefectural University, Japan)
- PD3 A System Analysis on the Drone with FC Battery Fueled by Bio-Hydrogen
Shun YAMATE^a, Yoshiki FUJIWARA^b, Hiroshi TADOKORO^b, Noboru KATAYAMA^b, Yuna SEO^a, Mitsuo KAMEYAMA^c, Kiyoshi DOWAKI^a
(^a Department of Industrial Administration, Tokyo University of Science, Japan, ^b Department of Electrical Engineering, Tokyo University of Science, Japan, ^c Japan Blue Energy Co., Ltd., Japan)
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(^a Graduate School of Science and Technology, Hirosaki University, Japan, ^b North Japan Research Institute for Sustainable Energy (NJRISE), Hirosaki University, Japan)
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(^a Faculty of Agro-Industrial Technology, Universitas Padjadjaran, Indonesia, ^b Faculty of Medicine, Universitas Padjadjaran, Indonesia)
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- PD7 Fischer-Tropsch Synthesis for Liquid Fuel Production from Waste Wood Building Materials
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(^a Department of Mechanical Science and Engineering, Hiroshima University, Japan, ^b Department of Chemical Engineering, Chulalongkorn University, Thailand, ^c National Nanotechnology Center, National Science and Technology Development Agency, Thailand)

ACBS2018 author index

+ Presenting author, * Corresponding author

Abah, Emmanuel Owoicho	OE4+*	Iwai, Kazuma	OE4
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Tadokoro, Hiroshi	PD3		
Tajima, Takahisa	PA5		
Takahashi, Fumitake	PD1		
Takahashi, Nobuhide	PA2*		
Takahashi, Takehiko	OC3*, PD2*		
Takana, Kojiro	OC4		
Tanigawa, Hiroaki	PB1, PC5		
Thianheng, Phakhinee	OA3+		
Totsuka, Daichi	OC3+		
Trinh, Thanh Hoai	OC1		
Tsugoshi, Takahisa	PB4		
Uemura, Yoshimitsu	OC1+*, PC6		
Ueno, Shunichiro	OB4		