

Wednesday, November 9

8:30 Registration

Room A

8:45-10:15 High-Speed Biomedical Imaging III

Chair: Takayuki Nishizaka (Gakushuin University) and Cheng Lei (The University of Tokyo)

8:45	3A-A01	Yasushi Okada	The University of Tokyo	Development and application of super-resolution microscope (Invited)
9:15	3A-A02	Baoli Yao, Ming Lei, Dan Dan, Xing Zhou, Jia Qian, Yanlong Yang, Shaohui Yan, Junwei Min, Xianghua Yu, Wei Zhao	Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences	Fast Structured Illumination Microscopy (Invited)
9:45	3A-A03	Yuko Mimori-Kiyosue	RIKEN	Dissecting 3D Dynamics of Mitotic Spindles by Lattice Light-Sheet Microscopy (Invited)

10:15-10:35 Coffee Break

10:35-11:55 High-Speed Biomedical Imaging IV

Chair: Baoli Yao (Xi'an Institute of Optics and Precision Mechanics) and Yuko Mimori-Kiyosue (Riken CLST)

10:35	3A-A04	Keisuke Goda	The University of Tokyo	Extreme imaging and beyond (Invited)
11:05	3A-A05	Cheng Lei, Baoshan Guo, Takuro Ito, Yasuyuki Ozeki, Keisuke Goda	The University of Tokyo	High-speed optofluidic time-stretch microscopy for high-throughput label-free cell classification
11:25	3A-A06	T. Nishizaka, Y. Kinosita, T. A. Kato, D. Nakane	Gakushuin University	Structural and functional dynamics of nanoscale molecular motors (Invited)

11:55-13:00 Lunch (Izumi)

13:00-14:30 Sports and Flying/Swimming Animals, Insects and Microbes II

Chair: Tsutomu Takagi (Hokkaido University) and Eleanor Stride (University of Oxford)

13:00	3A-P01	Hiroyuki Iwamoto	JASRI, Spring8	Ultrafast X-ray diffraction movie from the flight muscle of a live bee during wing-beat (Invited)
13:30	3A-P02	K. Ueyama, D. Kolomenskiy, S. Ravi, T.	Chiba University	Aerodynamic performance of bumblebees with flexible wing hinges
13:50	3A-P03	Daisuke Miyashiro, Yuuko Wada, Ikuko Shihira-Ishikawa, Atsushi Miyawaki, Shinji Kamimura	RIKEN	Direct flow analysis around the beating flagella of sea-urchin sperm cells supporting the slender body theory of micro-swimmers
14:10	3A-P04	S. Abe, T. Takagi, K. Takehara, N. Kimura, T. Hiraishi, K. Komeyama, S. Torisawa and S. Asaumi	Hokkaido University	How many fish in a tank?: Constructing an automated fish counting system by using PTV analysis

14:30-15:00 Coffee Break

15:00-16:50 High-Speed Biomedical Imaging V

Chair: Yuji Sasaki (The University of Tokyo) and Toshio Ando (Kanazawa University)

15:00	3A-P05	Eleanor Stride	University of Oxford	Characterisation of Microbubble Dynamics for Ultrasound Mediated Drug Delivery (Invited)
15:30	3A-P06	H. Matsuzaki, T. Osaki, T. Azuma, M. Ichiyanagi, S. Takagi, J. Unga, R. Suzuki, K. Maruyama	The University of Tokyo	Manipulation of Submicron-size Bubbles using Focused Ultrasound

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15:50	3A-P07	N. Kudo and N. Tokuoka	Hokkaido University	High-speed microscopic observation of ultrasonically activated micron-sized bubbles interacting with biological cells of low image contrast
16:10	3A-P08	H. Hosseini, S.F. Moosavi-Nejad	Kumamoto University	Real-Time High-Speed Visualization: A Novel Nonintrusive Diagnostic to Verify Biophysics of Therapeutic Ultrasound and Shock Waves
16:30	3A-P09	T. Ishii, E. Sato, Y. Oda, O. Hagiwara, H. Matsukiyo, T. Enomoto, M. Watanabe, S. Kusachi	Toho University	Quad-energy X-ray photon counting using a CdTe detector and its application to spectral computed tomography

17:00-18:20 **Panel Discussion**

"Expansion and Fusion of the High-speed Imaging World" -From Attosecond Pump&Probe Imaging to 10-fps AFM Imaging of Stepping Myosin-

Coordinator: Dr. Takaki Hatsui, Leader of detection group, SACLA

Panelists: Prof. Baoli Yao (Xi'an Institute of Photonics), Prof. Rihito Kuroda (Tohoku University)

Prof. Shingo Kagami (Tohoku University), Dr. Ulrich Trunk (DESY), Prof. T. Goji Etoh (Osaka University)

Room B

8:45-10:05 **High-speed Image Sensors/Cameras and Imaging Systems II**

Chair: Martin Richardson (University of Central Florida) and Yasuhide Takano (Kindai University)

8:45	3B-A01	Yi Cai, Li Jingzhen, Xu Shixiang, Gong Xiangdong, Ai Yuexia, Hui Bin, Wu Qingyang, Liu Chunping, Chen Hongyi, Lu Xiaowei	Shenzhen University	Picosecond Framing Imaging Device with Fine Spatial Information
9:05	3B-A02	Mikhail Ya. Schelev, Martin C. Richardson	A.M. Prokhorov General Physics Institute, Russian Academy of Sciences	Picosecond Streak-Imaging in Laser Research (from the past to the future) (Invited)
9:35	3B-A03	Liang Gao	University of Illinois	Compressed Ultrafast Photography: redefining the limit of passive ultrafast imaging (Invited)

10:05-10:35 *Coffee Break*

10:35-12:05 **High-speed Image Sensors/Cameras and Imaging Systems III**

Chair: Liang Gao (University of Illinois) and Tatsuya Yaoita (Ken Automation Inc.)

10:35	3B-A04	T. Suzuki, R. Hida, Y. Yamaguchi, F. Isa, F. Kannari	Keio University	Ultrafast single-shot 25-frame burst imaging with SF-STAMP system
10:55	3B-A05	Martin Richardson Cheonha Jeon, Danielle Reyes, Ethan Lane, Khan Lim, Shermineh Rostami, Matthieu Baudelet	University of Central Florida	Ultrafast diagnosis of optical filaments interacting with aerosols (Invited)
11:25	3B-A06	T. Enomoto, E. Sato, Y. Oda, T. Ishii, O. Hagiwara, H. Matsukiyo, M. Watanabe, S. Kusachi	Toho University	High-speed dual-energy X-ray photon counting utilizing an LSO-multipixel photon detector
11:45	3B-A07	Paul Hoess	Stanford Computer Optics, Inc.	Extreme Range Extension of Visual Sight Hampered by Turbid Media

12:05-13:00 *Lunch (Izumi)*

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13:00-14:30 **High-speed Image Sensors/Cameras and Imaging Systems IV**

Chair: Maarten Rosmeulen (IMEC) and Toshiyuki Enomoto (Toho University)

13:00	3B-P01	Rihito Kuroda and Shigetoshi Sugawa	Tohoku University	A High Sensitivity 20Mfps CMOS Image Sensor with Readout speed of 1Tpixel/sec for Visualization of Ultra-high Speed Phenomena (Invited)
13:30	3B-P02	T. Kondo, Y. Takemoto, N. Takazawa, M. Tsukimura, H. Saito, H. Kato, J. Aoki, S. Suzuki, Y. Gomi, S. Matsuda, Y. Tadaki	Olympus Corporation	A 3D stacked global-shutter image sensor with pixel-level interconnection technology for high-speed image capturing (Invited)
14:00	3B-P03	Futa Mochizuki, Keiichiro Kagawa, Shin-ichiro Okihara, Min-Woong Seo, Bo Zhang, Taishi Takasawa, Keita Yasutomi and Shoji Kawahito	Shizuoka University	Single-shot/repetitive 200Mfps compressive CMOS image sensor (Invited)

14:30-15:00 *Coffee Break*

15:00-16:40 **High-speed Image Sensors/Cameras and Imaging Systems V**

Chair: Rihito Kuroda (Tohoku University) and Toru Kondo (Olympus Corporation)

15:00	3B-P04	Renato Turchetta	STFC & Rutherford Appleton Laboratory	Ultra-high speed, high resolution CMOS Image Sensors (Invited)
15:30	3B-P05	Maarten Rosmeulen, P. De Moor, Luc Haspeslagh, Paul Goetschalckx, Stefano Guerrieri and Jonathan Borremans	IMEC	Imager technologies for high speed applications (Invited)
16:00	3B-P06	C. Zhang, V. T. S. Dao, T.G.Etoh, E.Charbon	Delft University of Technology	Pixel parallel, localized driver design for a 128x256 pixel array 3D 1Gfps image sensor
16:20	3B-P07	Linkun Wu, David San Segundo Bello, Philippe Coppejans, Jan Craninckx, Jonathan Borremans	Vrije Universiteit Brussel, IMEC	A 20 Mfps high frame-depth CMOS burst-mode imager with low power in-pixel NMOS-only passive amplifier

Room C

9:00-10:10 **Flow Visualization II**

Chair: Beric Skews (University of the Witwatersrand) and Masanori Ota (Chiba University)

9:00	3C-A01	Harald Kleine and Herbert Olivier	University of New South Wales	High-speed flow visualization in hypersonic, transonic and shock tube flows (Invited)
9:30	3C-A02	S. Inshakov, A. Yu. Rodionov, V. N. Shekhtman	State Research Center "The Central Aerohydrodynamic Institute" (TsAGI)	Shear interferometry versus schlieren methods - merits and demerits for gas-dynamic investigations
9:50	3C-A03	Toshiharu Mizukaki	Tokai University	Visualization of Overpressure Profile by Large-Scale Explosions

10:10-10:35 *Coffee Break*

10:35-11:55 **Flow Visualization III**

Chair: Harald Kleine (University of New South Wales) and Koju Hiraki (Kyushu Inst. of Technology)

10:35	3C-A04	Ken Kurihara, Hiromichi Arimoto, Masanori Ota, Kazuo Maeno	Chiba University	Experimental study of the shock wave in water generated by the laser induced single bubble using Background Oriented Schlieren (BOS) technique with high speed camera
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10:55	3C-A05	M. Ota, K. Kurihara, H. Arimoto, K. Shida, T. Inage	Chiba University	Background Oriented Schlieren (BOS) measurement in supersonic flow with 4K high-speed camera
11:15	3C-A06	R. Hall, N. P. da Silva, B. W. Skews, R. T. Paton	University of the Witwatersrand	The Effect of Wedge Position and Inlet Geometry on Shock Wave Reflection
11:35	3C-A07	B. Skews, S. D. Subiah, R. T. Paton	University of the Witwatersrand	Shock Wave Strengthening through Area Reduction

11:55-13:00 *Lunch (Izumi)*

13:00-14:30 **Flow Videometrics I**

Chair: Kohsei Takehara (Kindai University)

Kazuyuki Nakakita (Japan Aerospace Exploration Agency)

13:00	3C-P01	Boleslaw Stasicki, Fritz Boden and Krzysztof Ludwikowski	DLR, German Aerospace Center	A 3D imaging system for the non-intrusive in-flight measurement of the deformation of an aircraft propeller and a helicopter rotor (Invited)
13:30	3C-P02	Eisaku Atsumi, Jun Sakakibara	Meiji University	Multiple-eye PIV
13:50	3C-P03	T.Kanno, K.Ogiwara, Y. Zama, T.Furuhata	Gumma University	Time-Resolved PIV Measurement of Gasoline Spray by Using Ultra-High Speed Camera
14:10	3C-P04	Reinhard Geisler	German Aerospace Center (DLR)	A Fast Double Shutter for CCD-Based Metrology

14:30-15:00 *Coffee Break*

15:00-16:50 **Flow Videometrics II**

Chair: Jun Sakakibara (Meiji University) and Kohsei Takehara (Kindai University)

15:00	3C-P05	Keisuke Asai, Yosuke Sugioka, Daiju Numata, Kazuyuki Nakakita	Tohoku University	Progress in Unsteady PSP Techniques for Shock-Wave and Aeroacoustic Field Measurements (Invited)
15:30	3C-P06	Takahiro Noda	Tokyo university of agriculture and technology	Unsteady PSP measurement of surface pressure fluctuation due to trailing edge noise on a NACA0012 airfoil
15:50	3C-P07	Kazuyuki Nakakita	Japan Aerospace Exploration Agency	Simultaneous Visualization of Transonic Buffet on a Rocket Faring Model Using Unsteady PSP Measurement and Schlieren Method
16:10	3C-P08	Daiju Numata	Tokai University	Experimental Study of Shock-Wave Reflection and Diffraction Phenomena Using Pressure-Sensitive Paint
16:30	3C-P09	Tran Duc Thuan, Koichi Mori	Nagoya University	Unsteady motion of laser ablation plume driven by vortex induced by expansion of curved shock wave

Room D

8:45-10:05 **High-pressure Shock Compression I**

Chair: Takamichi Kobayashi (NIMS) and Marion Harmand (IMPMC, Univ. Paris)

8:45	3D-A01	N. Ozaki, B. Albertazzi, T. Matsuoka et al	Osaka University	Ultrafast XRD observation of laser-shock induced lattice dynamics in phase transformation phenomena using SACLA XFEL (Invited)
9:15	3D-A02	T. Matsuoka, N. Ozaki, T. Yabuuchi, Y. Inubushi, T. Togashi, B. Albertazzi, A. Faenov, H. Habara, N. Hartley, K. Hayashi, S. Iketani, T. Ishikawa, T. Katayama, M. Kita, M. Koenig, Y. Kondo, T. Matsu	Osaka University	Demonstration of Ultrafast X-ray Diffraction Platform for High Energy Density Materials Pumped by High Power Lasers and Probed by X-ray Free Electron Laser (XFEL)

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9:35 3D-A03 K. Nakamura, K. Ichiyonagi, N. Kawai, R. Fukaya, S. Nozawa, S. Adachi Tokyo Inst. Of Technology Dynamics of Structural Phase Transition under Laser-Shock Compression Studied with Picosecond X-ray Pulses from Synchrotron Radiation (Invited)

10:05-10:35 *Coffee Break*

10:35-12:05 **High-pressure Shock Compression II**

Chair: Kazutaka Nakamura (Tokyo Inst. of Technology) and Takuo Okuchi (Okayama University)

10:35 3D-A04 T. Mashimo Kumamoto University Shock-compression study on ceramic materials (Invited)

11:05 3D-A05 Takamichi Kobayashi NIMS Shock-Wave-Induced Luminescence of Phosphor

11:25 3D-A06 Xun Liu, D. Sato, H.Sasaki, X. Zhou, N. Kawai, T. Mashimo Kumamoto University Real time observation of slip bands in MgO under shock compression

11:45 3D-A07 K. Miyanishi, N. Ozaki, Y. Tange, H. Dekura, T. Kimura, Y. Sakawa, T. Sano, T. Tsuchiya, T. Vinci and R. Kodama Osaka University Optical properties measurements of magnesium oxide under laser shock compression

12:05-13:00 *Lunch (Izumi)*

13:00-14:10 **High-pressure Shock Compression III**

Chair: Norimasa Ozaki (Osaka University) and Takeshi Matsuoka (Osaka University)

13:00 3D-P01 Marion Harmand IMPMC, Univ. Paris Iron and iron alloys studies at XFEL for planetary science (Invited)

13:30 3D-P02 T Okuchi, N. Ozaki, M. Kita, N. Purevjav, T. Sano, Y. Sakawa, R. Kodama Okayama University Laser-driven Shock Compression of Water ? Fast Diagnostics of Changing Reflectivity

13:50 3D-P03 T. Sekine, T. Nishikawa, N. Ozaki, T. Sato, B. Albertazzi, A. Benuzzi-Mounaix, R. Bolis, M. Guaraguini, M. Koeing, K. Miyanishi, A. Ravasio, Y. Sakawa, T. Sano, Y. Umeda. and R. Kodama Hiroshima University Magmas at extreme conditions

14:10-14:30 *Coffee Break*

14:30-15:40 **Imaging Diagnostics in Plasma Applications I**

Chair: Yasunobu Arikawa (Osaka University) and Takayuki Watanabe (Kyushu University)

14:30 3D-P04 Takayuki Watanabe Kyushu University High-Speed Visualization of Thermal Plasma Characteristics (Invited)

15:00 3D-P05 Hisaya Komen, Keigo Tanaka, Masaya Shigeta, Manabu Tanaka and Anthony B. Murphy Osaka University Visualization of Plasma Temperature and Weld Pool Convection during Gas Metal Arc Welding

15:20 3D-P06 Keigo Tanaka, Titinan Methong, Masaya Shigeta, Manabu Tanaka and Anthony Bruce Murphy Osaka University Measurement of Metal Vapor Behavior in Helium Plasma during Gas Tungsten Arc Welding

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15:50-17:00 **Imaging Diagnostics in Plasma Applications II**

Chair: Takayuki Watanabe (Kyushu University) and Yasunobu Arikawa (Osaka University)

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| 15:50 | 3D-P07 | Y. Arikawa, S. Matsubara, Y. Kato, H. Kishimoto, Y. Abe, A. Yogo, H. Nihsimura, M. Nakai, H. Shiraga, S. Fujioka, H. Azechi, Y. Otake, K. Mima | Osaka University | 10-ns time resolution fast-neutron imaging detector (Invited) |
| 16:20 | 3D-P08 | King Fai Farley Law | Osaka University | Picosecond time resolved magnetic field probing by proton radiography |
| 16:40 | 3D-P09 | A. A. Ushakov, P. A. Chizhov, V. V. Bukin, S.V. Garnov | Prokhorov General Physics Institute, Russian Academy of Sciences | Femtosecond laser interferometry in laser plasma study applications |