

MOC2021

The Twenty-Sixth Microoptics Conference

MOC Award

Awarded to

**Dieter Bimberg
Federico Capasso
Tsutomu Hara
Katsumi Kishino**

MOC Contribution Award

Awarded to

**Tomoyuki Miyamoto
Hajime Shoji**



**September 27, 2021
Hamamatsu, Japan**

MOC Award

The Award honors outstanding technical contributions to the fundamentals and/or applications of microoptics.

Dieter Bimberg



Dieter Bimberg received the Ph.D. magna cum laude from Goethe University, Frankfurt, Germany. He held a Principal Scientist position at the Max Planck-Institute for Solid State Research, Grenoble, France, until 1979. After serving as a Professor of electrical engineering, Technical University of Aachen, Germany, he assumed the Chair of Applied Solid-State Physics at Technical University of Berlin. He served for 21 years as executive director of the Institute of Solid State Physics and is the Founding Director of the TUB Center of NanoPhotonics. He

was holding guest professorships at the Technion, Haifa, U.C. Santa Barbara, CA, USA, and at Hewlett-Packard in Palo Alto, CA. He was Distinguished Adjunct Professor at KAU, Jeddah 2012-2018. In 2018 he assumed the directorship of the “Bimberg Chinese German Center for Green Photonics” at the Changchun Institute of Optics, Fine Mechanics and Physics of the Chinese Academy of Sciences.

He is a member of the German Academy of Sciences Leopoldina, the EU Academy of Sciences, a Foreign Member of the Russian Academy of Sciences, the US Academies of Engineering and of Inventors, a Life Fellow of the American Physical Society and the Institute of Electrical and Electronics Engineers, IEEE. He is recipient of multiple international awards, like the UNESCO Nanoscience Award, the Max-Born Award and Medal of IoP and DPG, the Heinrich-Welker-Award, the Nick Holonyak Jr. Award, the Japanese Oyo Buturi Award of Applied Physics, the Jun-Ichi Nishizawa Medal and Award of IEEE, and the Stern-Gerlach Award of DPG, to mention a few. He received honorary doctorates of the University of Lancaster, UK, and the St. Petersburg Academic University of the Russian Academy of Sciences.

He has authored more than 1600 papers, 71 patents and applications, and six books. The number of times his research works has been cited exceeds 64,000 and his Hirsch factor is 112 (@ Google Scholar). His research interests include physics and technology of nanostructures, nanostructured photonic and electronic devices, and energy efficient data communication.

Citation

For pioneering contributions to the development of quantum dot lasers and VCSELs

Federico Capasso



Federico Capasso is the Robert Wallace Professor of Applied Physics at Harvard University, which he joined in 2003 after 27 years at Bell Labs where his career advanced from postdoctoral fellow to Vice President for Physical Research. He holds a Doctorate in Physics from the University of Rome, La Sapienza. He pioneered bandgap engineering leading to many new heterostructure devices including the invention of the quantum cascade laser. He carried out fundamental studies of the Casimir effect including the first measurement of the repulsive Casimir force. He and his group introduced subwavelength structured surfaces (metasurfaces) as a powerful and flexible tool for wavefront control by judicious design of the local phase and amplitude, leading to generalized laws of reflection and refraction. They pioneered the use of metasurfaces as a platform for Flat Optics, demonstrating metalenses with superior aberration control compared to conventional diffractive optics (Fresnel) and refractive optics, with much less thickness and complexity and

ease of optical alignment. Highlights of Capasso's flat optics research are high-performance diffraction limited dielectric metalenses in the visible, single broadband achromatic metalenses across the entire visible, the correction of third order aberrations including field curvature with a single metaoptic and the introduction of Matrix Fourier Optics, which led him and his collaborators to demonstrate a single shot polarization sensitive camera without birefringent optics, using a single metasurface.

He is co-author of over 400 publications and holds 70 US patents. His h-index is 145 and he has over 94000 citations.

He is a member of the National Academy of Sciences, the National Academy of Engineering and the American Academy of Arts and Sciences, Academia Europaea, and a foreign member of the Accademia dei Lincei. His awards include the 2021 Yves Medal and Jarus Quinn Prize of the Optical Society (OSA), the Robert Wood Prize of OSA, the Rumford Prize of the American Academy of Arts and Sciences, the Balzan Prize for Applied Photonics, the King Faisal Prize, the American Physical Society Arthur Schawlow Prize, the SPIE Gold Medal, the IEEE Edison Medal, the IEEE David Sarnoff Award in Electronics, the IEEE Streifer Award for Scientific Achievement, the Materials Research Society Medal, the Wetherill Medal of the Franklin Institute, the Willis Lamb Medal, the Enrico Fermi Prize of the Italian Physical Society, the Duddell medal and Prize of the Institute of Physics (London, UK), the Jan Czochralski Award of the European Materials Research Society, the Julius Springer Prize in Applied Physics, the Berthold Leibinger Future prize, The Newcomb Cleveland Prize of the American Association for Advancement of Science (AAAS), the Heinrich Welker Memorial Medal (Germany) & International Compound Semiconductors Symposium Award, the Rank Prize, the Gold Medal of the President of Italy for meritorious achievement in science, the Tommasoni & Chisesi Prize for Outstanding Achievements in Physics, the Bell Laboratories Fellow Award and the New York Academy of Sciences Award. He holds honorary doctorates from Lund University, Diderot University, and the University of Bologna. He started two companies Metalenz, to commercialize flat optics for high volume applications, and EOS Photonics, which subsequently merged with Pendar Technologies, to commercialize quantum cascade lasers for chemical sensing.

Citation

For pioneering contributions to the research on quantum cascade lasers, plasmonics, and metamaterials

Tsutomu Hara



Dr. Tsutomu Hara graduated from the Department of Electrical Engineering, Kanazawa University, where he obtained an MS in 1976. In 1991, he received a Dr. of Eng. Degree from Kanazawa University.

After working for a patent management section of Teisco K.K. (Electronic musical instrument manufacturer), he joined Hamamatsu Photonics K.K in 1979. Presently he is a Director, a Managing Executive Officer and a Director of Central Research Laboratory of Hamamatsu Photonics K.K. He has been engaged in research on optical materials, optical devices (especially spatial light modulators), optical computing and optical measurement.

He is a Visiting Professor of Shizuoka University, a Vice Chairman of the 182nd committee of Japan Society for the Promotion of Science, a Director of Hamamatsu Agency for Innovation, a Trustee of Institute for Laser Technology, an Adviser of WISE Program for Nano-Precision Medicine, Science, and Technology of Kanazawa University, and a Research Area Adviser of CREST (JST).

Dr. Hara received the Takayanagi Memorial Award in 2012.

Citation

For pioneering contributions to the development of spatial light modulators
for the breakthroughs in microoptics technologies

Katsumi Kishino



Katsumi Kishino earned his Bachelor's, Master's, and Doctorate degrees in Engineering from the Tokyo Institute of Technology, Tokyo, Japan, in 1975, 1977, and 1980, respectively. From 1980 to 1984, he was a Research Associate at Tokyo Institute of Technology. In 1984, he joined the Department of Electrical and Electronics Engineering, Sophia University, Tokyo, as a Lecturer. Then, he was appointed as an Associate Professor in 1986, a Professor in 1992, a Professor by Special Appointment in 2018. Presently, he is a director of Nanotechnology Research Center of Sophia University.

In the long period of research on compound-semiconductors over 47 years, Dr. Kishino has made wide-range contributions to the fields of photonic devices of AlGaAs integrated optics based on twin-guide lasers, 1.55 μm GaInAsP dynamic single mode lasers, 600-670nm red-light GaInP/AlInP lasers by GS-MBE, novel II-VI compounds on InP and related yellow-green emitters, and III-nitride semiconductors (GaN, InN and AlGaN) by RF-MBE including pioneering works on GaN-based nanocolumns and related optical nano-devices. From Sept. 1989 to Aug. 1990, he accomplished the first stage of research of resonant-cavity-enhanced (RCE) photodetectors as a Visiting Associate Professor at the University of Illinois at Urbana-Champaign, on leave from Sophia University.

Dr. Kishino awarded a 2010-2011 distinguished lecturer of IEEE photonic society, a 27th SSDM award (2016), a fellow of the Institute of Electronics, Information and Communication Engineers (IEICE) of Japan (2005), a fellow of the Japan Society of Applied Physics (2009), and a life fellow of IEEE (2021).

Citation

For pioneering contributions to the realization of visible semiconductor lasers
and nanocolumn light emitters

MOC Contribution Award

The Award honors outstanding contributions to the organization of Microoptics Conference.

Tomoyuki Miyamoto



Tomoyuki Miyamoto was born on May 16, 1968 in Tokyo, Japan. He received the B. E., the M. E., and Dr. (Eng.) degrees in Electronic Engineering from Tokyo Institute of Technology, Tokyo, Japan in 1991, 1993, and 1996, respectively. He was appointed as a Research Associate in 1996, Lecturer in 1998, and Associate Professor in 2000 at Tokyo Institute of Technology. He is currently an Associate Professor at the Institute of Innovative Research (IIR), Tokyo Institute of Technology. From 2004 to 2006, he concurrently served as an Academic Researcher in the Nanotechnology Promotion Section of Basic Research Division, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan. He has been engaged on research of semiconductor photonics devices, especially on VCSELs, quantum effect structures, and III-V semiconductor epitaxy. Currently, he is interested in optical wireless power transmission (OWPT). He has published over 130 papers and presented at over 200 conferences in these fields. He is a member of the Institute of Electrical and Electronics Engineers (IEEE) Photonics Society, the Institute of Electronics, Information, and Communication Engineers of Japan (IEICE), the Institute of Electrical Engineers of Japan (IEEJ), the Laser Society of Japan (LSJ), and the Japan Society of Applied Physics (JSAP).

Citation

For the great effort to successfully hold the Microoptics Conferences for many years

Hajime Shoji



Hajime Shoji received the B.E., M.E., and Ph.D. degrees in electronic engineering from the University of Tokyo, Tokyo, Japan, in 1985, 1987, and 1990, respectively.

In 1990, he joined Fujitsu Laboratories Ltd., Atsugi, Japan, where he was engaged in the research and development of various types of semiconductor lasers such as tunable DFB lasers, VCSELs, quantum dot lasers, and temperature insensitive lasers on InGaAs ternary substrates. In 2003, he moved to Eudyna Devices Inc., Yamanashi, Japan, where he worked on the development of semiconductor lasers for optical communication systems and carried out business development activities as a senior development manager. In 2009, due to the organizational change of Eudyna Devices Inc., he moved Sumitomo Electric Industries LTD., Yokohama, Japan, and he was leading the development of integrated semiconductor optical devices such as narrow linewidth tunable lasers, 90-degree hybrid integrated photodiodes and ultra-fast modulators for coherent transmission systems as a department head. Now, he is a general manager of Transmission Devices Laboratory, Sumitomo Electric Industries LTD., leading a wide range of R&D activities from compound semiconductor materials to optoelectronic and electronic devices.

Dr. Shoji is a member of the Japan Society of Applied Physics (JSAP), the Institute of Electronics, Information and Communication Engineers (IEICE), and IEEE/Photonics Society. He has been engaged in the management of many domestic and international conferences as a chair and a member of program/organization committees. Since 1996, he has been a member of Microoptics Group, JSAP, and he was a program co-chair of MOC'09, and a conference co-chair of MOC'11.

Citation

For the great effort to successfully hold the Microoptics Conferences for many years

Past Recipients of the MOC Award

(MOC/GRIN '89)	
1989 MOC Award	William A. Gambling (Southampton University)
1989 MOC Award	Teiji Uchida (NEC Corporation)
1989 GRIN Award	Erich W. Marchand (University of Rochester)
1989 GRIN Award	Ichiro Kitano (Nippon Sheet Glass Co., Ltd.)
(MOC '91)	
1991 MOC Award	Shun-ichi Tanaka (Science University of Tokyo)
1991 MOC Award	Ramu V. Ramaswamy (University of Florida)
(MOC/GRIN '93)	
1993 MOC/GRIN Special Award	Yasuharu Suematsu (Tokyo Institute of Technology)
1993 MOC Award	Kenichi Iga (Tokyo Institute of Technology)
1993 GRIN Award	Duncan T. Moore (University of Rochester)
(MOC '95)	
1995 MOC Award	Hiroshi Nishihara (Osaka University)
1995 MOC Award	Chen S. Tsai (University of California, Irvine)
(MOC/GRIN '97)	
1997 MOC/GRIN Award	Alain Carencu (France Telecom/CNET)
1997 MOC/GRIN Award	Tadashi Kojima (KONICA Corporation)
1997 MOC/GRIN Award	Giok-Djan Khoe (Eindhoven University of Technology)
1997 MOC/GRIN Award	Koichi Nishizawa (Polytechnic University)
(MOC '99)	
1999 MOC Award	Hans Melchior (Swiss Federal Institute of Technology Zurich)
1999 MOC Award	Masao Kawachi (NTT)
(MOC '01)	
2001 MOC Award	Karl Joachim Ebeling (University of Ulm)
2001 MOC Award	Kenya Goto (Tokai University)
2001 MOC Award	W. John Tomlinson (JDS Uniphase)
(MOC '03)	
2003 MOC Award	Kunio Tada (Kanazawa Institute of Technology)
2003 MOC Award	Paul Lagasse (Ghent University)
2003 MOC Award	Shing Chung Wang (National Chiao Tung University)
(MOC '05)	
2005 MOC Award	Yasuo Kokubun (Yokohama National University)
2005 MOC Award	David N. Payne (University of Southampton)
2005 MOC Award	Wilfrid Veldkamp (MIT Lincoln Laboratory)
(MOC '07)	
2007 MOC Award	Yasuhiro Koike (Keio University)
2007 MOC Award	John Bowers (University of California, Santa Barbara)
2007 MOC Award	Hugo Thienpont (Vrije Universiteit Brussel)
(MOC '09)	
2009 MOC Award	Kashiko Kodate (Japan Women's University)
2009 MOC Award	Meint K. Smit (TU Eindhoven)
2009 MOC Award	Connie Chang-Hasnain (Univ. of California, Berkeley)

(MOC '11)

2011 MOC Award

2011 MOC Award

2011 MOC Award

Roel Baets (Ghent University)

Shun Lien Chuang (University of Illinois)

Fumio Koyama (Tokyo Institute of Technology)

(MOC '13)

2013 MOC Award

2013 MOC Award

2013 MOC Award

Andreas Bräuer (Fraunhofer IOF)

Christopher R. Doerr (Acacia Communications Inc.)

Masataka Nakazawa (Tohoku Univ.)

(MOC '15)

2015 MOC Award

2015 MOC Award

2015 MOC Award

Masayuki Izutsu (JSPS San Francisco, Waseda Univ.)

Yang Hee-Lee (KAIST)

David J. Richardson (Univ. of Southampton)

(MOC2017)

2017 MOC Award

2017 MOC Award

2017 MOC Award

Yasuhiko Arakawa (Univ. of Tokyo)

Philip Russel (Max Planck Institute)

Ming C. Wu (Univ. of California, Berkeley)

(MOC2019)

2019 MOC Award

2019 MOC Award

2019 MOC Award

Benjamin J. Eggleton (Univ. of Sydney)

Waguih S. Ishak (Corning Inc.)

Susumu Noda (Kyoto Univ.)

Past Recipients of the MOC Contribution Award

(MOC '05)

2005 MOC Contribution Award Wolfgang Karthe (Fraunhofer IOF)

(MOC '07)

2007 MOC Contribution Award Kazuo Kuroda (University of Tokyo)

2007 MOC Contribution Award Young-Pil Park (Yonsei University)

2007 MOC Contribution Award Young-Joo Kim (Yonsei University)

(MOC '09)

2009 MOC Contribution Award Hirochika Nakajima (Waseda Univ.)

2009 MOC Contribution Award Heidi Ottevaere (Vrije Univ. Brussels)

2009 MOC Contribution Award Jürgen Mohr (Forschungszentrum Karlsruhe)

(MOC '11)

2011 MOC Contribution Award Gen-ichi Hatakoshi (Toshiba Corporation)

2011 MOC Contribution Award Hao-Chung Kuo (National Chiao Tung University)

2011 MOC Contribution Award Tien-Chang Lu (National Chiao Tung University)

(MOC '13)

2013 MOC Contribution Award Kiyoshi Yokomori (Japan Science and Technology Agency)

(MOC '15)

2015 MOC Contribution Award Marce P. De Micheli (Univ. of Nice Sophia Antipolis)

(MOC2017)

2017 MOC Contribution Award Tetsuya Mizumoto (Tokyo Institute of Technology)

(MOC2019)

2019 MOC Contribution Award Shinji Yamashita (Univ. of Tokyo)

2019 MOC Contribution Award Kiichi Hamamoto (Kyushu Univ.)

2019 MOC Contribution Award San-Liang Lee (National Taiwan Univ. Sci. & Tech.)