Authors' Photographs and Biographies

Humio INABA

Humio INABA was born in Tokyo, Japan in 1929. He received the B. S. degree in geophysics in 1951 and the Ph. D. degree in applied physics in 1962 both from Tohoku University, Sendai, Japan. He has been with the Research Institute of Electrical Communication, Tohoku University from 1957 to 1992 serving as an Associate Professor and then a Professor of quantum electronics 1965 and has became Director of the Research Institute from 1990. He moved to Tohoku Institute of Technology in 1992 as a Professor of electronics after the retirement from Tohoku University. He is also a member of the board of directors of Biophotonics Information Labs., Inc, established in 1993. He has been invited from Stanford Electronics Labs., Blaford University, U. S. A. from 1961 to 1962 doing research on lasers and optical heterodyning. His research interests currently include laser technology, photonics, laser radar and optical remote sensing, laser imaging and processing, ultraweak biophoton phenomena and biophotonics with novel applications of lasers. From 1986 to 1992, he has also served concurrently as Director of INABA Biophoton Project in the Exploratory Research for Advanced Technology (ERATO) Program organized by Research Development Corporation of Japan. He is a Fellow of IEEE and the Optical Society of America (OSA) and also a member of the Engineering Academy of Japan.

Takao KOBAYASHI

Takao Kobayashi received the B. E., M. E., and Ph. D degrees in electrical communication engineering from Tohoku Univer sity, Sendai, Japan in 1964, 1966 and 1974, respectively.

In 1967, he was with the Research Institute of Electrical Communication, Tohoku, as a Research Associate and later Associate Professor. In 1981, he became a Professor of Electrical and Electrnics Engineering, Fukui University. His broad research interests include the development of diode-pumped infrared solid-state lasers, ultraviolet gas and solid-state lasers, nonlinear optical devices for pollution monitoring, coherent and incoherent lidars for wind and temperature measurements.

Dr. Kobayashi is a menber of IEICE, Jpn. Soc. of AP, Phys. Soc. of Jpa., Laser Soc. of Jpn. and IEEE.

Nobuo TAKEUCHI

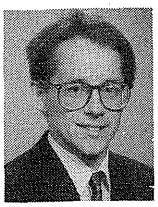
Nobuo Takeuchi was born in Tokyo, Japan. He received the BA (1963), the MA (1965), the PhD (1969) degrees in physics from the University of Tokyo. He joined Inst. of Solid State Physics, University of Tokyo in 1963, and stayed in Columbia University in New York, NRC of Canada, and moved to the National Inst. of Env. Studies. From 1992, he has been Prof. of Remote Sensing and Image Research Center, Chiba University. His research concerns laser spectroscopy, laser radar, and atmospheric remote sensing.

Dennis K. KILLINGER

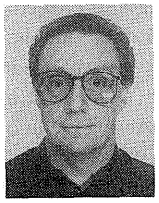
Dennis K. Killinger is a Professor in Physics at the University of Souch Florida. He conducts research in the development of new lasers and optical spectroscopic techniques, and the application of these for atmospheric Lidar and remote sensing. He is a Fellow of the Optical Society of America, past associate editor of Applied Optics and Optics Letters, and is currently Technical Co-chairman of the OSA/IEEE Conference on Lasers and Electro-Optics (CLEO '95). He previously worked at MIT Lincoln Laboratory, Naval Avionics Facility, and Ford Scientific Research Labs. He has recently also been appointed to the office of the Vice President of Research to handle technology transfer for the University and regional industries.

Martin MILTON

Martin Milton was born in Eastbourne, U. K. He received the BA degree in physics from Oxford University, England, in 1981. In the same year he



joined the Division of Quantum Metrology at the National Physical Laboratory. His research concerns the development of new laser sources for use in atmospheric remote sensing. Particular interests include parametric amplification, difference-frequency mixing and stimulated Raman scattering. He also works on the use of measurement data acquired using optical remote sensing to industrial and Government problems. Since joining NPL he has received the PhD degree in 1991, as an external student of Southampton University and an MBA degree at London Business School.



Stuart McDERMID

Stuart McDermid received his PhD degree in Physical Chemistry from the University of London, England, in 1976 where he studied the application of laser-induced-fluorescence to the study of the spectroscopy and kinetics of small molecules. In 1978 he moved to the Jet Propulsion Laboratory, California Institute of Technology, first as a National Research Council Research Associate and then joining the staff in 1981. At JPL Dr. McDermid has conducted research towards the development and application of laser remote sensing techniques for the study of the Earth atmosphere. He was awarded the NASA Exceptional Scientific Achievement Medal in 1992 for his work on ozone lidar.

Micael H. PROFFITT

Micael H. Proffitt was born in Long Beach, California in 1942. He received a B. A. (1964), a M. A. (1966) and a Ph. D. (1968) in Mathematics from the University of Texas, at Austin specializing in topology. He was an Assistant Professor and an Associate Professor of Mathematics at SUNY, New Paltz, NY from 1968-72. In 1972 he returned to the University of Texas as a Robert A. Welch Research Fellow and Research Scientist in the Departments of Physics and Chemistry at the University of Texas doing basic experimental research and instrument development. Since 1980 he has been a Research Associate with CIRES at the University of Colorad and the NOAA Aeronomy Laboratory in Boulder, Colorado, where he has specialized in atmospheric ozone measurements.

S. H. MELFI

S. H. Melfi received his B. S. degree in electrical engineering from the Citadel in 1963, and his M. S. (1968) and Ph. D. (1970) in physics from the College of William and Mary, Williamsburg, Virginia. He then joined the professional staff at NASA-Langley Research Center where his major research interests were in the development and application of lidar techniques for remotely probing the atmosphere. Since leaving Langley in 1973, he has held management positions at the US EPA Laboratory in Las Vegas, Nevada, NASA Headquarters, and Goddard. He has been a Professor in the Department of Physics at the University of Maryland-Baltimore County since July 1994.

James D. SPINHIRNE

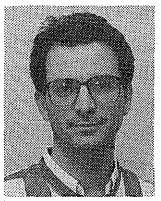
James D. Spinhirne received a Ph. D. degree in Atmospheric Physics from the Univ. of Arizona in 1977.

From 1978 to present He has been at NASA-Goddard Space Flight Center as a scientist in the Laboratory for Atmospheres with interests in remote sensing, instrument development and atmospheric radiation and climate, and he is currently a science team member for the GLAS spacecraft instrument for the Earth Observing System project. He is on the committee for Atmospheric Radiation of the American Meteorological Society and is a member of the American Geophysical Union and Optical Society.

A. HAUCHECORNE

Alain Hauchecorne was born in 1951. He received the Diploma of Ecole Polytechnique, Paris, in 1973 and the Doctorat-es-Sciences from the University of Paris in 1983. He is Director of Research at National Center of Scientific Research (CNRS) and at the head of the Group of Middle Atmosphere Structure and Dynamics at the Service d'Aironomie, Verrihres-le-Buisson. He is pioneer in the development of density and temperature measurements using Rayleigh and Raman lidars and wind measurements using Doppler lidars in the mid-

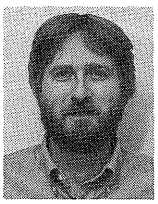
dle atmopphere. He conducted modeling and experimental studies on stratospheric and mesospheric dynamics. He participates to the Network for Detection of Stratospheric Changes (NDSC).



Stephen M. HANNON

Stephen M. Hannon received the B. S. degree in electrical engineering from the University of Illinois at Urbana-Champaign in 1985, and the S. M. and Ph. D. degrees in electrical engineering from the Massachusetts Institute of Technology in 1987 and 1990, respectively.

He specializes in the areas of optical remote sensing system phenomenology, satistically optimal signal processing for laser radar (lidar) systems, and the design of laser radar field experiments and the analysis of their data. In 1991, he joined Coherent Technologies, Inc., in Boulder, CO, as a research scientist. Dr. Hannon is now Director of Theoretical Studies and Signal Processing and leads systems conceptualization, modeling and performance predication efforts for compact solid-state laser radar systems. Prior to joining CTI, he was at SRI International, where he performed advanced algorithm development for multiwavelength DIAL systems. His graduate research at MIT and MIT/Lincoln Laboratory focused on optimal signal processing for multifunction (range, Doppler, intensity, thermal) laser radar systems. Dr. Hannon is a member of OSA and IEEE.



Sammy W. HENDERSON

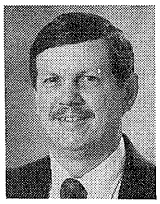
Sammy W. Henderson received the B. S. degree in physics and mathematics from Henderson State University, Arkadelphia, AR, in 1979, and the Ph. D. degree in physics from Texas A&M University, College Station, TX, in 1986.

In 1986 he joined Coherent Technologies, Inc., in Boulder, CO, as a laser physicist, and is presently the director of research and development there. His research topics have included diode laser and flashlamp-pumped solid-state lasers, nonlinear frequency conversion techniques, laser frequency stabilization techniques, and the design and application of coherent laser radar systems. At CTI, Henderson is leading efforts to develop compact laser radar systems using solid-state lasers. He has published over 25 papers in journals and conference proceedings, in addition to numerous technical reports written at CTI.

Dr. Henderson is a member of APS and OSA.

Chester S. GARDNER

Chester S. Gardner received the B. S. degree from Michigan State University in 1969 and the M. S. and Ph. D. degrees in electrical engineering from Northwstern University in 1971 and 1973, respectively. In 1973 he joined the faculty of the University of Illinois where he is currently Professor of Electrical and Computer Engineering and Director of the Electro-Optic Systems Laboratory. He has also served as Vice Chancellor for Research, Dean of the Graduate College, Associate Dean of Engineering for Academic Affairs, and Acting Dean of Engineering. He is a Fellow of the OSA and a Fellow of the IEEE. He has conducted both theoretical and experimental research in satellite laser ranging, laser altimetry, laser remote sensing and laser guide star adaptive imaging.



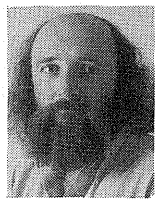
Edward V. BROWELL

Edward V. Browell heads the Lidar Applications Group in the Atmospheric Sciences Division at the NASA Langley Research Center in Hampton, Virginia. He received a Ph. D. in 1974 from the University of Florida, and for the past 20 years he has been involved in the development and application of lidar systems for the remote measurement of atmospheric gases and aerosols. He has participated in 18 major field experiments to study regional and global atmospheric processes all over the world, and he has published over 100 papers. Dr. Browell is a Fellow of the Optical Society of America and a member of the American Geophysical Union, the American Meteorological Society, and the American Association for the Advancement of Science.

Hans EDNER

Hans Edner was born in Järbo, Sweden, in 1954. He received the B. A. degree from the University of Göteborg in 1979, and the Ph. D. degree in physics from Lund University in 1987. His thesis was on applications of laser spectroscopy in combustion and

environmental probing. He is presently a senior research scientist at the Division of Atomic Physics, Lund Institute of Technology, where he leads the group in Optical Remote Sensing.



Kenneth SASSEN

Kenneth Sassen is a New York City-born atmospheric scientist with a background in laser research that began in 1967 at New York University. Following the Ph. D. degree in 1976 from the University of Wyoming, he joined the University of Utah where he was appointed Research Professor in 1989. He has participated in numerous field research campaigns using mobile lidar systems since 1981, and currently directs a program of cirrus cloud research from the Facility for Atmospheric Remote Sensing (FARS), which includes two polarization lidars, a 95 GHz polarimetric Doppler radar, and various radiometers. He has first-authored over 50 journal articles.

Albert ANSMANN

Albert Ansmann received a Diploma and a Ph. D. degree in meteorology from the University of Hamburg in 1984 and 1988, respectively. From 1984 to 1988 he was a research scientist with the Max Planck Institue for Meteorology, Hamburg, and 1989 to 1992 with the GKSS Research Center, Geesthacht, Germany. Since 1992 he is with the Institute for Tropospheric Research, Leipzing. He is the head of a new laser remote sensing group which is presently building up two lidar sistem.

Horst JAEGER

Horst Jaeger graduated as Diploma-Ingenieur in 1964 and received his Dr. rer. nat. in physics from the Technical University at Munich, Germany, in 1968, where he worked on spectroscopic light sources. From 1969 until 1973 he was with the Council for Scientific and Industrial Research, CSIR, at Pretoria, South Africa. There he developed spectroscopic techniques for metal analysis, especially raw and refined gold. In 1974 he joined the Fraunhofer Institute for Atmospheric Environmental Research, IFU, at Garmisch-Partenkirchen, Germany. He is presently working on lider remote sensing and the investigation of stratospheric changes.

Osamu UCHINO

Osamu Uchino received the D.S., M.S., and Ph.D. degrees in physics from Kyushu University, Fukuoka, Japan, in 1969, 1971, and 1977, respectively. He is now Head of the Third Laboratory, Meteorological Satellite and Observation System Department, Meteorological Research Institute.

He has been engaged in the development of new lidar systems such as Excimer Ozone DIAL and atmospheric observations with them.

Yasunobu IWASAKA

Yasunobu Iwasaka received the BS in physics, the MS and the PhD degrees in upper atmospheric physics, all from University of Tokyo in 1965, 1967 and 1970, respectively. He joined Water Research Institute, Nagoya University as Associate Professor in 1978, and has been a Professor of Solar Terrestrial Environment Laboratory, Nagoya University fom 1989. His research field is atmospheric physics, heterogeneous processes in the atmospheric, chemistry in the polar stratosphere. Dr. Iwasaka is a member of the Society of Geomagnetism and Earth, Planetary and Space Sciences, Meteorological Society of Japan, Association of Aerosol Science and Technology.

Huanling HU

Huanling Hu, male, Professor in Anhui Institute of Optics and Fine Mechanics (AIOFM), Academia Sinica, was borne in Shanghai, on March 30, 1941. He was graduated in 1967 from the Graduate school, Chinese University of Science and Technology, and majored in atmospheric probing. His present post is the director of Atmospheric Optics Division, AIOFM. Since 1979, he has been engaged in the studies of lidar, aerosol, and ozone etc. He was as a visiting scholar for two years at Institute of Atmos-

pheric Physics, University of Arizona. He is a member of ICLAS (International Coordination Group on Laser Atmospheric Studies).

Jinhuan QIU

Jinhuan Qiu, male, Professor, born in Fujian province of China on November 18, 1943, studied at Geophysics Department of Beijing University during 1962-1968, and now is a director of the Lab for Laser Remote Sensing, Institule of Atmospheric Physics, Chinese Academy of Sciences. He worked in Munich University of Germany with Prof. H. Quenzel as a visiting scholar from 1988 to 1990. Since 1980 he has been working mainly on the fields of atmospheric radiation and remote sensing, especially laser remote sensing of the atmosphere.

M. Patric McCORMICK

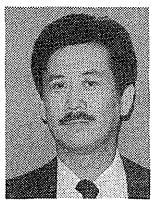
M. Patric McCormick is Head of the NASA Langley Research Center's Aerosol Research Branch and for the last 30 years has been performing research on the development of sensors for measurement of the Earth's atmosphere. This reseach has primarily focused on lidar and satellite limb extinction (occultation) techniques for characterization of aerosols, clouds, and other atmospheric species. Dr. McCormick has served twice as Chairman of the American Meteorological Society's Committee on Laser Atmospheric Studies, and is the present Chairman of the International Radiation Commission's International Coordination Group on Laser Atmospheric Studies. He is Principal Investigator for NASA's SAM II, SAGE I, SAGE II, and SAGE III satellite exeriments as well as Project Scientist for LITE.

Christian WERNER

Christian Werner received a MS degree in physics from Munich University in 1966 and a PhD in 1981. From 1966 to 1980 he was a scientist in the German Aerospace Research Establishment (DLR), Institute of Atmospheric Physics. Since 1980 he has been a section head in the Institute of Optoelectronics responsible for laser techniques. Currently, he is working on space lidar applications for atmospheric research.

Vladimir Evseevitch ZUEV

Vladimir Evseevitch Zuev, born 29 January 1925, atmospheric physics and optics specialist, director of the Institute of Atmospheric Optics since 1969, founder of the world wide scientific school in modern physics and optics of the atmosphere. At the Tomsk State University he received his Dipl. in 1951 and a Ph. D. in physics in 1954. This followed a Siberian Physico-Technical Institute during 1955-1969. Professor of the Tomsk State University since 1966, member of the USSR (now Russian Academy of Sciences) since 1981, Chairman of Department of Oceanology, Atmospheric Physics and Geography of Russian Academy of Sciences, member of the Presidium of Russian Academy of Sciences. Hero of Socialist Labour (1985), a winner of the USSR State Prize (1985, 1990), OSA fellow member and APS member.



Nobuo SUGIMOTO

Nobuo Sugimoto received his BEng and MEng degrees from Osaka University in 1976 and 1978, respectively, in material physics. He joined the National Institute for Environmental Studies (NIES) in 1979. He has studied laser spectroscopy and laser remote sensing methods for atmospheric measurements. He received his DrSc from University of Tokyo in 1985. At NIES, he has developed various lidar systems and laser long-path absorption systems. Currently, he is Head of the Upper-Atmospheric Environment Section in the Atmospheric Enviroment Division of NIES. He is also the leader of the science team for the earth-satellite-earth laser long-path absorption experiment using the Retroreflector in Space (RIS).