C&EN
CHEMICAL & ENGINEERING NEWS


Jacobsen


Newcomb


Ojima


Roush

The quality of **IWAO OJIMA**'s diverse research accomplishments is as excellent as his international and national reputation. Born in Yokohama, Japan, and educated at the University of Tokyo (B.S. 1968, Ph.D. 1973), Ojima is currently Leading Professor of Chemistry at the State University of New York, Stony Brook.

One area of research delved into by the award winner is β-lactams; he was one of the first to recognize and systematically develop the chemistry of these compounds in that he was instrumental in using β-lactams as building blocks for other compounds, particularly peptides and peptide mimetics. Through his work, he was able to develop an impressive and clever asymmetric route to the side chain of taxol, a chemotherapeutic agent familiar these days because of its potential for treating breast and ovarian cancer.

In the area of stereoselective hydrogenation and hydrogenolysis, Ojima is considered to be among the few experts. He applied homogenous catalytic hydrogenation to the enantioselective synthesis of a number of natural and non-natural amino acids, even extending the hydrogenation method to the synthesis of oligopeptides.

first as a research fellow and later as a senior research fellow and group leader of the organometallic research group. In 1978 and 1983, respectively, he was also an adjunct lecturer at Tokyo Institute of Technology and Tokyo University of Agriculture & Technology.

Among other honors, Ojima received the 25th Progress Award of the Chemical Society of Japan for Excellent Young Investigators in 1976. For four years, he was a member of the Advisory Committee of the National Institute of Health's Medicinal Chemistry Study Section, which evaluates research grants.

Ojima is the author or coauthor of about 200 published papers and reviews and holds over 130 patents and patent applications. A widely sought speaker at national and international conferences, he also regularly presents papers at American Chemical Society national meetings. His memberships include ACS, the American Association for the Advancement of Science, and the Chemical Society of Japan.

ACS 1994 National Award Winners

Arthur C. Cope Scholar Awards:

Maurice S. Brookhart, University of North Carolina, Chapel Hill

Paul Dowd, University of Pittsburgh

Christopher S. Foote, University of California, Los Angeles

Eric N. Jacobsen, Harvard University

Martin E. Newcomb, Wayne State University, Detroit

Iwao Ojima, State University of New York, Stony Brook

William R. Roush, Indiana University, Bloomington

Gary B. Schuster, University of Illinois, Urbana-Champaign

Edward C. Taylor, Princeton University

Gregory L. Verdine, Harvard University

Arther C. Cope Scholar Award

A. C. Cope and Cope Scholar Award Reception
Washington, D.C. 1994

CHEMICAL & Engineering News
THE NEWSMAGAZINE OF THE CHEMICAL WORLD ONLINE

AWARDS
January 22, 2001
Volume 79, Number 4
CENEAR 79 4 pp.99-103
ISSN 0009-2347

2001 ACS NATIONAL AWARD WINNERS

2001

E. B. Hershberg Award for Important Discoveries in Medicinally Active Substances

Sponsored by Schering-Plough Corp.

Explorers have always faced enormous risks to attain a lifelong ambition. Some explorers risk life and limb going deep under the oceans or deep into space, or by facing human-averse climates and altitudes to reach a spot on Earth rarely if ever seen before. **IWAO OJIMA,** however, is a different breed of explorer. His tools for exploration are nuclear magnetic resonance, infrared, UV, mass, and fluorescence spectrometers; liquid chromatographs; amino acid sequencers; microscopes; and computer workstations.

OJIMA has made huge strides in the world of medicinal chemistry through the use of new organic methods.

Ojima, Distinguished Professor and chairman of the department of chemistry at the State University of New York, Stony Brook, has dedicated his life to discovering the microscopic world. According to one of his colleagues, "That Ojima has been able to put down such a large footprint arises from a most unusual mix of abilities that includes organic synthesis, keen insights into good pharmaceutical problems, and the ability to induce people in diverse disciplines to work together toward a common goal."

Ojima's research includes four areas of intense interest to the pharmaceutical industry: fluorine-containing amino acids,

peptides, and enzyme inhibitors; the development of antithrombic agents; the development of novel β-lactams; and contributions to the development of second- and third-generation taxoids. In the first area, Ojima has been at the forefront in the incorporation of fluoro-amino acids into peptides. His research led to a series of trifluoromethyl-containing enzyme inhibitors and brain peptides.

ACS Award Ceremony
San Diego 2001

ACS Award Ceremony and Banquet with Ojima Lab. Alumni
San Diego, 2001

2001 ACS San Diego

E. B. Hershberg Award Celebration

2013

C&EN
CHEMICAL & ENGINEERING NEWS

Volume 91 Issue 3 | pp. 35-36 | Awards
Issue Date: January 21, 2013

ACS Award For Creative Work In Fluorine Chemistry

By Stephen K. Ritter
Department: ACS News
Keywords: awards, ACS, Iwao Ojima, fluorine chemistry, amino acid, bioactive molecule

Sponsored by Honeywell

Fluorine's versatility as a substituent in bioactive compounds is legend—strategic placement of fluorine improves the bioavailability, metabolic stability, and efficacy of many drugs. One chemist to thank for that is State University of New York, Stony Brook, professor **Iwao Ojima**.
"Ojima is a pioneer in bridging the gap between fluorine chemistry and medicinal chemistry and establishing an essential interdisciplinary field," comments medicinal fluorine chemist Robert Filler, an emeritus professor at Illinois Institute of Technology. "A hallmark of Ojima's contributions is his deft and creative use of fluorine as a key marker to open new vistas in medicinal research."

Ojima
Credit: Courtesy of Iwao Ojima

Ojima has a long list of chemical firsts to his credit. "In the early 1980s, his seminal application of transition-metal catalysis for functionalizing readily available fluorinated alkenes and arenes led to the synthesis of fluorinated amino acids and heterocycles," notes John T. Welch, a fluorine chemist at the State University of New York, Albany. These methods were timely inventions that spurred interest in incorporating the fluorinated compounds into biologically active peptides and proteins, Welch says.

For example, Ojima invented a process to synthesize 5-trifluoromethyluracil via palladium-catalyzed reactions. The process was commercialized to produce the antiviral drug trifluridine, which is used to treat herpesvirus, in particular in eye infections. He also developed fluorinated versions of captopril, an angiotensin-converting enzyme inhibitor used to treat high blood pressure, as well as fluorinated enkephalins, which are analgesic brain peptides.

Another first was the synthesis of fluorinated taxoids, which are derivatives of the cancer drug Taxol. His group used these compounds as molecular probes to identify bioactive conformations of Taxol and taxoids via 19F nuclear magnetic resonance spectroscopy. The fluorinated taxoids have been used as "warheads" in tumor-targeting drug delivery systems.

ACS Award Ceremony and Banquet

New Orleans

2013

ACS Award Symposium Dinner and celebration luncheon with Ojima Lab alumni, San Diego, 2013

ACS NEWS

C&EN | CEN.ACS.ORG | JANUARY 21, 2019

C&EN
CHEMICAL & ENGINEERING NEWS

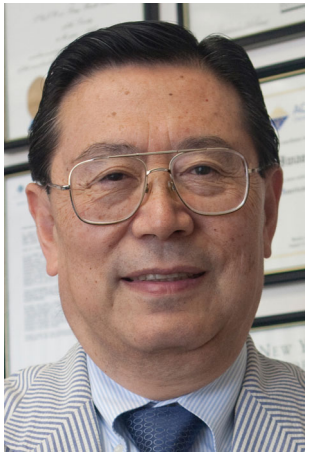
NATIONAL AWARDS

2019 ACS National Award winners

Recipients are honored for contributions of major significance to chemistry

Alexander on his scientific role model and why: "One of my scientific role models is George Washington Carver. He is renowned for

Ernest Guenther Award in the Chemistry of Natural Products: Iwao Ojima



Citation: For his outstanding work on taxol and taxane-class diterpenes at the interface of natural product chemistry, synthetic methodology, medicinal chemistry, chemical biology, and medicine
Current position: Distinguished professor of chemistry and director of the Institute of Chemical Biology and Drug Discovery, Stony Brook University

Education: BS, chemistry, MS, organic chemistry, and PhD, organic chemistry, University of Tokyo
What his colleagues say: "By virtue of his creative and dedicated studies over 25 years, professor Iwao Ojima is the world leader in the exploitation of taxol and taxane-class natural products in chemistry and applications to biomedical research. Ojima is a consummate natural products chemist, and he has many other achievements as well; but it is primarily his sustained and significant innovations in the taxane/taxoid class that qualify him for the 2019 Guenther Award."—Dennis P. Curran, University of Pittsburgh

IWAO OJIMA

2019 Ernest Guenther Award in the Chemistry of Natural Products

Sponsor: Givaudan Flavors Corporation

1971 Ernest Wenker
1970 Duilio Arigoni
1969 John W. Cornforth
1968 Elias J. Corey
1967 George A. Sim
1966 Albert J. Eschenmoser
1965 Konrad E. Bloch
1964 Oscar Jeger
1963 Arthur J. Birch
1962 E. R. H. Jones
1961 C. F. Seidel
1960 Carl Djerassi
1959 Frantisek Sorm
1958 George H. Buchi
1957 Sir Derek H. R. Barton
1956 Herman Pines
1955 Hans Schinz
1954 A. R. Penfold
1953 Max Stoll
1952 Yves-Rene Naves
1951 Edgar Lederer
1950 A. J. Haagen-Smit
1949 John L. Simonsen

1995 Jon C. Clardy
1994 Paul J. Scheuer
1993 Amos B. Smith, III
1992 Leo A. Paquette
1991 C. Dale Poulter
1990 Barry M. Trost
1989 Henry Rapoport
1988 Paul A. Wender
1987 Wolfgang Oppolzer
1986 Clayton H. Heathcock
1985 David E. Cane
1984 Jerrold Meinwald
1983 Karel Wiesner
1982 Paul A. Grieco
1981 Samuel J. Danishefsky
1980 Sukh Dev
1979 James A. Marshall
1978 Koji Nakanishi
1977 Robert E. Ireland
1976 A. Ian Scott
1975 S. Morris Kupchan
1974 Gunther Ohloff
1973 William G. Dauben
1972 Guy Ourisson

2019 Iwao Ojima
2018 David Ransom Williams
2017 Stephen F. Martin
2016 Eric Block
2015 Thomas R. Hoye
2014 Dennis P. Curran
2013 Kuniaki Tatsuta
2012 Stephen Hanessian
2011 Robert M. Williams
2010 Michael Crimmins
2009 Peter Wipf
2008 David G.I. Kingston
2007 Dale L. Boger
2006 William H. Fenical
2005 Satoshi Omura
2004 William R. Roush
2003 Steven V. Ley
2002 John W. Daly
2001 Yoshito Kishi
2000 Pierre Potier
1999 Kenji Mori
1998 G. Robert Pettit
1997 Kenneth L. Rinehart
1996 K. C. Nicolaou

2019 Ernest Guenther Award Symposium
April 1, 2019

8:00 AM Opening Remarks (S. Sieburth)
8:10 AM Stephen Hanessian
(Universite De Montreal)
Art, craft, logic, and the unforeseen in natural product synthesis
9:00 AM Mikiko Sodeoka (RIKEN)
From natural product to unnatural product: Seeking for better biological activity
9:50 AM Paul A. Wender (Stanford University)
Therapeutic function through synthesis-informed design: Approaches to HIV/AIDS eradication, Alzheimer's disease, and enhanced cancer immuno-therapy
10:40 AM Award (medallion) presentation
10:50 AM Award Address
Iwao Ojima (Stony Brook University)
Exploration of the exceptional potential of taxane-class diterpenes at the interface of chemistry, biology and medicine

ACS Award Ceremony and Banquet
April 2, 2019, Orlando, FL

The 51st Chemical Society of Japan Award (日本化学会賞) for distinguished achievements, The Chemical Society of Japan

Yokohama, Japan, 1999

CSJ Award Celebration Reception
(one of three group photos)
Yokohama, Japan, 1999

American Chemical Society
Division of Medicinal Chemistry
Hall of Fame

Iwao Ojima, Ph.D.

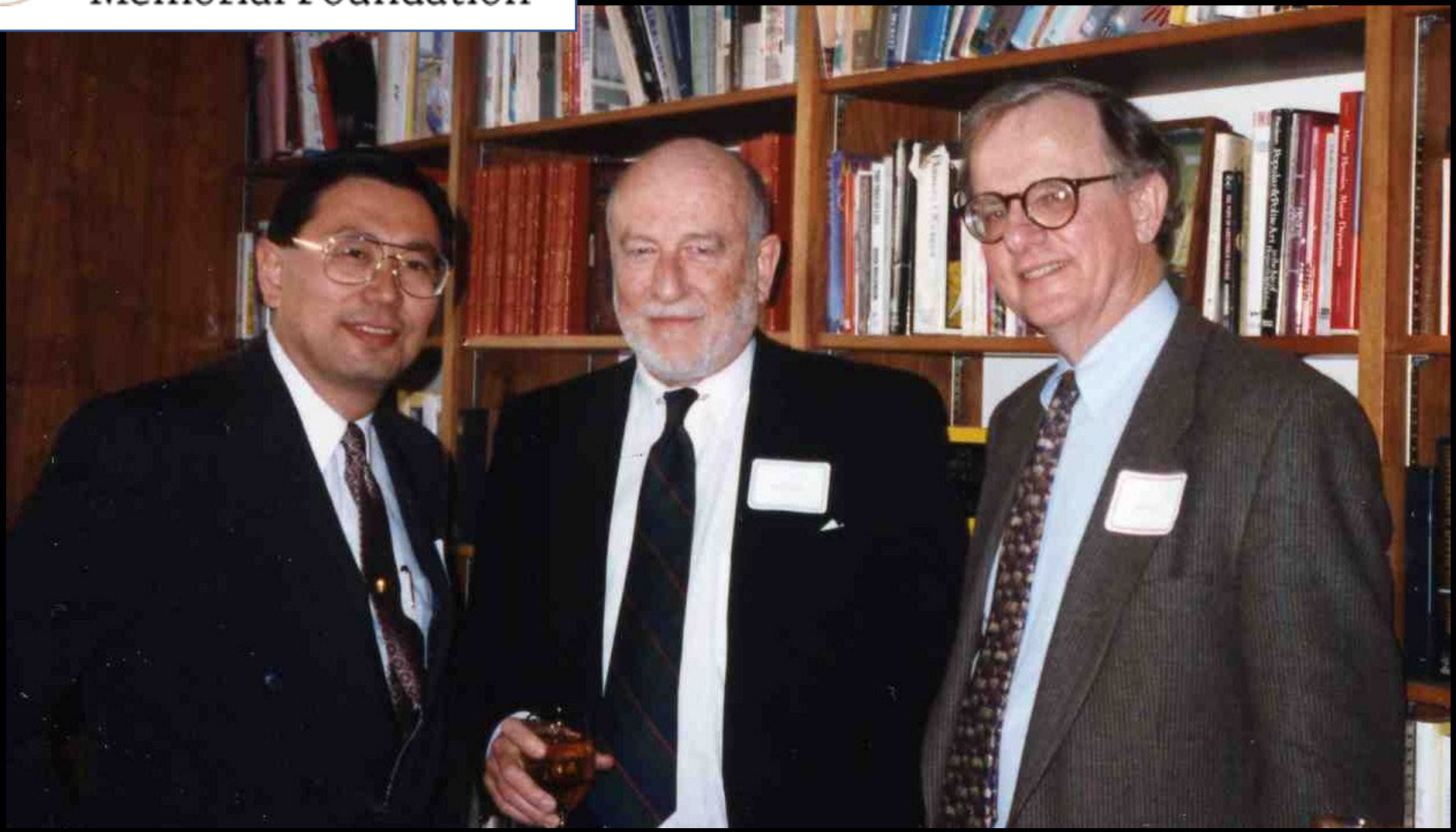
2006

Professor Iwao Ojima received his B.S. (1968), M.S. (1970), and Ph.D. (1973) degrees from the University of Tokyo, Japan. He joined the Sagami Institute of Chemical Research and held a position as Senior Research Fellow until 1983. He joined the faculty at the Department of Chemistry, State University of New York at Stony Brook first as Associate Professor (1983), was promoted to Professor (1984), Leading Professor (1991), and then to Distinguished Professor (1995). He served as the Department Chairman from1997 to 2003. He serves as the founding Director for the Institute of Chemical Biology & Drug Discovery (ICB&DD) at Stony Brook from 2003. He has been a Visiting Professor at the Université Claude Bernard Lyon I, Lyon, France (1989), The University of Tokyo, Tokyo, Japan (1996), The Scripps Research Institute, La Jolla, CA (1997), and Université de Paris XI, BIOCIS, Châtenay-Malabry, France (1997).

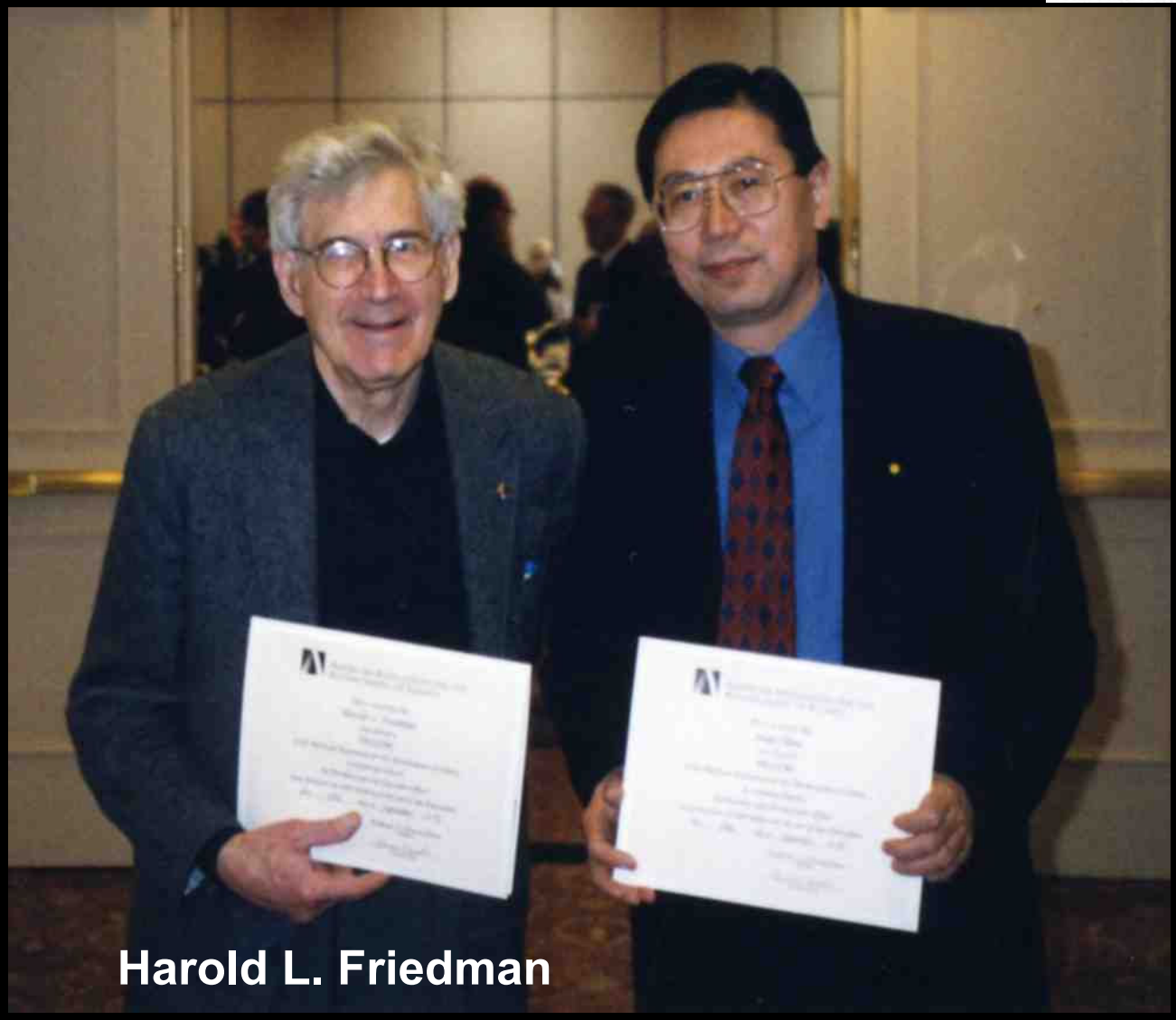
His research interests include drug design and discovery (anticancer agents, antibacterial agents, enzyme inhibitors), medicinal chemistry and chemical biology, catalytic asymmetric synthesis, organic synthesis by means of organometallic reagents and catalysts, peptidomimetics, ß-lactam chemistry, and organofluorine chemistry (fluoroamino acids and peptides, medicinal applications).

He has published more than 350 papers and reviews in leading journals and more than 150 patents and patent applications, edited 6 books (SciFinder lists >640 publications to his credits), and he has given more than 80 Plenary and Invited Lectures in international conferences and symposia by August 2007.

John Simon Guggenheim Memorial Foundation



John S. Guggenheim Fellow
New York, NY, 1995



AAAS Fellow, Philadelphia, 1998

The New York Academy of Sciences
Building communities, advancing science since 1817

Fellow, New York Academy of Sciences
New York, NY 2000

ACS Fellow

Boston, 2010

Eric Kaler

Fellow, National Academy of Inventors
Induction Ceremony, Pasadena, 2015

NAI Fellow

Induction Ceremony, Pasadena, 2015

Shuji Nakamura

Philip Low

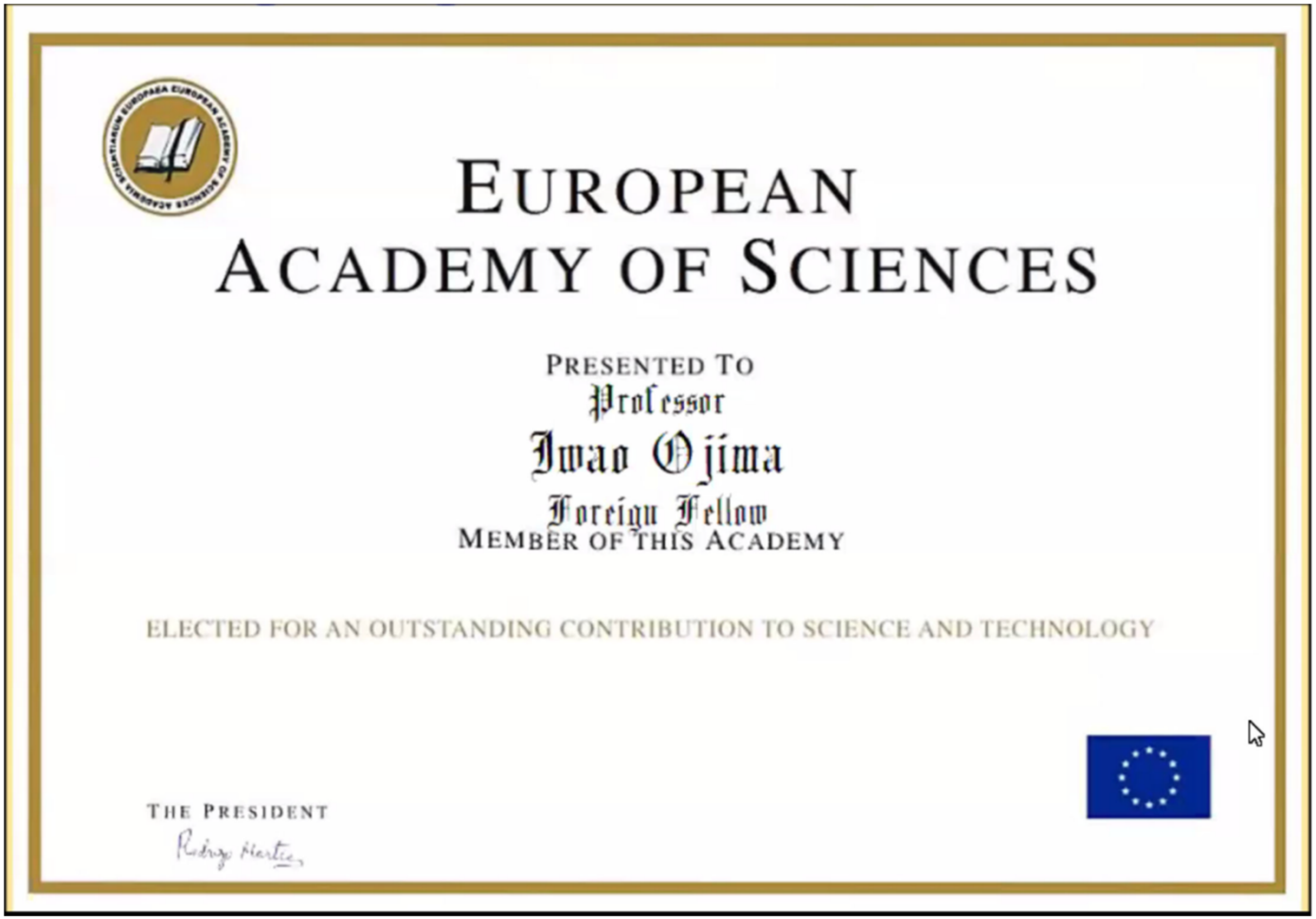
Garrett Reisman

Hwu Davies

Michael Jung

EUROPEAN ACADEMY OF SCIENCES

IN SUPPORT OF EXCELLENCE IN SCIENCE AND TECHNOLOGY



Fellow, European Academy of Sciences

2020