

## CURRICULUM VITAE

### MARIO J. MOLINA

2015

Professor, Department of Chemistry and Biochemistry, and Scripps Institution of Oceanography, University of California, San Diego

President, Mario Molina Center for Strategic Studies in Energy and the Environment, Mexico City

#### **Education:**

Universidad Nacional Autónoma de México; Ingeniero Químico (Chemical Engineer Degree)	1965
University of Freiburg, West Germany; Postgraduate (Polymerization Kinetics)	1967
University of California, Berkeley; Ph.D. (Physical Chemistry)	1972

#### **Professional Positions:**

Assistant Professor, Universidad Nacional Autónoma de México	1967-68
Postdoctoral Associate, University of California, Berkeley	1972-73
Postdoctoral Associate, University of California, Irvine	1973-75
Assistant Professor, University of California, Irvine	1975-79
Associate Professor, University of California, Irvine	1979-82
Member of Technical Staff, Jet Propulsion Laboratory, Caltech	1982-84
Senior Research Scientist, Jet Propulsion Laboratory, Caltech	1984-89
Professor, Dept. of Earth, Atmospheric & Planetary Sciences and Dept. of Chemistry; Lee and Geraldine Martin Professor of Environmental Studies (1992-97); Institute Professor (1997-2003), Massachusetts Institute of Technology	1989-2003
President, Mario Molina Center for Strategic Studies in Energy and the Environment	2003- present
Professor, Department of Chemistry and Biochemistry, and Scripps Institution of Oceanography, University of California, San Diego	2003- present

#### **Honors and Awards:**

UCI Alumni Association Special Recognition for Contributions in Basic Research	1976
Newport Democratic Club Public Service Award for Service to the Environment	1977
Alfred P. Sloan Foundation Fellow	1976-78
Camille and Henry Dreyfus Teacher-Scholar	1978-82
Tyler Ecology and Energy Prize	1983
Society of Hispanic Professional Engineers Award for Achievement in Science and Technology	1983
Council for Recognition of Hispanics, Science Honoree	1984
American Chemical Society Esselen Award	1987

American Association for the Advancement of Science Newcomb-Cleveland Prize	1987-88
NASA Medal for Exceptional Scientific Achievement	1989
United Nations Environment Program Global 500 Award	1989
Orange County Section of the American Chemical Society Service through Chemistry Award	1989
Pew Scholar on Conservation and the Environment	1990-92
Member, National Academy of Sciences	1993-present
Member, Academia Mexicana de Ingeniería	1993-present
Max Planck Research Award	1994-96
Nobel Prize in Chemistry	1995
United Nations Environment Program Ozone Award	1995
Doctor <i>Honoris Causa</i> , Universidad de Buenos Aires, Argentina	1996
Walker Prize, Boston Museum of Science	1996
Doctor <i>Honoris Causa</i> , Universidad Nacional Autónoma de México, México	1996
Doctor <i>Honoris Causa</i> , University of East Anglia, Norwich, England	1996
Golden Plate Award, American Academy of Achievement	1996
Titular Member, European Academy of Arts, Sciences and Humanities	1996
Member, Institute of Medicine	1993-present
Member, Academia Mexicana de Ciencias	1993-present
Honorary Member, American Meteorological Society	1997
Associate Fellow, Third World Academy of Sciences	1993-present
Honorary Degree, Doctor of Science, Yale University	1997
Honorary Degree, Doctor of Laws, University of Calgary, Canada	1997
American Chemical Society Award for Creative Advances in Environmental Science and Technology	1998
American Geophysical Union Fellow	1998
Doctor of Science, <i>Honoris Causa</i> , Connecticut College, New London, CT	1998
Honorary Degree, Doctor of Science, Occidental College, Los Angeles, CA	1998
Willard Gibbs Medal Award	1998
American Physical Society Fellow	1998
UNEP Sasakawa Prize	1999
Member, Pontifical Academy of Sciences	1993-present
Doctor <i>Honoris Causa</i> , Pontificia Universidad Católica del Perú	2000
Doctor <i>Honoris Causa</i> , Universidad Nacional Mayor de San Marcos, Perú	2000
Honorary Member, Sociedad Química del Perú	2000
Doctor <i>Honoris Causa</i> , Universidad de las Américas, Puebla, Mexico	2001
Honorary Degree, Doctor of Science, Trinity College, Connecticut	2001
Honorary Degree, Doctor of Science, University of Miami, Miami, FL	2001
Fellow of the American Association for the Advancement of Science	1993-present
Honorary Degree, Doctor of Science, University of Waterloo, Canada	2002
Honorary Degree, Florida International University	2002
Honorary Degree, Utah State University	2002
Doctor <i>Honoris Causa</i> , Universidad de Pachuca, Mexico	2002
Medalla al Mérito Ciudadano, Legislature of the Mexico City Government,	2002
Presea Ezequiel Montes Ledesma, Querétaro, Mexico	2002
John P. McGovern Medal, Sigma Xi - The Scientific Research Society	2002

Environment Award, Heinz Family Foundation	2002
National Hispanic Scientist of the Year Award, MOSI, Tampa, FL	2003
Doctor of Science <i>Honoris Causa</i> , Tufts University, Massachusetts	2003
Member, El Colegio Nacional, Mexico	1993-present
Participant, International Council on Clean Transportation	1993-present
Doctor <i>Honoris Causa</i> , Benemérita Universidad Autónoma de Puebla, Mexico	2004
Doctor <i>Honoris Causa</i> , Universidad Autónoma Metropolitana, Mexico	2004
Doctor of Science, Honorary Degree, University of South Florida	2005
Doctor <i>Honoris Causa</i> , Universidad Autónoma del Estado de México	2006
Doctor <i>Honoris Causa</i> , Universidad de Chile	2006
Honorary Member, Society of Toxicology	2007
Premio Nacional a la Excelencia Jaime Torres Bodet, Mexico	2007
Premio Nacional Benito Juárez García al Mérito Ciudadano, Mexico	2007
Doctor Honoris Causa, Colegio de Postgraduados (Institución de Enseñanza e Investigación en Ciencias Agrícolas), Mexico	2007
Honorary Degree, The City College of New York	2007
Máster de Oro, Spain	2008
Gran Cruz de la Orden de Isabel la Católica, Spain	2008
Doctor <i>Honoris Causa</i> , Universidad de Santiago de Chile	2008
Presea Estado de México, "José María Luis Mora", Mexico	2008
Honorary Member of Instituto Mexicano de Ingenieros Químicos, Mexico	2008
Honorary Member of Fundación Carlos III, Spain	2009
Doctor <i>Honoris Causa</i> : Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Mexico	2009
Doctor <i>Honoris Causa</i> , Universidad Alfonso X El Sabio, Spain	2009
Honorary Degree, Duke University	2009
Doctor <i>Honoris Causa</i> , Universidad de Guadalajara, Mexico	2010
Doctor <i>Honoris Causa</i> , Univesité libre de Bruxelles, Belgium	2010
Doctor <i>Honoris Causa</i> , Universidad del Valle de Mexico, Mexico	2010
Doctor <i>Honoris Causa</i> , Universidad Nacional de San Luis Potosí, México	2011
Officer In The Order Of Oranje-Nassau, Netherlands	2011
Doctor <i>Honoris Causa</i> , Washington College, Maryland	2011
Doctor <i>Honoris Causa</i> , University of British Columbia, Canada	2011
Doctor <i>Honoris Causa</i> , Whittier College, California	2012
Doctor of Science, Honorary Degree, Harvard University, Cambridge, MA	2012
Doctor <i>Honoris Causa</i> , Universidad Complutense de Madrid, Spain	2012
Doctor <i>Honoris Causa</i> , University of Manchester, U.K.	2013
Medal "San Ignacio de Loyola", Universidad Iberoamericana, Mexico	2013
Gold Medal of the President of the Italian Republic, Italy	2013
Presidential Medal of Freedom, United States of America	2013
Knight of the Legion of Honour, France	2014
University of California San Diego Medal	2014
Doctor of Science, Honorary Degree, John Jay College of Criminal Justice, New York, NY	2014
Champions of the Earth Award, United Nations	2014
Doctor of Science, Honorary Degree, Williams College, Williamstown, MA	2015

**Major Research Interests:**

Atmospheric Chemistry, Physical Chemistry,  
 (Gas Phase Chemical Kinetics; Photochemistry; Heterogeneous Chemistry)  
 Urban, Regional and Global Air Pollution  
 Climate Change and Air Quality: Science and Policy Issues

**Membership in Professional Societies:**

American Chemical Society  
 American Physical Society  
 American Geophysical Union  
 Sigma Xi Scientific Research Society  
 American Association for the Advancement of Science  
 Society for the Advancement of Chicano and Native American Scientists

**Selected Activities:**

Testified by invitation at hearings before the House of Representatives Subcommittee on Public Health & Environment of the Committee on Interstate and Foreign Commerce, 93rd Congress; the U.S. Senate Subcommittee on Toxic Substances and Environmental Oversight of the Committee on Environment and Public Works; and before numerous state legislatures on the issue of chlorofluorocarbons and stratospheric ozone depletion	1974-80
NSF Oversight Committee, Fluorocarbon Technology Assessment, Systems Control, Inc.	1976
NIH Advisory Committee to the Director, Recombinant DNA Research	1977
NRC-NAS Commission on Human Resources	1978-81
NASA Panel for Chemical Kinetics and Photochemical Data Evaluation	1978-2006
TRW/NASA Consultant, Halogen Occultation Experiment (HALOE) Langley Research Center	1979-81
Co-chair, 14th Informal Conference on Photochemistry, Newport Beach, CA	1980
UCI Academic Senate, Awards	1980-81
NRC/NAS Panelist, Postdoctoral Fellowships Program	1982-87
Organizer and Presider, Symposium on Antarctic Ozone Depletion	
NCAR Scientific Programs Evaluation Committee, Panel Review of Atmospheric Chemistry Division, Boulder, CO	1986
UCR Ad Hoc Committee for Review of the Statewide Air Pollution Research Center, Riverside, CA	1988
AAAS Annual Meeting, Boston, MA	1988
NASA Advisory Committee to Oversee the Scientific Assessment of Atmospheric Effects Associated with Stratospheric Emissions from High Speed Civil Transports	1988-94
Editorial Advisory Board of the International Journal of Chemical Kinetics	1988-91
DOE Review Panel for the Molecular Science Research Center at the Pacific Northwest Laboratories, Batelle, Richland, WA	1988
Organizer and Presider, Symposium on Physical Chemical Problems in the Earth's Atmosphere, 196th American Chemical Society National Meeting, Los Angeles, CA	1988
Panelist, Annual Meeting of the National Academy of Sciences President's Circle on Issues Confronting the Global Future, Irvine, CA	1989
NOAA Review Panel for the Aeronomy Laboratory (Chair)	1989
NSF Advisory Committee for Atmospheric Sciences	1989-94

NRC-NAS Steering Committee on Aeronautical Technologies	1990-93
Co-organizer and lecturer, Atmospheric Chemistry Workshop Universidad Nacional Autónoma de México, Mexico City, Mexico	1991
Co-chair, Gordon Conference on Atmospheric Chemistry, New Hampton, NH	1991
Co-chair, Atmospheric Chemistry Colloquium for Emerging Senior Scientists, MIT, Cambridge, MA	1991
NRC-NAS Committee on Atmospheric Chemistry	1991-93
Sigma Xi National Lecturer	1992-93
Robert A. Welch Foundation Lecturer	1994
NSF Advisory Committee for Geosciences	1994-97
President's Committee of Advisors on Science and Technology (PCAST)	1994-2000
Advisory Panel of Atmospheric Chemistry Division, National Center for Atmospheric Research	1995-2003
Evaluation Committee for Chemistry Graduate Programs at the National Universidad Nacional Autónoma de México, Mexico City, Mexico	1995
Member, MIT International Council	1996-2000
Member, MIT Council on the Environment	1996-2003
Member, MIT Task Force on Student Life and Learning	1996-2000
Member, Editorial Advisory Board of Accounts of Chemical Research	1996-2000
Member, Board of Directors, Northeast State Clean Air Foundation	1996-2006
Advisor to the Camille and Henry Dreyfus Foundation (Environ. Program)	1996-2002
Chair, Advisory Board, United Nations Environment Programme Regional Office for North America (UNEP/RONA)	1996-98
Member of the Jury, King Jaime I Prize on the Defense of Nature, Valencia, Spain	1996-present
Member, Board of Governors, US-Mexico Foundation for Science	1996-2003
Participant, Intel International Science and Engineering Fair	1997
Co-Organizer, Symposium on "Atmospheric Chemistry: from Local to Global Pollution," Fifth Chemical Congress of North America, Cancun, Mexico	1997
Panelist, White House Roundtable on Global Climate Change (Washington, DC)	1997
Member, Board of Directors, Union of Concerned Scientists	1997-present
Member, Steering Committee, MIT Consortium on Global Environmental Challenges	1997-2001
Member, The President's Committee on the National Medal of Science	
Member, National Research Council Board on Environmental Studies and Toxicology	1997-2000
Member, Secretary of Energy Advisory Board	1998-2002
Chair, Committee on Atmospheric Chemistry, National Academy of Sciences	1999-2003
Member, Advisory Editorial Board, Chemical Physics Letters	1999-2006
Chair, World Bank Blue Ribbon Panel on Mexico City Air Quality Management	1999-2001
Co-Chair, PCAST Independent Review Board of the National Assessment on Climate Change	1999- 2000
Secretary of Energy Advisory Board Panel on Emerging Technologies	2000
Member, Board of Trustees, Science Service	2000-05
Member, Visiting Committee, Max Planck Institute for Chemistry	2000-04
Member, National Research Council Board on Atmospheric Sciences and Climate	2001-04
Member, College of Chemistry Advisory Board, University of California, Berkeley	2001-05
Chair, Environmental Sciences Review Committee, Brookhaven National Laboratory	2002

Co-Chair, Workshop on the Environment, Challenges for the Chemical Sciences in the 21 <sup>st</sup> Century, National Academy of Sciences	2002
Member, Advisory Board, Journal of Physical Chemistry	2002
Member, National Commission on Energy Policy	2002-03
Chair, Scientific Advisory Council, Comisión Federal para la Protección contra Riesgos Sanitarios, Mexico	2002-05
Member, Board of Directors, The John and Catherine MacArthur Foundation	2002-14
Review Editor and Drafting Author of Summary for Policy Makers, Working Group I, Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)	2006-07
Member, Advisory Council, ClimateWorks	2008-13
Member, Advisory Council World Wildlife Fund	2008-14
Member of The President's Council of Advisors on Science and Technology (PCAST)	2008-present
Board of Directors, Innovación en la Enseñanza de la Ciencia (INNOVEC) Foundation	2008-present
Member of the External Advisory Board, MIT Energy Initiative	2008-present
Member of the International Council on Clean Transportation	2008-present
Testimony before the U.S. House of Representative, Hearing of the Committee on Energy Independence and Global Warming	2010
Member of the InterAcademy Council Committee to Review the IPCC	2010
Chair of the Science Advisory Council of the Stockholm Environmental Institute (SEI)	2012
Chair of the AAAS Climate Science Panel to the What We Know Initiative	2014

### **Selected Invited Lectures:**

1976:

*Protection of the Ozone Layer*, Institute of Higher Studies (Santa Barbara, CA).

*Stratospheric Pollution Due to Man-Made Chemicals*, Agricultural Research Center, US Dept. of Agriculture (Beltsville, MD).

*Stratospheric chemistry of chlorine compounds*, Joint Symposium on Atmospheric Ozone, IA OCC/ICACGP, (Dresden, German Democratic Republic).

*Stratospheric chemistry chlorofluorocarbons*, Symposium on Fluorine Compounds in the Environment, Amer. Chem. Soc. 172<sup>nd</sup> Nat. Meeting, (San Francisco, CA).

1977:

*Atmospheric Chemistry of Chlorofluorocarbons*, XV International Congress of Entomology: Symposium on "The Impact of the CFC/Ozone Question on Insecticidal Aerosols", (Washington, DC).

1979:

*The Aerosol Threat to the Environment*, Continuing Education Div., Santa Barbara City College (Santa Barbara, CA).

- Laboratory measurements of absorption cross sections*, NATO Advanced Study Institute on Atmospheric Ozone, (Algarve, Portugal).
- 1980:  
*Química de la Estratósfera; Cinética Química Contemporánea: Teoría y Experimentos*, (Córdoba, Argentina).
- 1981:  
*Kinetics of hydroxyl radical reactions of interest in the stratosphere*, 28th IUPAC Congress, Int. Union of Pure and Applied Chem. (Vancouver, Canada).
- 1983:  
*Laboratory chemistry and stratospheric ozone*, Indo-US Workshop on Global Ozone Problem (New Delhi, India).  
*Rates of reaction of OH with HNO<sub>3</sub> and with HCl*, Amer. Chem. Soc. 185th National Meeting, Div. of Environmental Chemistry (Seattle, WA).
- 1987:  
*Heterochemical studies on ice chemistry*, Fluorocarbon Program Panel Meeting, Chemical Manufacturer's Association (Edinburgh, Scotland).  
*Ice chemistry and Antarctic ozone*, Symposium on Heterogeneous Reactions in the Atmosphere, Pacific Conference on Chemistry and Spectroscopy (Irvine, CA).  
*Chemistry of the Atmosphere and Ozone Layer*, National SACNAS Conference (El Paso, TX).
- 1988:  
*Heterogeneous chemical processes in ozone depletion*, Symposium on Ozone Depletion, Greenhouse Gases and Climate Change, Board on Atmospheric Sciences and Climate, National Academy of Sciences, (Washington, DC).  
*Chlorofluorocarbons in the environment: A review*, Symposium on Environmental Fate of Organochlorine Compounds in the Atmosphere, 36<sup>th</sup> ASMS Conference on Mass Spectroscopy and Allied Topics, ASMS, (San Francisco, CA).  
*The chemical mechanisms for ozone loss over Antarctica*, Symposium on Current Trends in Atmospheric Sciences, International Congress of Geochemistry and Cosmochemistry (Paris, France).  
*Chemistry of the Atmosphere*, MBR/MARC Program Seminar Series, University of Texas at San Antonio (San Antonio, TX).  
*The Changing Chemistry of the Global Atmosphere*, Annual Meeting of the Caltech board of Trustees (Palm Springs, CA).
- 1989:  
*The Greenhouse Effect*, Caltech Assoc. /Faculty Dinner (Pasadena, CA).  
*Ozone Depletion at the Poles*, XVIII Reunión de Física Estadística (Oaxtepec, Mexico).

- Stratospheric Ozone Depletion*, David French Lecture, Claremont College (Claremont, CA).
- The chemistry of some reactions believed to be important in ozone depletion over Antarctica*, International Ozone Symposium, (Hampton, VA).
- Global atmospheric chemistry of halogens*, International Symposium on Global and Regional Environmental Atmospheric Chemistry (Beijing, China).
- Laboratory chemistry and stratospheric clouds*, Symposium on the Role of Clouds in Atmospheric Chemistry and Global Climate, Am. Met. Soc., (Anaheim, CA).
- Heterogeneous chemistry in the Antarctic stratosphere*, Symposium on Fundamental Kinetic Processes Linking CFC Release to Global Ozone Destruction in the Polar Stratosphere, Am. Chem. Soc., (Dallas, TX).
- Heterogeneous chemistry on polar stratospheric clouds*, Symposium on the Climate Effects on Aerosols, Am. Assoc. for Aerosol Res., (Reno, NV).
- Stratospheric ozone: Current Concerns*, Symposium on Global Environmental Chemistry - Challenges and Initiatives, Am. Chem. Soc., (Miami, FL).
- Chemistry of Antarctic ozone depletion*, 3rd Intl. Conference on Southern Hemisphere Meteorology and Oceanography, Am. Met. Soc., (Buenos Aires, Argentina).

1990:

- The Antarctic Ozone Hole*, Featured Lecture, Celebration of the Sciences, Washington College, (Chestertown, MD).
- Our Endangered Atmosphere*, Panelist, Earth Day, 1990: The Science Behind the Issues, Organized by the American Chemical Society and the University of Massachusetts, (Boston, MA).
- Chemistry of Polar Ozone Depletion*, 20<sup>th</sup> International Symposium on Free Radicals, (Shizuoka, Japan).
- Heterogeneous Chemical Processes*, American Chemical Society 200<sup>th</sup> National Meeting, Division of Physical Chemistry, (Washington, DC).

1992:

- Protection of the Ozone Layer*, Environment and Development, Rio Ciencia '92, (Rio de Janeiro, Brazil).
- Ozone Destruction in the Antarctic Stratosphere*, National Hispanic Heritage Month, National Science Foundation, (Washington, DC).
- Sources of Ozone Depletion*, Center for Energy and Environmental Studies, Princeton University, (Princeton, NJ).
- Chemistry of Stratospheric Ozone Depletion*, 12<sup>th</sup> International Symposium on Gas Kinetics, (Reading, UK).
- An Overview of Polar Ozone Depletion*, Science at the Frontier 2, National Academy of Sciences/National Research Council, (Irvine, CA).
- Stratospheric Ozone*. In Abstracts of the Scheele Symposium on Oxygen, (Stockholm, Sweden).



1993:

*The Antarctic Ozone Hole*, Sigma-Xi Lectures: California, New Mexico, Connecticut, Massachusetts.

*Stratospheric Ozone Depletion*, Atmospheric Chemistry Symposium of the 1993 Pittsburgh Conference on Analytical Chemistry, (Atlanta, GA).

*The Role of Photochemistry in Stratospheric Ozone Depletion*, XVI<sup>th</sup> International Conference on Photochemistry, (Vancouver, Canada).

1994:

*Chemical Mechanisms of Atmospheric Ozone Depletion*, 7th BOC Priestly Conference, (Lewisberg, PA).

*Stratospheric Ozone Depletion, The Greenhouse Effect and Other Changes in the Atmosphere*, 13<sup>th</sup> International Conference on Chemical Education, (San Juan, Puerto Rico).

*La Investigación Química Frente a los Problemas Ambientales del Mundo*, 30<sup>th</sup> Mexican Chemistry Congress, (Cancún, Mexico).

1995:

*HCl vapor pressures and reaction probabilities for ClONO<sub>2</sub> + HCl on liquid H<sub>2</sub>SO<sub>4</sub>-HNO<sub>3</sub>-HCl-H<sub>2</sub>O solutions*, Faraday Discussions on Atmospheric Chemistry, (Norwich, UK).

*Stratospheric Ozone: Recent Scientific Developments*, Taipei International Conference on Ozone Protection, (Taipei, Republic of China); and MIT-Agenda 21 International Conference on Sustainable Development and Environment, (Beijing, China).

1996:

*Monitoring the Ozone Hole, The Habitability of the Earth*, Princeton University's 250<sup>th</sup> Anniversary Celebration, (Princeton, NJ).

*Stratospheric Ozone Depletion: A Global Problem*, The Third Annual William Nordberg Memorial Lecture, Goddard Space Flight Center, (Greenbelt, MD).

*The Chemistry of Polar Ozone Depletion*. Cornell University, (Ithaca, NY).

*Heterogeneous Reactions - A New Perspective in Atmospheric Chemistry*. CIBA Foundation / Royal Society Discussion Meeting on Atmospheric Chemistry and Global Change, (London, UK).

*Global Warming and Ozone Depletion*, Conference on Our Planet, Our Children, sponsored by Representative Ed Markey (Lexington, MA).

*CFCs and the Ozone Layer-Disrupting a Delicate Balance*, Panelist, ACS Satellite TV Seminar, (Washington, DC).

*Preserving the Global Environment: A Challenge for the 21st Century*, Commencement address at the College of Chemistry, University of California, Berkeley (Berkeley, CA).

*The Antarctic Ozone Hole*, Opening Lecture of Complutense University Summer School, (El Escorial, Spain).

*Stratospheric Ozone and the Montreal Protocol*, 1996 International Day of the Ozone Layer Protection, (Sao Paulo, Brazil).

*Polar Ozone Depletion*, Japan Association for Mathematical Sciences Seminar on Environment, Science and Technology, (Onuma, Japan).

*The Antarctic Ozone Hole*, Annual Conference of the Society for Advancement of Chicanos and Native Americans in Science, (Los Angeles, CA).

*Stratospheric Ozone Depletion*, 1996 Hispanic Heritage Month Celebration at EPA (Washington, DC).

1997:

*Chemistry of Ice Particles; CFCs and Stratospheric Ozone*, Ida Beam Distinguished Visiting Professor Lecture Series, University of Iowa, (Iowa City, IA).

*Chemical Kinetics Studies of Atmospheric Reactions*, Creative Advances in Envir. Sci. & Tech. Award Symposium at the 213<sup>th</sup> National ACS meeting, (San Francisco, CA).

*Global Change Research: Cooperation in the Americas*, Special Symposium on Science Policy and Scientific Cooperation in the Americas, Fifth Chemical Congress of North America, (Cancun, Mexico).

*The Antarctic Ozone Hole*, G.M. Kosolapoff Award Lecture, Auburn University, (Auburn, AL).

*Stratospheric Ozone Depletion: A Global Problem*, H. Martin Friedman Lecture, Brooklyn College, (Brooklyn, NY).

*Stratospheric Ozone Depletion: A Global Problem*, 17<sup>th</sup> Annual Fred Garland Memorial Lecture, Texas A&M University, (Kingsville, TX).

*Stratospheric Ozone Depletion: A Global Problem*, Distinguished Scientist Lecture, Trinity University, (San Antonio, TX).

*Stratospheric Ozone Chemistry*, Plenary Lecture, Montreal Protocol 10<sup>th</sup> Anniversary Colloquium, (Montreal, Canada).

*Science, Environment and News Media*, Ten Nobels for the Future, Hypothesis, (Milan, Italy).

1998:

*The Chemistry of Ice Clouds*, Canon Visiting Scholar, College of William and Mary, (Williamsburg, VA).

*Environmental Challenges for the 21<sup>st</sup> Century*, Bren Fellows Program 17<sup>th</sup> Lecture, University of California at Irvine, (Irvine, CA).

*Environmental Challenges for the 21<sup>st</sup> Century: From Urban Pollution to Global Change*, Conference on Sustainable Development of a Commercial City, Central, Policy Unit, (Hong Kong Special Administrative Region).

*Atmospheric Ozone: From Local to Global Pollution*, Symposium Can Industry be Profitable Yet Environmentally Correct?, (Swedish Chamber of Commerce, New York, NY).

1999:

*Chemistry and the Environment: The Antarctic Ozone Hole*, 1999 Dakin Memorial Lecture, Adelphi University, (Garden City, NY).

*Depletion of the Ozone Layer: Consequences for the Environment*, A.R. Sanchez Distinguished Lecture, Texas A&M International University, (Laredo, TX).

*The Antarctic Ozone Hole*, J. Robert Oppenheimer Memorial Lecture, Los Alamos National Laboratory, (Los Alamos, NM).

*The Science of Global Change*, Premier screening of "A Perfect Balance", organized by Earth Communications Office and Union of Concerned Scientists, (Santa Monica, CA).

*A Perspective on Stratospheric Ozone Depletion*, Plenary Lecture, 1999 Annual Meeting of the American Academy of Dermatology, (New Orleans, LA).

*The Impact of Human Activities on Atmospheric Ozone*, Shirley A. Kliegel Lectureship in Geological and Planetary Sciences, California Institute of Technology, (Pasadena, CA).

*Physical Chemistry of Atmospheric Inorganic Aerosol: Solids or Liquids?*, Chancellor's Science Seminar Series, University of North Carolina, (Chapel Hill, NC).

*The Role of the Evaluation of Kinetics and Photochemical Data in the Ozone Depletion Issue*, American Geophysical Union Spring Meeting, (Boston, MA).

*Global Atmospheric Pollution: Ozone Depletion and Climate Change*, A Century of Nobel Prizes: Science and Humanism, UNESCO/Interdisciplinary University of Paris, (Paris, France).

*Global Atmospheric Chemistry: Challenges for the Coming Decade*, 1999 Distinguished Guest Lecture, Royal Society of Chemistry, (London, UK).

2000:

*An overview of the Chemistry of Atmosphere Particulates in the Stratosphere and Troposphere*, NARSTO 2000 Symposium on Tropospheric Aerosols, (Querétaro, Mexico).

*Global Change and the Antarctic Ozone Hole*, Jubilee Plenary Session on Science and the Future of Mankind, Pontifical Academy of Sciences, (Vatican).

*Air Pollution in Megacities: Mexico City Case Study*, Third Rosenblith Lecture in Science and Technology, National Academy of Sciences, MIT, (Cambridge, MA).

*Chemistry of Stratospheric Ozone Depletion*, Roberts Memorial Lecture, Colorado College, (Colorado Springs, CO).

*Major Environmental Challenges in the New Century*, Global Ministerial Environment Forum, United Nations Environment Programme, (Malmö, Sweden).

*The Antarctic Ozone Hole*, 16<sup>th</sup> Annual Broberg Lecture, North Dakota State University, (Fargo, ND).

*The Antarctic Ozone Hole*, Natick Chapter of Sigma Xi, (Natick, MA).

*The Antarctic Ozone Hole*, Frontiers in Research Lecture, University of Ottawa. (Ottawa, Canada).

*Impactos de las Actividades Humanas en la Química de la Atmósfera*, XXIV Congreso Latinoamericano de Química, Federación Latinoamericana de Asociaciones Químicas, (Lima, Peru).

*The Antarctic Ozone Hole, The CFC-Ozone Puzzle: Environmental Science in the Global Arena* (presented jointly with F.S. Rowland), Inaugural John H. Chafee Memorial Lecture on Science and the Environment, National Conference on Science, Policy and the Environment, National Academy of Sciences, (Washington, D.C.).

2001:

*Urban, Regional and Global Air Pollution*, Keynote Address, 12<sup>th</sup> World Clean Air and Environment Congress, (Seoul, Korea).

*Environmental Impact of Energy*, Energy Day, British Chamber of Commerce, (Mexico City).

*Emissions Impossible*, Panelist, World Economic Forum, (Davos, Switzerland).

*The Antarctic Ozone Hole* (The Taplin Lecture); *The Science and Politics of Climate Change; Urban, Regional and Global Air Pollution*, Inaugural Princeton Environmental Institute/Princeton University Press Public Lecture Series, (Princeton, NJ).

*The Antarctic Ozone Hole and Chemistry on Ice Surfaces*, The Danforth Lecture, Grinnell College (Grinnell, IA)

*The Antarctic Ozone Hole*, The Clifford Barger Hinto-Wright Lecture, Harvard Medical School, (Boston, MA); Brdicka Lecture, Heyrovsky Institute of Physical Chemistry, (Prague, Czech Republic).

*Conservando el medio ambiente global: Un reto para el Siglo XXI*, Commencement Address, Universidad de las Américas, (Puebla, Mexico).

*La Destruccion de la Capa de Ozono: un Problema Global*, presented at the dedication of the Mario Molina Environmental Technology Laboratory, Universidad Tecnológica Nezahualcóyotl, (State of Mexico, Mexico).

2002:

*El Impacto de las Actividades Humanas en la Atmósfera*, Casa de América/Foro Complutense, (Madrid, Spain); University of Costa Rica, (San Jose, Costa Rica).

*Preserving the Environment, Challenges for the 21<sup>st</sup> Century*, Commencement Address, University of Waterloo, (Waterloo, Canada).

*The Impact of Human Activities on the Atmosphere*, Keynote Address, International Women's Forum, (Mexico City).

*The Antarctic Ozone Hole: Global Environmental Consequences of Human Activity*, Presidential Lecture, Florida International University, (Miami, FL).

*The Antarctic Ozone Hole*, Kukin Lecture, Yeshiva University, (New York, NY); Daniel Fisher Dinner Lecture, Harvard College, Harvard University (Cambridge, MA); Distinguished Speaker Series: Nature and Society: Putting Knowledge to Work at the University of California, San Diego, (San Diego, CA).

*Los Cambios en las Ciencias y su Influencia en la Academia Universitaria*, 1er Encuentro de la Academia Universitaria por el Desarrollo Sostenible, Instituto Centro Americano de Administración de Empresas, INCAE, (San Jose, Costa Rica).

*Global Environmental Change: Two Views of the Future* (presented jointly with Bill McKibben), Cary Lecture Series, (Lexington, MA).

*Surface Chemistry of Atmospheric Aerosols*, the 11<sup>th</sup> Annual George C. Pimentel Memorial Lecture, University of California, Berkeley, (Berkeley, CA).

*Surface Chemistry of Atmospheric Aerosols*, American Chemical Society 224<sup>th</sup> National Meeting, (Boston, MA).

*Atmospheric Chemistry and Flow Reactors*, and *Surface Chemistry of Atmospheric Aerosols*, Kaufman Lectures, University of Pittsburgh, (Pittsburgh, PA).

*The Antarctic Ozone Hole*, Chemical Engineering Graduate Students Association Symposium, Carnegie Mellon University, (Pittsburgh, PA).

*El Impacto de las Actividades Humanas en la Atmósfera*, Keynote address, XXVIII Congreso de Ingeniería Sanitaria y Ambiental, (Cancún, Mexico).

2003:

*The impact of human activities on the chemistry of the atmosphere*, 28th International Union of Geodesy and Geophysics, General Assembly, (Sapporo, Japan).

*Global Environmental Issues: The Impact of Human Activities on the Atmosphere*, Ford/MIT Nobel Lecture, (Cambridge, MA).

*Science and the Environment*, Sesquicentennial Environmental Initiative Lecture, Washington University in St. Louis, (St. Louis, MO).

2004:

*Improving Air Quality in Large Urban Centers: Mexico City Case Study*, Shanghai Academy of Environmental Sciences, (Shanghai, China).

*The Stratospheric Ozone Layer: a Global Problem*, Fudan University, (Shanghai, China).

*The Impacts of Human Activities on the Atmosphere*, Tsinghua University, (Beijing, China).

*The Impacts of Human Activities on Urban Atmospheres*, China Meteorological Agency, (Beijing, China).

*Air Pollution in Large Urban Centers*, Peking University, (Beijing, China).

*Efectos de la emisión de contaminantes en la Atmósfera del Planeta*, Benemérita Universidad Autónoma de Puebla, (Puebla, Mexico).

*Evolución Química de Partículas Atmosféricas*, III Minisimposio Internacional sobre Remoción de Contaminantes del Agua, Atmósfera y Suelos, Universidad Nacional Autónoma de México, (Mexico City).

*Fisicoquímica de Partículas Atmosféricas*, Second Mexican Meeting on Mathematical and Experimental Physics, El Colegio Nacional, (Mexico City).

*The Chemistry of Ice Surfaces in the Earth's Atmosphere*, Ecole Polytechnique Fédérale de Lausanne (EPFL), (Lausanne, Suiza).

*Climate Change: a Challenge for the 21<sup>st</sup> Century*, Western Governors Association North American Energy Summit, (Albuquerque, NM).

*Megacities and Atmospheric Pollution*, Talleres de Periodismo Científico Jack Ealy, Instituto de las Américas, (San Diego, CA).

*The Impact of Human Activities on the Atmosphere*, Departamento de Ciencias Ambientales de Salud, Columbia University, (New York, NY).

*Air Quality and Climate Change*, Department of Atmospheric and Oceanic Science, University of Maryland, (College Park, MD).

*La Contaminación Atmosférica: sus efectos locales y globales*, Centro de Estudios Demográficos, Urbanos y Ambientales, El Colegio de México, (Mexico City).

2005:

*Science and Policy Issues related to Air Quality in Mexico*, Aspen Institute, (Punta Mita / Vallarta, Mexico).

*Problemas de Calidad del Aire en Países en Desarrollo*, Network for Environmental Risk Management, Instituto Nacional de Salud Pública, (Cuernavaca, Mexico).

*Programa "Emisión Zero" para la Calidad del Aire*, Gobierno del Estado de Jalisco, (Guadalajara, Mexico).

*Global Air Quality*, Chulalongkorn University, (Bangkok, Thailand).

*The Impact of Human Activities in the Atmosphere*, Thammasat University, (Bangkok, Thailand).

*Propuesta para Mejorar la Calidad del Aire en Mexico en 10 años*, Taller sobre la Contaminación del Aire en Mexico, Instituto Nacional de Ecología, (Mexico City).

*Air Quality Lessons Learned from the Mexico City Metropolitan Area*, Border Institute VII: Transboundary Air Pollution and Binational Air Quality Management, (Rio Rico, AZ).

*Contaminación Atmosférica a Escala Urbana, Regional y Global*, Foro Ambiental del Gobierno de Guanajuato, (Irapuato, Mexico).

*La Investigación Científica y la Calidad del Aire en la Zona Metropolitana del Valle de Mexico*, Foro Sobre la Calidad del Aire en el Distrito Federal y Cambio Climático, (Mexico City).

*Climate Change and Global Air Quality; The Need for Action*, The Stony Brook World Environmental Forum, (Long Island, NY).

*Avances en la Investigación Científica de la Calidad del Aire en Mexico*, Seminario Ambiental para las Empresas del Distrito Federal, CANACINTRA, (Mexico City).

*2003 Measurement Campaign in the Mexico City Metropolitan Area*, Atmospheric Aerosols: Health, Environmental and Policy of Particulates in the US- Mexico Border Region, (San Diego, CA).

*Aspectos Generales de la Campaña de Medición MCMA-2003*, V Simposio de Contaminación Atmosférica, El Colegio Nacional, (Mexico City).

*Estudios Estratégicos sobre Energía y Medio Ambiente*, Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, (Guadalajara, Mexico).

*Perspectives on Ozone Layer Science*, Lessons from the Vienna Convention and the Chemicals Agenda, (Vienna, Austria).

*El Impacto de las Actividades Humanas en la Atmósfera*, Instituto Politécnico Nacional, (Mexico City).

*Las Actividades Humanas y el Medio Ambiente*, Secretaría de Relaciones Exteriores, (Mexico City).

2006:

*Ciencia, Energía y Medio Ambiente*, Academia Mexicana de Ciencias, (Mexico City).

*El impacto de las Actividades Humanas en la Atmósfera*, Sociedad Química de Mexico, (Mexico City).

*El Calentamiento Global y el Ciclo Hidrológico*, IV Foro Mundial del Agua, (Mexico City).

*Cambio Climático, Calidad del Aire y Transporte*, Unión Jalisciense de Asociaciones de Ingenieros, (Guadalajara, Mexico).

*Avances en la Investigación Científica de Calidad del Aire en Mexico*, Asociación Mexicana de Directivos de la Investigación Aplicada y Desarrollo Tecnológico A.C. ADIAT, (Guadalajara, Mexico).

*Cambio Climático*, 2º Foro de Intercambio de Experiencias en las Alianzas Estratégicas con Universidades Regionales, (Cuernavaca, Mexico).

*El Impacto de las Actividades Humanas en la Atmósfera*, Universidad Autónoma del Valle de Mexico, (Mexico City).

2007:

*Combattre les Pollutions et Préserver la Santé*, Conférence de Paris pour une Gouvernance Ecologique Mondiale, (Paris, France).

*Challenges in Reducing Air Pollution in Developing Nations*, Stanford, (Stanford, CA).

*Impacto en la Agricultura del Cambio Climático*, Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, (Mexico City).

*El Impacto de las Actividades Humanas en la Atmósfera*, Universidad Iberoamericana, (Mexico City).

*Cambio Climático*, Conferencia Mariano Otero, (Mexico City).

*El Cambio Climático*, Comisión de Desarrollo Rural del Senado de la República, (Mexico City).

*El Cambio Climático*, Reunión de Delegados de la Procuraduría Federal de Protección al Ambiente, (Mexico City).

*El Cambio Climático*, Edificación Sustentable en América del Norte, Comisión para la Cooperación Ambiental, (Mexico City).

*Balance de la Gestión de Calidad de Aire*, Dialogo con Actores Locales, Mexicali - Imperial County, (Mexicali, Mexico).

*Cambio Climático*, Ceremonia del 5º Aniversario de la Protección del Medio Ambiente, (State of Mexico, Mexico).

*Ley de Protección y Desarrollo de los Bioenergéticos*, Grupo Parlamentario del PRD, (Mexico, City).

*The Impact of Human Activities on our Atmosphere*, Society of Toxicology, 2007 Annual Meeting, (Charlotte, NC).

*Climate Change: Challenges and Strategies for Sustainable Cities*, Association of Pacific Rim Universities, World Institute Workshop, UCSD (San Diego, CA).

*Cambio Climático*, Conferencia Internacional sobre Cambio Climático, (Bilbao, Spain).

*Incidencia de Muerte por Niveles de Contaminación*, Asociación Mexicana para la prevención de la Arteriosclerosis, (Zacatecas, Mexico).

*Calentamiento Global*, Programa de Vinculación en Materia Ambiental con Empresas del Valle de Toluca, (State of Mexico, Mexico).

*Los Problemas Ambientales Nacionales y Globales*, El Colegio de Mexico, (Mexico City).

*Energía y Cambio Climático*, Asociación Mexicana de Amigos del Instituto Weizmann de Ciencias A.C. (Ixtapan de la Sal, Mexico).

*Cambio Climático y Transporte*, Asociación Mexicana de la Industria Automotriz, (Mexico City).

- La problemática del cambio climático*, Día Internacional de la Diversidad Biológica 2007: Cambio Climático y Biodiversidad, Colegio Nacional, SEMARNAT, CONABIO, CMM, (Mexico City).
- Cambio Climático*, Primer Foro Internacional de Energía Renovable en Baja California: Logros y Oportunidades, (Mexicali, Mexico).
- Cambio Climático y Medios de Comunicación*, Seminario Internacional de Medios de Comunicación y Cambio Climático, Programa de las Naciones Unidas para el Desarrollo, (Mexico City).
- Cambio Climático*, Consejo Nacional Agropecuario, (Mexico City).
- The Impact of Human Activities on the Chemistry of the Atmosphere*, 8th Congress on Physical Chemistry of the Portuguese Chemical Society, (Coimbra, Portugal).
- Calentamiento Global: Consecuencia de las Actividades Humanas*, (San Sebastián, Spain).
- Cambio Climático Global*, Segundo Congreso y Exposición Internacional del Petróleo en Mexico, PEMEX, (Veracruz, Mexico).
- Cambio Climático*, Club de Industriales, (Mexico City).
- Calentamiento Global*, XV Aniversario de Centros Públicos de Investigación, CONACYT, (Mexico City).
- Mexico y la Ciencia ante el Cambio Climático*, Colegio de la Frontera Norte, (Tijuana, Mexico).
- El Calentamiento Global, Seminario de Cambio Climático: El Caso de Mexico*, Academia de Ingeniería, (Mexico City).
- El Impacto de las Actividades Humanas en la Atmósfera*, 19ª Conferencia de la Sociedad Internacional de Epidemiología Ambiental, (Mexico City).
- El Deterioro del Medio Ambiente: Un Obstáculo para la Paz*, Foro Internacional Pro-Paz, Clubes Rotarios de Torreón, (Torreón, Mexico).
- Climate Change and Policy: Needs for a Global Community*, Workshop on Climate Change and Human Health, Institute of Medicine's Round Table on Environmental Health Sciences, National Research Council, (San Francisco, CA).
- Cambio Climático y Edificaciones Sustentables*, Reunión Nacional de Vivienda 2007, Cámara Mexicana de la Industria de la Construcción, (Aguascalientes, Mexico).
- Polar Ozone Depletion: Early History*, 20th Anniversary of the Montreal Protocol, Scientific Symposium: "Ozone Depletion: from its discovery to Envisat and Aura", (Athens, Greece).
- Our Common Atmosphere, Global Sustainability—A Nobel Cause*, 1st Interdisciplinary Symposium, (Potsdam, Germany).
- Cambio Climático: Retos Ambientales para el Siglo XXI*, Circulo de Estudios Mexico, (Mexico, City).
- Future of the World – Energy and Sustainable Development*, Second Bienal Festival of Thinkers, (Abu Dhabi, United Arab Emirates).
- La Ciencia como Parte Integral de la Cultura Contemporánea*, Forum Universal de las Culturas, IV Conferencia Internacional Ciencia y Bienestar: del Asombro a la Ciencia, (Monterrey, Mexico).
- Cambio Climático y Efectos en la Salud*, Cuarta Sesión Ordinaria del Consejo Científico de la Comisión Federal para la Protección Contra Riesgos Sanitarios, (Mexico City).



*El Cambio Climático*, Mexichem, Reunión de Planeación, (Mexico City).

*El Cambio Climático: Un Problema Global*, Cámara Nacional de la Industria de Transformación, (Mexico City).

2008:

*Tragedia en Tabasco Causas–Consecuencias/Prevención–Reconstrucción*, Club de Industriales, Banco Interamericano de Desarrollo, (Mexico City).

*El Impacto de las Actividades Humanas en la Atmósfera*, Universidad Autónoma de Nuevo León, (Monterrey, Mexico).

*El Impacto de las Actividades Humanas en la Atmósfera*, Encuentro Directivo de Latinoamérica de la Compañía Gas Natural, (Mexico City).

*Climate Change: Science and Policy, Breaking Global Deadlocks: The Future of International Governance Architecture*, Secretaría de Relaciones Exteriores, (Mexico City).

*Energy and Environmental Program in Mexico, Challenges to Low-CO2 Energy Supply at Proposed Scale and Pace*, XXVII Global Change Forum , Massachusetts Institute of Technology (Arlington, VA)

*Cambio Climático en la Agenda Global de Hoy*, 49th Annual Meeting of the Board of Governors of the BID and IIC, (Miami, FL).

*La Atmósfera y la contaminación Ambiental, Seminario de Derecho, Ciencia y tecnología, Academia Mexicana de Ciencias/Suprema Corte de la Justicia de la Nación*, (Mexico City).

*El Calentamiento Global*, Foro de Protección Civil e Higiene en el Trabajo, Poder Judicial de la Federación, (Mexico City).

*Background on Climate Change: Updates from the Latest Science, Getting Serious about Climate Change: A guide for Foundations National Harbor*, (Maryland).

*Calidad del Aire en Megaciudades*, Seminario Internacional: Recomendaciones de Expertos para la Nueva Etapa del Plan de Descontaminación Atmosférica de Santiago, (Santiago, Chile)

*Cambio Climático y Edificaciones Sustentables*, Banobras/Infraestructura y Sustentabilidad Ambiental, (Mexico City).

*El Cambio Climático*, Primer Foro: Cambio Climático en el Estado de Tabasco Comisión de Ecología del H. Congreso del Edo.de Tabasco, (Tabasco, Mexico).

*El Calentamiento Global*, Asociación Mexicana de Instituciones de Seguros, Convención Nacional de Aseguradoras, (Mexico City).

*El Cambio Climático*, Cambio Climático y Seguridad Nacional: Programa de Diálogo y Construcción de Acuerdos, Comisión del Medio Ambiente: Encuentro sobre Legislación, (Querétaro, Mexico).

*Climate Change and Air Quality: Some Science-Policy Considerations*, 5° Taller Jack F. Ealy sobre Periodismo Científico, UCSD, (San Diego, CA).

*Global Climate Change: the Imperative for Action*, A Conversation on Building Green Economies, XXVI Annual Border Governors Conference (Los Ángeles, CA).

*El Impacto de las Actividades Humanas en la Atmósfera*, Fundación Telmex: Mexico Siglo XXI, (Mexico City).

*Energy and Climate Change*, Ambrosetti Forum: Intelligence on the World, Europe and Italy, The European House (Ville d'Este, Italy).

*Cambio Climático, ¿Hasta dónde llegaremos?*, Cumbre Empresarial Veracruz 2008, (Veracruz, Mexico).

*La Capa de Ozono: El impacto de las Actividades Humanas*, VI Congreso Latinoamericano de Aerosoles Mexico, (Mexico City).

*El Impacto de las Actividades Humanas en la Atmósfera*, 5th Annual meeting Forum Science and Technology in Society, (Kyoto, Japan).

*Política sobre Cambio Climático en Mexico*, Seminario Anual de la Fundación ClimateWorks, (Berkeley, CA).

*The Impact of on our Atmosphere of human Activities*, Honeywell Nobel Initiative, (Monterrey, Mexico).

*Retos en Ciencias, Tecnología y Protección al Medio Ambiente*, VII conferencia de la Unión Iberoamericana de Ciencia, Tecnología y Empresa, (Mexico City).

*The Impact of Human Activities on our Atmosphere*, 19th General Meeting and 25th Anniversary Celebration, Third World Academy of Sciences, (Mexico City).

*Hacia el Futuro: Energía y Medio Ambiente en el Siglo XXI*, Ciclo de Conferencias: "El Cambio Climático a debate" Fundación Rafael del Pino, (Madrid, Spain).

*Aspectos Económicos y Científicos del Programa Especial de Cambio Climático*, Presidencia de la República, (Mexico City).

2009:

*Sustainable Habitats: Are they feasible?*, Al Gore Solutions Summit (New York, NY).

*Climate Change: Opportunities for collaboration between developed and developing countries*, Delhi Sustainable Development Summit 2009. Towards Copenhagen: an equitable and ethical approach, (Delhi, India).

*The Impact of Human Activities on our Atmosphere*, San Diego Science Festival, (San Diego, CA).

*Plausible International Agreements to control Climate Change and the Mexican Low Carbon Economy Plan*, St James's Palace Nobel Laureate Symposium, (London, UK).

*Energy and Climate Change: Is there a solution?*, Meetings of Nobel Laureates, (Lindau, Germany).

*Climate Change: Science - Technology – Solution*, MPS/GEO Distinguished Lecture National Science Foundation, (California).

*Climate Change: Current Status- Impacts–Solutions*, 9th World Wilderness Congress, (Yucatán, Mexico).

*Mexico y el Cambio Climático*, Estrategias contra el Cambio Climático, Una Contribución Mexicana, (Zacatecas, Mexico).

*El Cambio Climático*, Foro Cambio Climático, (Mexico City).

*El Cambio Climático y el efecto del Carbón Negro*, Taller Internacional de Carbono Negro y Cambio Climático en Latinoamérica, (Mexico City).

- El Cambio Climático: Hallazgos científicos, Congreso de Ciudades Sustentables*, Universidad Michoacana de San Nicolás de Hidalgo, (Michoacán, Mexico).
- El Cambio Climático: Ciencia, tecnología y soluciones*, ANIQ Foro Nacional de la Industria Química, (Mexico City).
- La contaminación del aire de la ZMVM Problemática y Oportunidades*, Seminario Internacional sobre Calidad del Aire y Efectos a la Salud, (Mexico City).
- El Cambio Climático*, Foro Internacional del Agua, Energía y Cambio Climático, (Veracruz, Mexico).
- La Evidencia Científica, los Nuevos Hallazgos y las Perspectivas del Cambio Climático*, Taller de Definición de Líneas de Acción Climática, Petróleos Mexicanos, (Mexico City).
- Evidencia Científica y Nuevos Hallazgos del Cambio Climático*, Premios Nobel en el Cinvestav, (Mexico City).
- Cambio Climático y Sector Papel y Celulosa*, Comida anual de la Cámara Nacional de las Industrias de la Celulosa y del Papel, (Mexico City).
- Impacto del Cambio Climático*, Coca-cola Company Mexico, Presentación Filosofía Corporativa, (Mexico City).
- El Cambio Climático y la Economía Verde*, Foro Nacional de Energía, Medio Ambiente y Política del Cambio Climático, Goldman School's Executive and International Programs, and Center for Environmental Public Policy at the University of California, Berkeley, (Mexico City).
- Cambio Climático y Desarrollo Económico Sustentable*, II Taller Internacional MIT-Universidad Anáhuac, (Mexico City).
- Sistemas en la Enseñanza Vivencial e Indagatoria de la Ciencia*, Quinta Conferencia Internacional: Crecimiento con Calidad de los Programas de Enseñanza de las Ciencias Basados en la Indagación, (Monterrey, Mexico).
- Mexico y el Cambio Climático*, Semana de la Ciencia y la Innovación, Gobierno del Distrito Federal (Mexico City.)
- El Cambio Climático*, Summit de Cambio Climático: Competitividad para los Negocios, Embajada de Gran Bretaña y Embajada de Dinamarca en Mexico, (Mexico City).
- Climate Change: Science, Technology and Solutions*, MPS/GEO Distinguished Lecture, National Science Foundation Lectures, (Arlington, VA).
- Science and Policy of Climate Change*, Café Scientifique Arlington, (Arlington, VA).
- Los Desafíos Globales del Cambio Climático y sus Repercusiones para Mexico*, Mexico y la Unión Europea rumbo a Copenhague, Facultad de Ciencias Políticas y Sociales de la UNAM y la Delegación de la Comisión Europea en Mexico, (Mexico City).

2010:

- Nuclear energy and Climate change*, Nuclear Disarmament, Non-Proliferation and Development, The Pontifical Academy of Sciences, (Vatican City).
- El Cambio Climático y el Desarrollo Sustentable*, Conferencias Nobel, Universidad de las Américas, (Puebla, Mexico).
- The Science and Policy of Climate Change*, Nobel Week in Brussels, (Brussels, Belgium).

- Desarrollo sustentable y cambio climático*, Química Verde y el Calentamiento Global, El Colegio Nacional, (Mexico City).
- El Cambio Climático un problema global*, XII Congreso Internacional: Avances en Medicina, Instituto Tecnológico de Estudios Superiores de Monterrey, (Guadalajara, Mexico).
- Cambio Climático y su impacto en la Economía Global*, XVII Congreso Nacional del Comercio Exterior, Consejo Empresarial Mexicano de Comercio Exterior, Inversión y Tecnología, A.C., (Yucatán, Mexico).
- El Cambio Climático y la Industria Inmobiliaria*, Expo Desarrollo Inmobiliario, Asociación de Desarrolladores Inmobiliarios, (Mexico City).
- Situación actual del Cambio Climático y que está haciendo el mundo para enfrentarlo*, El sector financiero hacia la cumbre mundial sobre Cambio Climático, Programa de las Naciones Unidas para el Medio Ambiente, (Mexico City).
- Cambio climático y energía*, Foros de reflexión compromiso por Mexico- Foro Desarrollo Sostenible, (Toluca, Mexico),
- Climate Change*, 2010 Conference of Nobel Laureates, The Elie Wiesel Foundation & 92Y (New York, NY).
- El Cambio Climático*, Primer encuentro Tijuana Innovadora 2010 - Tecnología y Cultura, (Tijuana, Mexico)
- Amenazas, Peligros y Soluciones para la Vida en la Tierra*, Primer Congreso de mentes brillantes “El Ser Creativo”, (Málaga, Spain).
- El Cambio Climático: Ciencia, Tecnología y Soluciones*, Ikerbasque, Fundación Vasca para la Ciencia, (San Sebastián, Spain).
- Strengthening the Montreal Protocol to Reduce Non-CO2 GHG Emission*, Basque Centre for Climate Change, (Bilbao, Spain).
- El Cambio Climático*, La Ciudad de las Ideas, 3er Festival Internacional de Mentes Brillantes, (Puebla, Mexico).
- Ciencia, Sociedad y Cambio Climático*, 3er Foro Iberoamericano de Ciencia, Tecnología e Innovación, Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo, (Cancún, Mexico).
- Discurso Inaugural de la Conferencia de las Partes 16 (COP-16)*, Conferencia de las Naciones Unidas para el Cambio Climático, (Cancún, Mexico).
- La Ciencia del Cambio Climático*, Conferencia de las Naciones Unidas para el Cambio Climático COP-16, Evento paralelo: Green Solutions, (Cancún, Mexico).
- Vínculos y Co-beneficios entre los Protocolos de Kioto y de Montreal*, Conferencia de las Naciones Unidas para el Cambio Climático COP-16, Evento paralelo: Secretaría del Medio Ambiente y Recursos Naturales – UNIDO, (Cancún, Mexico).
- Potencial de Mitigación del Cambio Climático con Controles de Hollín, Metano y HFC's*, Conferencia de las Naciones Unidas para el Cambio Climático COP-16, Evento Paralelo: Programa de las Naciones Unidas para el Medio Ambiente, (Cancún, Mexico).
- El Cambio Climático: Ciencia, Tecnología y Soluciones*, El Colegio de la Frontera Norte, (Tijuana, Mexico).
- El Cambio Climático: Ciencia, Tecnología y Soluciones*, Premio Daniel Cosío Villegas, El Colegio de Mexico, (Mexico City).

2011:

*The Science and Policy of the Ozone Layer: a brief historical perspective*, University of California, San Diego, 50<sup>th</sup> Anniversary Year, (San Diego, CA).

*El Cambio Climático: un problema ambiental urgente*, Comunidad Educativa Tomás Moro, (Mexico City).

*Educación y Valores para el Desarrollo*, Encuentro de Educación y Valores para la Convivencia en el Siglo XXI, Secretaría de Educación Pública, (Mexico City).

*El cambio climático: Ciencia, Tecnología y Soluciones*, Congreso Peninsular de Energía, (Cancun, Mexico).

*The Science and Policy of Climate Change*, XXXII MIT Global Change Forum-Rethinking Global Change, (Cambridge, MA).

*La Química del Cambio Climático*, Universidad Autónoma de San Luis Potosí, (SLP, Mexico).

*El cambio climático: Negociaciones y Sectores de Gran Demanda de Energía*, Consejo Minero de Chile, (Santiago, Chile).

*El cambio climático*, Instituto Alonso de Ercilla, (Santiago, Chile).

*La Ciencia y Política del Cambio Climático*, Universidad Metropolitana, (San Juan, Puerto Rico).

*Chemistry and Climate Change*, IUPAC World Chemistry Congress- World Chemistry Leadership Meeting, (San Juan, Puerto Rico).

*Eficiencia energética en el sector transporte: Impacto en el cambio climático*, Taller de Eficiencia Energética en Vehículos Pesados CONUEE – ICCT, (Mexico City).

*Sistemas Modernos de Enseñanza de las Ciencias*, 5° Congreso Nacional de Educación y 3er Encuentro Nacional de Padres de Familia, Sindicato Nacional de Trabajadores de la Educación SNTE, (Mexico City).

*Estrategias regionales y sectoriales para un desarrollo sustentable de baja intensidad de carbono en México*, Cámara de Diputados - Comisión Especial sobre Cambio Climático, (Mexico City).

*The Science and Policy of Climate Change*, Environmental Protection Agency, (Washington, DC).

*Climate Change and Air Quality*, 6<sup>th</sup> National Conference on Environmental Chemistry, (Shanghai, China).

*Stratospheric Ozone Depletion and Climate Change*, Fudan University, (Shanghai, China).

*Climate Change: Science and Policy*, Remarks on Science Communication, Chinese Academy Of Sciences, (Beijing, China).

*Cambio climático y la evolución futura del Homo sapiens*, Jornada de Vanguardia Científica Nuevos paradigmas y temas emergentes en las Ciencias de la Vida, UAM-Gobierno del Distrito Federal, (Mexico City).

*El Cambio Climático y el Sector Transporte*, Congreso Internacional de Transporte Sustentable, (Mexico City).

*The Science and Policy of Climate Change*, BASF, (Ludwigshafen, Germany).

*Futuro del Planeta*, II Congreso de Mentas Brillantes, El Ser Creativo, (Madrid, Spain).

*Atmospheric Chemistry and Chemical Kinetics*, The Year of Chemistry, Washington College, (Chestertown, MD).

*Chemistry and Climate Change*, The Year of Chemistry, Washington College, (Chestertown, MD).

*Scientific Lessons: Stratospheric Ozone and Climate Change*, Science and Policy Issues, IYC Symposium on Stratospheric Ozone, (Washington, DC).

*La Ciencia del Cambio Climático*, Colegio Madrid, (Mexico City).

*La Ciencia y Política del Cambio Climático*, Congreso Global Infrastructure & Eco-Technology, (Mexico City).

*Hacer química educando*, VI Conferencia Internacional sobre Enseñanza Vivencial e Indagatoria de la Ciencia en la Educación Básica, (Mexico City).

*Innovar y mejorar el mundo a través de la Educación en Ciencias*, VI Conferencia Internacional sobre Enseñanza Vivencial e Indagatoria de la Ciencia en la Educación Básica, (Mexico City).

*La Química, el Cambio Climático y el Ozono Estratosférico*, Coloquio Fronteras de la Química, Año Internacional de la Química, (Mexico City).

2012:

*Climate Change: Science, Policy and Solutions*, 4<sup>th</sup> International Conference on Drug Discovery & Therapy, (Dubai, United Arab Emirates).

*Ecología y Medio Ambiente*, V Congreso Nacional de la Academia de Ingeniería, (Mexico City).

Development and the Environment, G20 Finance Ministers and Central Bank Governors Meeting, (Mexico City).

*Cambio Climático: Aspectos Económicos, Científicos y Políticos*, Colegio de Puebla, (Puebla, Mexico).

*Energía y Cambio Climático*, Seminario internacional: *El Futuro de la energía*, Secretaria de Energía, (Mexico City).

*La Necesidad de un Crecimiento Verde*, Club De Madrid, The G20 in the Post Crisis World: the Need for Green Growth, SRE, (Mexico City).

*Renewable Energy & Climate Change*, Mexican International Renewable Energy Congress, (Mexico City).

*Desarrollo Urbano y Sustentabilidad en el Valle de México*, Conferencia Cuajimalpa Verde, (Mexico City).

*La Ciencia y Política del cambio climático*, Real Academia de Ciencias, Symposium Internacional: "La Química de nuestro tiempo", (Madrid, Spain).

*The Science and Policy of Climate Change*, Orsted Lecture, Technical University of Denmark, (Lyngby, Denmark).

*Gas Phase Kinetics and Atmospheric Chemistry: A Historical Perspective*, Polany Lecture, GK2012 22nd International Symposium on Gas Kinetics, (Boulder, CO).

*The Science and Policy of Climate Change*, World Automation Congress, (Puerto Vallarta, Mexico).

*Science Communication and Climate Change*, Lindau Nobel Laureate Meetings, (Lindau, Germany).

*Chemistry and Climate Change*, 244<sup>th</sup> American Chemical Society National Meeting, (Philadelphia, PA).

*El Agua y el Cambio Climático*, Expo Agro- Chihuahua, (Chihuahua, Mexico).

*Cambio Climático: Ciencia y Soluciones*, Reunión Anual Academia Panamericana de Ingeniería, (Mexico City).

*Vinculación del Sector Vivienda y los Compromisos de México ante el Cambio Climático*, Diálogos de la Mesa Transversal de Vivienda Sustentable en México, (Mexico City).

*Ciencia y Política del Cambio Climático*, Segundo Congreso Nacional de Investigación en Cambio Climático, (Mexico City).

*Cambio Climático: Aspectos Económicos, Científicos y Políticos*, Presentación Thermo Scientific- AccesoLab, (Mexico City).

*El Impacto de la Ciencia y Tecnología en el Desarrollo del País*, Value Investment Forum, (Mexico City).

*Cambio Climático, Ciencia y Comunicación*, Cátedra Andrés Marcelo Sada- Décimo Aniversario, (Monterrey, Mexico).

*Complexity in Climate Change Science*, Plenary Session on Complexity and Analogy in Science, (Vatican City).

*Desarrollo Sustentable: Aspectos Científicos Económicos y Políticos*, Encuentro de Líderes por la Sustentabilidad, (Mexico City).

*Desarrollo Sustentable: Ciencia, Política y Finanzas*, XLII Congreso Mundial IAFEI, (Cancun, Mexico).

*Climate Change: Science, Policy and Solutions*, Dublin City University, (Dublin, Ireland).

2013:

*Climate Change and Sustainable Development*, SEI Science Forum 2013, Stockholm Environment Institute, (Stockholm, Sweden).

*The Energy-Climate Nexus*, Global-regional integration workshop on sustainable energy, International Council for Science, (Mexico City).

*Cambio Climático y Desarrollo Sustentable*, Comisión Especial de Cambio Climático, Senado de la República, (Mexico City).

*Cambio Climático y Desarrollo Sustentable*, Foro de Pensamiento Global: Ciudadanos responsables-ciudades sustentables, VI Encuentro Latinoamericano de Empresas Socialmente Responsables, (Mexico City).

*On healthy air and urban populations*, Tyler Prize for Environmental Achievement 40th Anniversary Event, (Washington, D.C.).

*La medida en las ciencias de la atmósfera*, Simposio: La medida, El Colegio Nacional, (Mexico City).

*Energy & Climate Change*, Greening North America's Energy Economy, Commission for Environmental Cooperation, (Alberta, Canada).

*Cambio Climático y Desarrollo Urbano Sustentable*, Conferencia EmTech del MIT Technology Review, (Mexico City).

*Energía Nuclear y Sustentabilidad*, Seminario el Futuro de la Energía Nuclear, Academia de Ingeniería, (Mexico City).

*Cambio Climático y Desarrollo Sustentable*, Universidad Internacional Menéndez Pelayo, (Santander, Spain).

*Communicating Climate Change Science*, 63rd Lindau Nobel Laureate Meeting Chemistry, (Lindau, Germany).

*Short Live Climate Pollutants*, Climate and Clean Air Coalition to Reduce Short Lived Climate Pollutants (CCAC), (Santiago, Chile).

*Cambio Climático*, Escuela Básica Profesor Ramón del Río, (Santiago, Chile).

*La Industria Petrolera y su Papel en el Cambio Climático*, 7° Seminario Internacional: Respuesta a Emergencias, Caracterización y Remediación de Sitios Impactados por Hidrocarburos, Petróleos Mexicanos, (Mexico City).

*Cambio Climático: Ciencia, política e impacto social*, Migración Humana y Cambio Climático, Fundación Bancomer, (Mexico City).

*Cambio Climático y Desarrollo Sustentable*, Los Retos del Desarrollo Sustentable en el Mediano y Largo Plazo, Universidad Iberoamericana 70 Aniversario, (Mexico City).

*El Cambio Necesario*, El Futuro Empieza Hoy, Universal Thinking Forum, (Mexico City).

*Climate Change: Science and Policy*, Foundation Lecture, Manchester University, (Manchester, UK).

*Science and Policy of Climate Change: Solutions to the challenge*, The Sustainable Link in a New Approach between Europe and the Arab Nations, Pio Manzù Conference, (Rimini, Italy).

*Agua y Cambio Climático*, Foro Estatal Agroalimentario, Gobierno de Guanajuato, (Guanajuato, Mexico).

*Cambio Climático y Desarrollo Sustentable*, Universidad Tecnológica de Matamoros, (Tamaulipas, Mexico).

*Energías Renovables y Cambio Climático*, Comisión de Cambio Climático LXII Legislatura, Cámara de Diputados, (Mexico City).

*Climate Change: Science and Policy*, Symposium "The Anthropocene", Max Planck Institute for Chemistry, (Mainz, Germany).

2014:

*El cambio climático y la importancia de la investigación en la Universidad*, Universidad Panamericana, (Guadalajara, Mexico).

*Cooperación en Materia del Cambio Climático*, XIX Foro de Ministros del Medio Ambiente de América Latina y el Caribe, Secretaría de Medio Ambiente y Recursos Naturales, (Los Cabos, Mexico).

*El Cambio Climático y los Riesgos Globales*, Seminario: Cambio Climático: Riesgos, Adaptación y Mitigación, Academia Mexicana de Ciencias/ Senado de la República, LXII Legislatura, (Mexico City).

*Ciencia y Política del Cambio Climático*, VI Cumbre de Jefes de Estado y/o Gobierno de la Asociación de Estados del Caribe, Asociación de Estados del Caribe/ Secretaría de Relaciones Exteriores, (Mérida, Mexico).

Hallazgos y Tendencias Recientes en Cambio Climático, Reunión Nacional de Delegadas y Delegados del Sector, Secretaria de Medio Ambiente y Recursos Naturales, (Mexico City).



*Cambio Climático y Contaminación Atmosférica*, Plan de Prevención y Descontaminación Atmosférica de la Región Metropolitana de Santiago, (Santiago, Chile).

*Cambio Climático y Contaminantes de Vida Corta*, Universidad de Concepción, (Chillán, Chile).

*Ciencia, Innovación y Protección al Ambiente*, Congreso Internacional de Innovación y Desarrollo: Empresa, Estado, Academia y Sociedad, Universidad Técnica Particular de Loja, (Quito, Ecuador).

*Investigación Científica, Innovación y Cambio Climático*, CONACYT: Bienvenida a Jóvenes Investigadores, Academia Mexicana de Ciencias, (Mexico City).

*Sustainability in the World and its Prospect*, Annual Conference 2014, Club de Roma, (Mexico City).

*A Call to Action: Understanding Climate Risk*, The Economic and Financial Risks of a Changing Climate, The Climate Risk Forum, Resources for the Future (RFF) and the American Association for the Advancement of Science (AAAS), (Washington, DC).

2015:

*Problemas ambientales globales*, Cátedra Mario Molina, Universidad Nacional Autónoma de México, (Mexico City).

*La Química de la atmósfera*, Simposio La Química: El funcionamiento del universo, los seres vivos y las actividades humanas, Colegio Nacional, (Mexico City).

*Session 7: Visions for places: First steps by cities toward meeting climate change and sustainability*, 4<sup>th</sup> Nobel Laureates Symposium on Global Sustainability, (Hong Kong Special Administrative Region).

*Climate Change: Science, Policy and Communication*, The Karl Taylor Compton Lecture, MIT, (Cambridge, MA).

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