

Henry F. Schaefer III

Mini-Biography

Henry F. Schaefer III was born in Grand Rapids, Michigan. He attended public schools in Syracuse (New York), Menlo Park (California), and Grand Rapids (Michigan), graduating from East Grand Rapids High School. He received his B.S. degree in chemical physics from the Massachusetts Institute of Technology and Ph.D. degree in chemical physics from Stanford University. For 18 years he served as a professor of chemistry at the University of California, Berkeley. During the 1979-1980 academic year he was also Wilfred T. Doherty Professor of Chemistry and inaugural Director of the Institute for Theoretical Chemistry at the University of Texas, Austin. Dr. Schaefer is currently Graham Perdue Professor of Chemistry and Director of the Center for Computational Quantum Chemistry at the University of Georgia. He is simultaneously Professor of Chemistry, Emeritus, at the University of California at Berkeley. His other academic appointments include Professeur d'Echange at the University of Paris (1977), Gastprofessor at the Eidgenössische Technische Hochschule (ETH), Zürich (1994, 1995, 1997, 2000, 2002, 2004, 2006, 2008, 2010), David P. Craig Visiting Professor at the Australian National University (1999), and Visiting Professor at the Ludwig Maximilians University (LMU) Munich (2012, 2013, 2014, 2015, 2016, 2017, 2018).

Schaefer is the author of more than 1500 scientific publications, with a large majority appearing in the *Journal of Chemical Physics*, *Journal of the American Chemical Society* or the *Journal of Physical Chemistry*. A total of 300 scientists from 35 countries gathered in Gyeongju, Korea for a six-day conference in February, 2004 with the title "Theory and Applications of Computational Chemistry: A Celebration of 1000 Papers of Professor Henry F. Schaefer III." In May 2010, the University of California at Berkeley hosted a large international conference in Professor Schaefer's honor, the title of the conference being "Molecular Quantum Mechanics: From Methylene to DNA and Beyond." Simultaneous with the Berkeley conference was published the book *Selected Papers of Henry F. Schaefer III*, Edited by R. J. Bartlett, T. D. Crawford, M. Head-Gordon, and C. D. Sherrill. In May 2014 the Peking University Graduate School sponsored a large conference in honor of Professor Schaefer in Shenzhen, China. A symposium in Professor Schaefer's honor is planned for December 2020 at the International Chemical Congress of Pacific Basin Societies (PACIFICHEM) in Honolulu, Hawaii.

Critical to Professor Schaefer's scientific success has been a brilliant array of students and coworkers; including 75 undergraduate researchers who have published papers with him, 117 successful Ph.D. students (plus 15 in progress), 51 postdoctoral researchers, and 81 visiting professors who have spent substantial time in the Schaefer group. A number of his students have gone on to positions of distinction in industry (Accelrys, ALTANA, American Cyanamid, AstraZeneca, AT&T, Avaya, Bicerano and Associates, Castle Hill Gaming, Chemical Abstracts, Clariant, Computational Geosciences, Coraid, DeNovaMed, Deutsche Bank, Dow Chemical, ELANTAS, Electronic Arts, Endress-Hauser, EnerDel, GAUSSIAN, Goodrich, Google, Henkel, Hewlett-Packard, Hughes Aircraft, IBM, ICON, Komag, Locus Pharmaceuticals, Materials Design, McKesson Corp, Mobil Research, Molecular Simulations, Monsanto, Nimble Storage, OpenEye, OSI Software, Pfizer, Pharmaceutical Research Associates, Polaroid, Proctor & Gamble, Q-CHEM, Reagens Deutschland, Ricoh, Schroedinger, SciCo, Sugan, Treventis, Universal Display Corporation, WaveSplitter Technologies, Xcellence LLC, and Xenon Pharmaceuticals). Four of his graduated Ph.Ds have started their own companies.

Several of Schaefer's former students have gone on to successful careers in government laboratories, including the Australian National University Supercomputer Center, Environmental Protection Agency (EPA), Joint Institute for Laboratory Astrophysics (JILA), Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, NASA Ames, National Cancer Institute, National Center for Disease Control, National Institute of Environmental Health Sciences, National Institutes of Health (Bethesda), National Research Council of Canada (Ottawa), Naval Research Laboratory, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, Pittsburgh Supercomputing Center, Sandia National Laboratories, and the Savannah River National Laboratory. Charles Blahous went directly from his Ph.D. studies with Dr. Schaefer to the position of American Physical Society Congressional Scientist Fellow, and eventually to positions of significant importance in the U.S. political system (chief of staff for Senator Alan Simpson of Wyoming and later for Senator Judd Gregg of New Hampshire; and Executive Director of President George W. Bush's Bipartisan Committee to Strengthen Social Security; see *Wall Street Journal* article April 22, 2005). Dr. Blahous is currently Research Fellow at the Hoover Institution, Stanford University, and was appointed by President Barack Obama to the Board of Trustees for Social Security and Medicare.

Many of Dr. Schaefer's students have accepted professorships in universities, including the University of Alabama at Birmingham, University of Arizona, Budapest University (Hungary), University of California at Merced, City University of New York, University of Concepcion (Chile), Duke University, Emory University, Fatih University (Istanbul, Turkey), Georgia Tech, University of Georgia, University of Giessen (Germany), University of Girona (Spain), University of Grenoble (France), University of Guelph (Ontario), Hacettepe University (Ankara), University of Heidelberg (Germany), University of Illinois-Chicago, University of Illinois-Urbana, Indian Association for the Cultivation of Science (Calcutta), Indiana University-Purdue University at Indianapolis, Johns Hopkins University, Keio University (Japan), University of Kentucky, Lehigh University, University of Manchester (England), University of Marburg (Germany), University of Massachusetts, University of Memphis, University of Michigan, University of Mississippi, National Tsing Hua University (Taiwan), University of North Dakota, Ohio State University, Osaka University (Japan), University of Ottawa (Canada), University of Paris - Sud (France), Pennsylvania State University, University of Pittsburgh, Pohang Institute of Science and Technology (Korea), Portland State University, Rice University, Rikkyo University (Tokyo), Scripps Research Institute, University of South Florida, St. Andrew's University (Scotland), St. Petersburg State University (Russia), Stanford University, University of Stirling (Scotland), University of Stockholm (Sweden), University of Tasmania (Australia), Technical University of Munich (Germany), Texas A&M University, the University of Texas at Arlington, University of Trondheim (Norway), University of Tübingen (Germany), Ulsan National University of Science and Technology (Korea), and Virginia Tech.

Dr. Schaefer has been invited to present plenary lectures at more than 290 national or international scientific conferences. He has delivered endowed or named lectures or lecture series at more than 60 major universities, including the Kenneth S. Pitzer Memorial Lecture at Berkeley, the Israel Pollak Distinguished Lectures at the Technion - Israel Institute of Technology, Haifa, the C. V. Raman Memorial Lecture in Calcutta, India, the Per-Olov Lowdin Lectures at the University of Uppsala, Sweden, and the Jan Almlöf/Odd Gropen Lectures in Norway. He is the recipient of 31 honorary degrees. He was the longest serving Editor-in-Chief of the London-based journal *Molecular Physics* (1995-2005). He is currently Associate Editor for the journal *Physical Chemistry Chemical Physics*. He was also the longest

serving President of the World Association of Theoretical and Computational Chemists, from 1996 to 2005. His service to the chemical community includes the chairmanship of the American Chemical Society's Subdivision of Theoretical Chemistry (1982) and Division of Physical Chemistry (1992). At the 228th National Meeting of the American Chemical Society (Philadelphia, August, 2004) the Division of Computers in Chemistry and the Division of Physical Chemistry co-sponsored a four-day "Symposium in Honor of Henry F. Schaefer's 60th Birthday." The book *Theory and Applications of Computational Chemistry: The First Forty Years* (1308 pages, Elsevier) was published in 2005 in honor of Professor Schaefer.

Professor Schaefer's major awards include the American Chemical Society Award in Pure Chemistry (1979, "for the development of computational quantum chemistry into a reliable quantitative field of chemistry and for prolific exemplary calculations of broad chemical interest"); the American Chemical Society Leo Hendrik Baekeland Award (1983, "for his contributions to computational quantum chemistry and for outstanding applications of this technique to a wide range of chemical problems"); the Schrödinger Medal (1990); the Centenary Medal of the Royal Society of Chemistry (London, 1992, as "the first theoretical chemist successfully to challenge the accepted conclusions of a distinguished experimental group for a polyatomic molecule, namely methylene"); the American Chemical Society Award in Theoretical Chemistry (2003, "for his development of novel and powerful computational methods of electronic structure theory, and their innovative use to solve a host of important chemical problems"). In 2003 he also received the annual American Chemical Society Ira Remsen Award, named after the first chemistry research professor in North America. The Remsen Award citation reads "For work that resulted in more than one hundred distinct, critical theoretical predictions that were subsequently confirmed by experiment and for work that provided a watershed in the field of quantum chemistry, not by reproducing experiment, but using state-of-the-art theory to make new chemical discoveries and, when necessary, to challenge experiment."

The Journal of Physical Chemistry published a special issue in honor of Dr. Schaefer on April 15, 2004. In 2009 and 2010, the journal *Molecular Physics* published seven separate issues in honor of Professor Schaefer. He was elected a Fellow of the American Academy of Arts and Sciences in 2004. He was the recipient of the prestigious Joseph O. Hirschfelder Prize of the University of Wisconsin for the academic year 2005-2006. He became a Fellow of the Royal Society of Chemistry (London) in 2005. He was among the inaugural class of Fellows of the American Chemical Society, chosen in 2009. He earlier became a Fellow of the Alfred P. Sloan Foundation, John S. Guggenheim Foundation, American Physical Society, and American Association for the Advancement of Science. In April 2011 he received the Ide P. Trotter Prize of Texas A&M University. Recent recipients of this prestigious award have included Nobelists Charles Townes, William Phillips, Francis Crick, Steven Weinberg, and Roald Hoffmann. In 2012 he received the Alexander von Humboldt Award. In March 2012 Professor Schaefer received the \$20K SURA Distinguished Scientist Award, given to the outstanding scientist in any field in the southern USA, from Missouri to Texas to Florida to Virginia. In April 2013, at the Chemical Heritage Foundation in Philadelphia, Dr. Schaefer received the Chemical Pioneer Award of the American Institute of Chemists. In January 2014 he was named by *The Best Schools* as one of "The 50 Most Influential Scientists in the World Today." In March 2014 he received the American Chemical Society Peter Debye Award in Physical Chemistry. In February 2016 he was elected an Honorary Fellow of the Chemical Research Society of India.

For 30 years Professor Schaefer has been one of the most highly cited scientists in the world. The Science Citation Index reports that his research had been cited more than 67,000 times. Professor Schaefer's Thomson-Reuters H-index is currently 117. He has published 149 Citation Classic Papers. His research involves the use of state-of-the-art computational hardware and theoretical methods to solve important problems in molecular quantum mechanics.

Professor Schaefer is also well known as a student of the relationship between science and religion. One or more of the lectures in his popular lecture series on this important topic have been presented at most major universities in North America, including Harvard, Stanford, Berkeley, M.I.T., Yale, Princeton, and the Universities of Alberta and Toronto. The Veritas Forum has called on Professor Schaefer to give major lectures at 18 of its conferences. Dr. Schaefer has also presented science/religion lectures in many universities abroad, including those in Ankara, Bandung (Indonesia), Bangalore, Beijing, Belo Horizonte, Berlin, Bern, Bratislava, Brisbane, Budapest, Cajamarca (Peru), Cambridge (England), Canberra, Cape Town, Chengdu, Chennai (Madras), Christchurch, Cluj-Napoca, Kochi (Cochin), Delhi, Durban, Goa, Guangzhou, Guilin, Guwahati, Heidelberg, Hong Kong, Hyderabad, Istanbul, Izmir, Kanpur, Karlsruhe, Kolkata (Calcutta), Krakow, Kunming, Lanzhou, Lausanne, Leipzig, London, Lucknow, Montevideo (Uruguay), Mumbai (Bombay), Munich, Paris, Plovdiv, Prague, Pondicherry, Pune, Rome, Santiago (Chile), Sarajevo, Seoul, Shanghai, Shenzhen, Shillong, Simferopol, Singapore, Sofia, Split, St. Petersburg, Strasbourg, Sydney, Szeged, Taipei, Tianjin, Tokyo, Trivandrum, Uppsala, Urumqi, Varanasi (Banares), Vienna, Warsaw, Wuhan, Wuxi, Xiamen, Zagreb, and Zurich. His continuously evolving lecture "The Big Bang, Stephen Hawking, and God" appears in many locations and in several languages on the worldwide web. This lecture has been one of the most popular articles about science on the web in recent years, as discussed in Michael White and John Gribbin's best selling biography of Professor Hawking (pages 314-315 of the 2002 edition). A brief spiritual biography (through 1991, written by Dr. David Fisher) of Professor Schaefer may be found on pages 323 – 326 of the book *More Than Conquerors*, edited by John Woodbridge (Moody Press, Chicago 1992).

Professor Schaefer is a Fellow of the American Scientific Affiliation, and an extended Profile of him appears in the *ASA Newsletter*, Volume 43, Number 6, 2001. On April 24, 2002 Dr. Schaefer received the Erick Bogseth Nilson Award, given to an outstanding university professor in North America, by the organization Christian Leadership. In May 2005 Dr. Schaefer was elected a Corresponding Member of the Catholic Academy of Sciences in the USA. In November 2014, he was elected a member of the Executive Council of the American Scientific Affiliation, the largest organization of Christians in the sciences in North America. An article featuring Professor Schaefer entitled "A Chemist and God", appeared in the October 18, 2008 issue of *World* magazine. An eight page interview of Schaefer appears in the 2010 book *Open Questions: Diverse Thinkers Discuss God, Religion, and Faith*. On January 13, 2013 *The Best Schools* included Schaefer in its list of the "Fifty Smartest People of Faith." He is featured on pages 585-587 of *Encyclopedia of Christianity and Science* (Zondervan, 2017). At the University of Georgia Professor Schaefer teaches an oversubscribed freshman seminar *Science and Christianity: Conflict or Coherence?* Dr. Schaefer's book with the same title had its Second Edition (with additions) published in April 2016. The book reached position #84 on the best-selling list of Amazon.com.