



Welcome!

Professor Somorjai's research interest is in the fields of surface science and catalysis. His group is studying the structure, bonding, and reactivity of solid-gas, solid-liquid, and solid-solid interfaces on the molecular scale. This knowledge is then utilized to understand macroscopic surface phenomena, the rate and product selectivity in multipath catalytic reactions. Since most catalysts are nanoparticles, metal and oxide nanoparticles are synthesized using colloidal chemistry in the 1-10 nm range their catalytic activities are studied as it changes as a function of size and shape and composition. High surface area oxides supports are constructed that are mesoporous and the role of oxide-metal interfaces are studied in catalytic reactions. The molecular mechanisms of catalytic reactions are studied using instruments for nanoscale characterization of surfaces under reaction conditions. These include sum frequency generation surface vibrational spectroscopy (SFG), high-pressure scanning tunneling microscopy (high pressure STM) and high-pressure x-ray photoelectron spectroscopy (high pressure XPS). Synchrotron based spectroscopy techniques (microspectroscopy, x-ray absorption techniques of NEXAFS, EXAFS) are also utilized to monitor surfaces under reaction conditions, small metal nanoparticles were found to heterogenize homogeneous solution phase catalytic reactions and studies of correlating heterogeneous and enzyme catalytic reactions are in progress. Professor Somorjai has educated a generation of leading scientists in the field. Out of more than 130 Ph.D. students and 220 postdoctoral fellows, approximately 110 hold faculty positions now.

About Professor Somorjai



Gabor A. Somorjai was born in Budapest, Hungary, on May 4, 1935. He was a fourth year student of Chemical Engineering at the Technical University in Budapest in 1956 at the outbreak of the Hungarian Revolution. He left Hungary and emigrated to the United States, where he received his Ph.D. degree in Chemistry from the University of California, Berkeley in 1960. He became a U.S. citizen in 1962.

After graduation, he joined the IBM research staff in Yorktown Heights, New York, where he remained until 1964. At that time, he was appointed Assistant Professor of Chemistry at the University of California, Berkeley. In 1967, he was named Associate Professor, and in 1972 promoted to Professor. Concurrent with his faculty appointment, he is also a Faculty Senior Scientist in the Materials Sciences Division, and Group Leader of the Surface Science and Catalysis Program at the Center for Advanced Materials, at the E.O. Lawrence Berkeley National Laboratory.

Professor Somorjai has educated more than 130 Ph.D. students and 250 postdoctoral fellows. He is the author of more than 1200 scientific papers in the fields of surface chemistry, heterogeneous catalysis, and solid state chemistry. He has written four textbooks, *Principles of Surface Chemistry*, Prentice Hall, 1972; *Chemistry in Two Dimensions: Surfaces*, Cornell University Press, 1981; and *Introduction to Surface Chemistry and Catalysis*, Wiley-Interscience, 1994 and the Second Edition in 2010; as well as a monograph, *Adsorbed Monolayers on Solid Surfaces*, Springer-Verlag, 1979.

His honors include the following:

2015

William H. Nichols Medal of the New York Section of the American Chemical Society
Honorary Fellowship of the Royal Society of Chemistry

2013

National Academy of Sciences Award in Chemical Sciences

2011

Honda Prize (<https://www.youtube.com/watch?v=kBdJ0srnAS4>) (Link to Youtube Video (<https://www.youtube.com/watch?v=kBdJ0srnAS4>))

ENI New Frontiers in Hydrocarbons Award (<https://youtu.be/4EraMcDfXtY>) (Link to Youtube video (<https://youtu.be/4EraMcDfXtY>))

2010

BBVA Frontiers of Knowledge Award in Basic Sciences (<https://youtu.be/SWeyvOe7Xig>) (Link to Youtube video (<https://youtu.be/SWeyvOe7Xig>))

Docteur Honoris Causa, Northwestern University

2009

Miller Senior Fellow

Japanese Society for the Promotion of Science Award

Excellence in Surface Science Award from the Surfaces in Biointerfaces Foundation

Fellow of the American Chemical Society

Honorary Membership, Chemical Society of Japan

2008

Priestley Medal from the American Chemical Society

2007

Langmuir Prize from the American Physical Society

2006

Remsen Award from the Maryland Section of the ACS

Honorary Fellow, Cardiff University

2003

UCB College of Chemistry Commencement Address

Cotton Medal, Texas A&M University

Docteur Honoris Causa, ETH Zurich, Switzerland

2002

National Medal of Science (<https://youtu.be/sXNPE-YVq5E>) (Link to Youtube video (<https://youtu.be/sXNPE-YVq5E>))

Appointed University Professor of the 10 campuses of the University of California

2001

Docteur Honoris Causa, University of Manchester, United Kingdom

American Chemical Society Award for Creative Research in Homogeneous or Heterogeneous Catalysis;

Linus Pauling Medal for Outstanding Accomplishment in Chemistry, American Chemical Society,

Puget Sound, Portland and Oregon Section

Docteur Honoris Causa, Royal Institute of Technology, Stockholm, Sweden

1999

Docteur Honoris Causa, József Attila University, Szeged, Hungary

1998

Wolf Prize in Chemistry, Wolf Foundation;

Docteur Honoris Causa, Università degli Studi di Ferrara, Ferrara, Italy

1997

Von Hippel Award, Materials Research Society

1995

Chemical Pioneer, American Institute of Chemists

1994

Adamson Award in Surface Chemistry, American Chemical Society

1992

Docteur Honoris Causa, Université Libre de Bruxelles, Brussels, Belgium

1990

Honorary Membership in Hungarian Academy of Sciences

Docteur Honoris Causa, Université Pierre et Marie Curie, Paris, France

1989

Peter Debye Award in Physical Chemistry, American Chemical Society

Senior Distinguished Scientist Award, Alexander von Humboldt Foundation

E.W. Mueller Award, University of Wisconsin; Docteur Honoris Causa, Technical University, Budapest, Hungary

1986

Henry Albert Palladium Medal

1983

Elected to membership, American Academy of Arts and Sciences

1982

Elected Fellow, American Association for the Advancement of Science

Distinguished Scholar for Exchange with China

1981

Colloid and Surface Chemistry Award, American Chemical Society

1979

Elected to membership, National Academy of Sciences

1978

Miller Professorship, University of California, Berkeley

1977

Emmett Award, American Catalysis Society

1976

Kokes Award, Johns Hopkins University, Baltimore, Maryland

Elected Fellow, American Physical Society

1969