Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Michael Grätzel

Name: **Michael Grätzel**
Born: **11 May 1944**

Research Priorities: nanocrystalline junctions, photovoltaic cells, photon energy conversion and storage, lithium-ion batteries, molecular switches and displays, photocatalysis

Michael Grätzel is a German chemist. He conducts research on photonics and has made a name for himself by developing a new type of solar cell ("Grätzel cell") that notably performs better in low light.

Academic and Professional Career

since 1981	Full Professor and Director, Laboratory of Photonics and Interfaces, École Polytechnique Fédérale (EPFL), Lausanne, Switzerland
1977 - 1981	Associated Professor, Physical Chemistry, EPFL, Lausanne, Switzerland
1976	Habilitation, Physical Chemistry, Freie Universität Berlin, Berlin, Germany
1975 - 1976	Lecturer, Photochemistry and Physical Chemistry, Freie Universität Berlin, Berlin, Germany
since 1976	Research Associate, Hahn Meitner Institute Berlin (since 2008: Helmholtz-Zentrum Berlin für Materialien und Energie HZB, Berlin, Germany
1972 - 1974	Petroleum Research Foundation Postdoctoral Fellow, University of Notre Dame, Notre Dame, USA
1971	Doctorate, Physical Chemistry, Technische Universität Berlin, Berlin, Germany
1969 - 1972	Research Associate, Hahn Meitner Institute Berlin, Berlin, Germany
1968	Diplom Degree in Chemistry, Freie Universität Berlin, Berlin, Germany

Functions in Scientific Societies and Committees (Selection)

2006	Member, Scientific and Academic Advisory Committee, Weizmann Institute of Science, Rehovot, Israel
since 2003	Member, Review College, Engineering and Physical Sciences Research Council (EPSRC), Swindon, UK
1999 - 2006	Member, Evaluation Board, National Institute of Materials and Chemical Research (NIMC), Tsukuba, Japan
2005, 1997	Invited Panelist, Council on Chemical Science, US Department of Energy, USA
2002 - 2004	Expert Witness, Royal Court of Justice, London, UK
1998	Member, Scientific Committee, French National Centre for Scientific Research (CNRS), Paris, France
	Expert for Evaluating the Physical Chemistry Laboratory of the University of Paris (URA 75) and the Institute of Electrochemistry of the University of Grenoble, France
1998	Member, Evaluation Board of Photovoltaic Research, Helmholtz Association, Germany
1997 - 2003	Member, Evaluation Board, Volkswagen Foundation, Hanover, Germany

Honours and Awarded Memberships

since 2021	Member, Chinese Academy of Sciences, (CAS), China
2020	Diels-Planck Medal and Diels-Planck Lecture Award, Kiel University, Kiel, Germany
2018	August Wilhelm von Hofmann Commemorative Medal, German Chemical Society (GDCh), Germany
2019	Elected Individual Member, Swiss Academy of Engineering Sciences (SATW), Switzerland
2015	King Faisal International Science Prize, King Faisal Foundation, Riyadh, Saudi Arabia
2014	Eric and Sheila Samson Prime Minister's Prize for Innovation in Alternative Fuels for Transportation (together with Thomas Meyer), The Ministry of Science and Technology, Israel
since 2014	Member, German National Academy of Sciences Leopoldina, Germany
2013	Marcel Benoist Prize, Marcel Benoist Foundation, Bern, Switzerland
2012	Swisselectric Research Award, Swisselectric Research, Bern, Switzerland
2012	Albert Einstein World Award of Science, World Cultural Council (Consejo Cultural Mundial), Mexico
2011	Wilhelm Exner Medal, Austrian Trade Association, Vienna, Austria

2011	Paul Karrer Gold Medal, University of Zurich, Zurich, Switzerland
2011	Gutenberg Research Award, Gutenberg Research College, Johannes Gutenberg University Mainz, Mainz, Germany
2010	Millennium Technology Prize, Technology Academy Finland, Finland
2009	Distinguished Honorary Professor, CAS, Huazhong University of Science and Technology, Wuhan, China
2009	Luigi Galvani Medal, Italian Chemical Society, Italy
2009	Balzan Prize, International Balzan Prize Foundation, Milan, Italy
2008	Harvey Prize for Science and Technology, Technion, Haifa, Israel
2007	International Award, Japan Society of Coordination Chemistry, Japan
2006	World Technology Award in Materials, The World Technology Network
2005	Heinz Gerischer Award, Electrochemical Society, USA
2004	ENI Italgas Prize in Science and Environment, Italgas, Milan, Italy
2002	McKinsey Venture Award, USA
2002	IBC International Award in Supramolecular Science and Technology
2001	Havinga Medal, Havinga Fund Foundation, Leiden, Netherlands
2001	Faraday Medal, Royal Society of Chemistry, UK
2000	European Grand Prix for Innovation
1998	McKinsey Venture Award, USA
	Member, European Academy of Science
	Fellow, Royal Society of Chemistry, UK
	Honorary Member, Société Vaudoise des Sciences Naturelles, Switzerland
	Member, Bulgarian Academy of Sciences, Bulgaria
	Highly Cited Researcher, Web of Science, Clarivate

Research Priorities

Michael Grätzel is a German chemist. He conducts research on photonics and has made a name for himself by developing a new type of solar cell ("Grätzel cell") that notably performs better in low light.

For the absorption of light energy, the Grätzel cell does not use inorganic semi-conductor materials but organic dye. Michael Grätzel was able to take photovoltaics to the molecular level, moving beyond light-absorbing diodes. His revolutionary cell design represented a new paradigm because – in contrast to the planar p-n-junctions of conventional solar cells – it

features three-dimensional mesoscopic junctions.

The prototype of this new photovoltaics approach is the dye-sensitized solar cell (DSC) that uses dye molecules, pigments and quantum dots to harvest sunlight. DSCs are the first and only photovoltaic system that separates light absorption from charge carrier transport. It is also the only photovoltaic technology that mimics photosynthesis to produce electricity. DSCs are easy and inexpensive to produce and they offer unique and practical advantages such as flexibility, aesthetic appeal, transparency, and bifacial photon collection. Currently, they achieve an energy conversion efficiency of almost 15 percent in full sunlight and 32 percent in ambient light. These properties and excellent long-term stability have enabled commercial applications on an industrial scale. The production of these cells is less expensive than that of conventional silicon-based solar cells and they notably perform better in low light.