



Prof. Martin Moskovits

UC Santa Barbara, USA

Education: BSc (1965); PhD (1971) University of Toronto

Appointments:

2013-2016: member of Faculty Senate Committee on Diversity and Equity

2011-2012: Senior Vice President for Academic Affairs at the City College of the City University of New York.

2009: Co-founder of Spectra Fluidics, a startup company dedicating to developing sensors based on microfluidics.

2007 - 2010: Chief Technology Officer of API Technologies Corp., a publicly traded company (ATNY) currently traded on NASDAQ specializing in advanced electronics, magnetics and nanoptics for defense and communications applications, and President of its NanoOpto subsidiary.

2000-2010: Member of US Department of Energy, Basic Energy Sciences Advisory Committee, and Vice Chair from 2006-2010.

2000-2011: Member of University of California (office of the president) Technology transfer advisory committee.

2000-2008: Member of the Board of the Sansum Diabetes Research Center

2000-2007: Board member Santa Barbara Technology Group.

2000-Present, Professor of Chemistry, University of California, Santa Barbara.

2000-2007: Susan and Bruce Worster Dean of Science at UC Santa Barbara.

1999-2004: Founding Director of the program in Nanoelectronics for the Canadian Institute for Advanced Research, 1999-2004.



1993-1999: Chair of the Department of Chemistry, University of Toronto

1993-1997: Member (faculty governor) of the University of Toronto's Governing Council (equivalent to the UC Regents).

1982: Professor of Chemical Physics University of Toronto

1973: appointed assistant professor of physical chemistry at the University of Toronto

1971-73: senior scientist, Alcan International, Kingston Ontario.

1965-67: Co-Founded OHM Manufacturing Ltd. A company specializing in electronics for the music industry

Teaching:

wide range of undergraduate and graduate courses in chemistry and chemical physics including freshman chemistry, quantum mechanics, statistical mechanics and thermodynamics, spectroscopy, materials science.

Academic Research:

Various aspects of nanoscience and nanotechnology with emphasis on photonic, electronic and photocatalytic properties, best known for developing nanofabrication techniques in anodic alumina templates, and for proposing the plasmonic origin of surface-enhanced Raman. Current research includes single-nanowire-based field-effect-transistor sensors, enhanced optical and plasmonic effects in gold and silver nanostructures, including novel plasmonic photovoltaics and plasmonic photosynthesis devices for fuel production.

Author or co-author of more than 330 technical papers and inventor on 28 patents.

Cumulative number of citations (Google Scholar): >35,000; h-Index=86.

More than 360 invited talks at universities, national and international meetings and conferences.

Honors and Awards:

Fellow of the American Association for the Advancement of Science,



Fellow of the Optical Society of America

Fellow of the Royal Society of Canada.

1987: Guggenheim Fellowship.

1993: Gerhard Herzberg Award of the Spectroscopy Society of Canada.

1993: Royal Society of Chemistry (London) award in Surface and Colloid Science.

1995: Johannes Marcus Marci Medal of the Czech Spectroscopy Society,

2008: NASA NanoTech Briefs Nano 50 Innovator award.

2010: Ellis Lippincott Award of the Optical Society of America.

2014: 2014 annual J. C. Polanyi Lecture in Physical Chemistry, University of Toronto Department of Chemistry, Toronto, Canada

2014: 2014 annual Joshua Jortner Lecturer, Department of Chemistry, Tel Aviv University, Israel

Publication in the last 4 years

335 Duncan Graham, Martin Moskovits and Zhong-Qun Tian, SERS – facts, figures and the future, *Chem. Soc. Rev.*, 2017, 46, 3864-3865.

334 Song-Yuan Ding, En-Ming You, Zhong-Qun Tian and Martin Moskovits, Electromagnetic theories of surface-enhanced Raman spectroscopy, *Chem. Soc. Rev.*, 2017, 46, 4042-4076.

333 Katherine N. Kanipe, Philip P. F. Chidester, Galen D. Stucky, Carl D. Meinhart, and Martin Moskovits, Properly Structured, Any Metal Can Produce Intense Surface Enhanced Raman Spectra, *J. Phys. Chem. C*, 2017, 121, 14269–14273.

332 Phillip Christopher and Martin Moskovits, Hot Charge Carrier Transmission from Plasmonic Nanostructures, *Annual Review of Physical Chemistry*, 2017, 68, 379-398.

331 Rustin Y. Mirsafavi, Kristine Lai, Neal D. Kline, Augustus W. Fountain III, Carl D. Meinhart, and Martin Moskovits, Detection of Papaverine for the Possible Identification of Illicit Opium Cultivation, *Anal. Chem.*, 2017, 89, 1684–1688.

330 Vicky V. T. Doan-Nguyen, Kota S. Subrahmanyam, Megan M. Butala, Jeffrey

A. Gerbec, Saiful M. Islam, Katherine N. Kanipe, Catrina E. Wilson, Mahalingam Balasubramanian, Kamila M. Wiaderek, Olaf J. Borkiewicz, Karena W. Chapman, Peter J. Chupas, Martin Moskovits, Bruce S. Dunn, Mercouri G. Kanatzidis, and Ram Seshadri, Molybdenum Polysulfide Chalcogels as High-Capacity, Anion-Redox-Driven Electrode Materials for Li-Ion Batteries, *Chem. Mater.*, 2016, 28 (22), pp 8357–8365

329 Neal D Kline, Ashish Tripathi, Rustin Mirsafavi, Ian Pardoe, Martin Moskovits, Carl Meinhart, Jason A Guicheteau, Steven D Christesen, Augustus W Fountain III, Optimization of Surface-Enhanced Raman Spectroscopy Conditions for Implementation into a Microfluidic Device for Drug Detection, *Anal. Chem.*, 2016, 88 (21), pp 10513–10522.

328 Woo-ram Lee, Jose Navarrete, Brian Evanko, Galen D. Stucky, Syed Mubeen and Martin Moskovits, A plasmonic liquid junction photovoltaic cell with greatly improved power conversion efficiency, *Chem. Commun.*, 2016, 52, 13460-13462.

327. Kenneth A Bosnick, HM Wang, Thomas L Haslett, M Moskovits, Quantitative Determination of the Raman Enhancement of Ag₃₀ (CO)₂₅ and Ag₅₀ (CO)₄₀ Matrix Isolated in Solid Carbon Monoxide, *J. Phys. Chem. C*, 2016, 120, 20506–20511

326. Katherine N Kanipe, Phillip PF Chidester, Galen D Stucky, Martin Moskovits, Large Format Surface-Enhanced Raman Spectroscopy Substrate Optimized for Enhancement and Uniformity, *ACS Nano*, 2016, 10, 7566-7571

325. Roy Rotstein, Aym Berges, Samir Mitragotri, Daniel E. Morse, and Martin Moskovits, Angle dependent light scattering by highly-uniform colloidal rod-shaped microparticles: Experiment and simulation, *J. Polymer Sci. B*, 2016, 54, 1889-1895.

324. Binghui Wu, Joun Lee, Syed Mubeen, Young-Si Jun, Galen D. Stucky and Martin Moskovits, Plasmon-Mediated Photocatalytic Decomposition of Formic Acid on Palladium Nanostructures, *Adv. Optical Mater.* 2016, 4, 1041–1046.



323. N. H. Kim, C. D. Meinhart and M. Moskovits, Plasmon-Mediated Reduction of Aqueous Platinum Ions: The Competing Roles of Field Enhancement and Hot Charge Carriers, *J. Phys. Chem. C* 2016, 120, 6750-6755.
322. Binghui Wu, Deyu Liu, Syed Mubeen, Tracy T Chuong, Martin Moskovits, Galen D Stucky, Anisotropic Growth of TiO₂ onto Gold Nanorods for Plasmon-Enhanced Hydrogen Production from Water Reduction, *J. Amer. Chem. Soc.*, 2016, 138, 1114-1117
321. M.R. Hoonejani, A. Pallaoro, G.B. Braun, M. Moskovits, C.D. Meinhart, Quantitative multiplexed simulated-cell identification by SERS in microfluidic devices, *Nanoscale* 2015, 7, 16834-16840
320. C. Andreou, R. Mirsafavi, M. Moskovits, C.D. Meinhart, Detection of low concentrations of ampicillin in milk, *Analyst*, 2015, 140, 5003-5005.
319. Alessia Pallaoro, Gary B. Braun, M. Moskovits, Biotags Based on Surface-Enhanced Raman Can be as Bright as Fluorescence Tags, *Nano letters*, 2015, 15, 6745-6750.
318. Alessia Pallaoro, Mehran R Hoonejani, Gary B Braun, Carl D Meinhart, Martin Moskovits, Rapid Identification by Surface-Enhanced Raman Spectroscopy of Cancer Cells at Low Concentrations Flowing in a Microfluidic Channel, *ACS Nano*, 2015, 9, 4328-4336.
317. Woo-ram Lee, Syed Mubeen, Galen D Stucky, Martin Moskovits, A surface plasmon enabled liquid-junction photovoltaic cell, *Faraday Discuss.*, 2015, 178, 413-420.
316. Deblina Sarkar, Xuejun Xie, Jiahao Kang, Haojun Zhang, Wei Liu, Jose



Navarrete, Martin Moskovits, Kaustav Banerjee, Functionalization of Transition Metal Dichalcogenides with Metallic Nanoparticles: Implications for Doping and Gas-Sensing, *Nano Lett.* 2015, 15, 2852-2862.

315. Syed Mubeen, Joun Lee, Deyu Liu, Galen D. Stucky, and Martin Moskovits, Panchromatic Photoproduction of H₂ with Surface Plasmon, *Nano Letters*, 2015, 15, 2132-2136.

314. E. J. He, M. Moskovits, J. Dong, W. Gao, Q. Y. Han, H. R. Zheng and N. Liu, Luminescence Enhancement Mechanism of Lanthanide-Doped Hybrid Nanostructures Decorated by Silver Nanocrystals, *Plasmonics*, 2015, 10, 357–368.

313. Ashish Tripathi, Erik D. Emmons, Augustus W. Fountain, III, Jason A. Guicheteau, Martin Moskovits, and Steven D. Christesen, Critical Role of Adsorption Equilibria on the Determination of Surface-Enhanced Raman Enhancement, *ACS Nano*, 9, 584–593, 2015.

312. M. Moskovits, The case for plasmon-derived hot carrier devices, *Nature Nanotech*, 10, 6-7, 2015.

311. Syed Mubeen, Joun Lee, Woo-ram Lee, Nirala Singh, Galen D. Stucky, and Martin Moskovits, On the Plasmonic Photovoltaic, *ACS Nano*, 2014, 8, 6066–6073.

310. Yichi Zhang, Je-Hyeong Bahk, Joun Lee, Christina S Birkel, Matthew L Snedaker, Deyu Liu, Hongmei Zeng, Martin Moskovits, Ali Shakouri, Galen D Stucky, Hot Carrier Filtering in Solution Processed Heterostructures: A Paradigm for Improving Thermoelectric Efficiency, *Adv. Mater.*, 2014, 26, 2755-2761.

309. Roy Rotstein, Samir Mitragotri, Martin Moskovits, Daniel E. Morse, Progressive Transition from Resonant to Diffuse Reflection in Anisotropic Colloidal Films, *Journal of Polymer Science, Part B: Polymer Physics*, 2014, 52, 611–617.

308. N. Singh, S. Mubeen, J. Lee, H. Metiu, M. Moskovits and E. W. McFarland,



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Stable electrocatalysts for autonomous photoelectrolysis of hydrobromic acid using single-junction solar cells *Energy Environ. Sci.*, 2014, 7, 978-981.

307. Brian D. Piorek, Chrysafis Andreou, Martin Moskovits, and Carl D. Meinhart, Discrete Free-Surface Millifluidics for Rapid Capture and Analysis of Airborne Molecules Using Surface-Enhanced Raman Spectroscopy; *Anal. Chem.*, 2014, 86, 1061–1066.