

DAVID L. ALLARA

Professor of Materials Science & Chemistry, The Pennsylvania State University

Professional Preparation:

- B.S. in Chemistry (honors), University of California, Berkeley, 1959
- Ph.D. in Physical Organic Chemistry, University of California, Los Angeles, 1964
- National Science Foundation Post-Doctoral Fellow, Oxford University (UK), 1964-1965

Appointments:

- Professor of Materials Science, Professor of Chemistry and member of the Materials Research Institute, The Pennsylvania State University, 1987-present
- Manager, Physical Chemistry Research Dept., Bell Communications Research, 1984-1987
- Staff Member, Bell Laboratories, 1969-1984
- Associate Professor of Chemistry, San Francisco State University, 1967-1969
- Staff Member, Stanford Research Institute (SRI) International, 1965-1967

Awards:

- Distinguished Technical Staff career achievement award, Bell Laboratories (1984); AAAS Fellow (1997); ACS, Analytical Division Spectrochemical Analysis Award (1998); ACS, Adamson Award for Distinguished Achievements in Surface Chemistry (2003); Honorary Doctorate of Science, Linkoping University, Sweden (2003); AVS Fellow (2005)

Publications [out of 185 total; Total Cites for 5 most cited publications through 2006: over 6,000]

5 Recent Publications:

- *Physical and Electronic Structure Effects of Embedded Dipoles in Self-Assembled Monolayers: Characterization of Mid-Chain Ester Functionalized Alkanethiols on Au{111}*, O.M. Cabarcos A. Shaporenko, T. Weidner, S. Uppili, L. S. Dake, M. Zharnikov and D. L. Allara, *Journal of Physical Chemistry C*, **2008**, accepted for publication
- *Charge Transfer Dynamics in Self-Assembled Monolayers*, S. Neppel, U. Bauer, D. Menzel, P. Feulner, A. Shaporenko, M. Zharnikov, P. Kao and D. L. Allara, *Chem. Phys. Lett.*, **2007**, *447*, 227-231
- *Preparation, Structure and Optical Properties of Nanoporous Gold Thin Films*, M.C. Dixon, T.A. Daniel, M. Hieda, D.M. Smilgies, M.H.W. Chan, D.L. Allara, *Langmuir*, **2007**; *23*; 2414-2422
- *Neutral Radical Molecules Ordered in Self-Assembled Monolayer Systems for Quantum Information Processing*, A. Tamulis, V.I. Tsifrinovich, S. Tretiack, G.P. Berman, D.L. Allara, *Chem. Phys. Lett.* **2007**, *436*, 144-149
- *Single Molecule Electrical Junctions*, Y. Selzer, D.L. Allara, *Ann.Rev.Phys.Chem*, **2006**, *57*, 593-623

5 Other Recent:

- *How Precise are Self-Assembled "Molecular Ruler" Stack Films? Molecular Structure and Interfacial Ligation in Cu Bound Alkanethiocarboxylic Acid Stacks*, T. Daniel, G. McCarty and D. Allara, *Langmuir*, **2007**, *23*, 638-648
- *Molecular Self-Assembly at Bare Semiconductor Surfaces: Characterization of a Homologous Series of n-Alkanethiolate Monolayers on GaAs(001)*, C.L. McGuinness, D. Blasini, J.P. Masejewski, S. Uppili, O.M. Cabarcos, D. Smilgies, D.L. Allara, *ACS-Nano*, **2007**, *1*, 30-49
- *Organosiloxane Self Assembled Monolayer Growth from Supercritical Carbon Dioxide in Microstructured Optical Fiber Capillary Arrays*, M.F. Danisman, D.L. Allara, and J.V. Badding, *Langmuir*, **2008**, *24*; 3636-3644
- *Nanoscale Molecular Switching of Thiol-Substituted Oligoanilines*, L. Cai, M.A. Cabassi, H. Yoon, O.M. Cabarcos, C.L. McGuinness, A.K. Flatt, D.L. Allara, J.M. Tour, and T.S. Mayer, *Nanoletters*, **2005**, *5*, 2365-2372
- *A Perspective on Surfaces and Interfaces*, D.L. Allara, *Nature*, **2005**, *437*, 638-639

Synergistic Activities:

- Developed 2 new courses in materials science at Penn State
- Developed 1 new course in molecular thermodynamics for Chemical Engineers
- Developed new methods for quantitative spectroscopic analysis of materials using EM theory
- Provided service to several professional organizations
- Developed capabilities and userbase for a combination FE-SEM/AFM in the PSU Materials Characterization lab.
- Founded three companies to utilize discoveries made at Universities with collaborators

Collaborators & Other Affiliations

Senior Coauthors of journal publications during past 48 months (outside Penn State and not former students or postdocs):

G.P. Berman (Los Alamos Nat. Labs), V.I. Tsifrinovich (NY Polytechnic U), L. Richter (NIST), J.M. Tour (Rice U.), M. Zharnikov (U. Heidelberg, Germany), R. van Zee (NIST), B. Liedberg (Linkoping U., Sweden), R. Opila (U. Delaware), J. Kushmerick (NIST)

Thesis Advisees and Postgraduate Scholars:

Thesis (Name / current affiliation)

W. Sheen (Amberwave), Z. Wang (Lord Corp.), P. Zhang (Cabot Corp.), M. Chamberland (??), Y.T Kim (Korea), M. Ho (??), Atul Parikh (UC Davis), S. Atre (Oregon State U.), G. Hietpas (DuPont), Jeanne Shi (deceased), Jinaou Shi (KLM Tencor), K. Seshadri (3M), T. Dunbar (3M), A. Hooper (EMI), H. Skriba (??), T. Spiva (??), C. Mars (Novellus), M. Garrett (Rudolph Technologies), B. Tarasevich (Pacific Northwest DOE Labs), E. Koo (LG Chem., Korea), T. Vaughn (??), S. Hamilton (??), T. Xie (Shanghi), M. Reinard (??), T. Tighe (Motorola), Y-H Liu (Taiwan), K-S. Tseng (Taiwan), D. LeGault (??), J. Stapleton (PSU staff), T. Daniel (PSU Staff), M. Dixon (Q-Sense), C. McGuinness (current PSU), M. Maitani (current PSU), K. Dronavajjala (Intel), P. Kao (current PSU)

Postdoctoral Associates and Research Associates in past 5 years

H. Skulason, P. Harder, O. Cabarcos, D. Dwight, F. Bjorefors, Y. Selzer, T. Tighe, S. Uppili, A. Ichimura, J. Stapleton, T Daniels, D. Dwight, F. Danisman,

Total number of Ph.D.'s awarded (sponsored research, 9/87-01/08): 23

Total number of MS's awarded (sponsored research): 8

Total Postdoctoral Associates (sponsored research): 20

Graduate and Postdoctoral Advisors: all deceased