

## DAVID G. WHITTEN

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### PERSONAL DATA:

Birthdate: January 25, 1938  
Birthplace: Washington, D. C.  
Marital status: married, 2 children

**EDUCATION:** 1959 B.A. The Johns Hopkins University (Chemistry).  
1961 M.A. The Johns Hopkins University (Organic Chemistry).  
1963 Ph.D. The Johns Hopkins University (Organic Chemistry).

### PROFESSIONAL EXPERIENCE:

1963-1965 Research Fellow, U.S. Army at California Institute of Technology Jet Propulsion Laboratory.  
1965-1966 Research Fellow, California Institute of Technology, Professor George S. Hammond, Advisor.  
1966-1970 Assistant Professor of Chemistry, University of North Carolina.  
1970-1973 Associate Professor of Chemistry, University of North Carolina.  
1973-1980 Professor of Chemistry, University of North Carolina.  
1975-1976 Vice Chairman, Department of Chemistry, University of North Carolina.  
1980 Invited Visiting Professor, Ecole Polytechnique Federale de Lausanne, Switzerland.  
1980-1983 M. A. Smith Professor, University of North Carolina.  
1983-1997 C. E. Kenneth Mees Professor, University of Rochester.  
1988-1991 Chair, Department of Chemistry, University of Rochester.  
1989-1995 Director, NSF Center for Photoinduced Charge Transfer, University of Rochester.  
1995-1997 Chair, Department of Chemistry, University of Rochester  
1997-2001 Technical Staff Member, Los Alamos National Laboratory  
1997-2015 Editor-in-Chief, Langmuir  
2001-present Associate Editor, ACS Applied Materials and Interfaces  
2000-2005 Cofounder and Chief Science Officer, QTL Biosystems, LLC

2000-2004	Professor of Chemistry and Biochemistry, Arizona State University (Part Time 2000-2002, Adjunct 2002-2004)
2005-2016	Professor, Department of Chemical and Biological Engineering, University of New Mexico
2005-2009	Associate Director, Center for Biomedical Engineering, University of New Mexico
2009-2012	Interim Director, Center for Biomedical Engineering, University of New Mexico
2012-present	Associate Director, Center for Biomedical Engineering, University of New Mexico
2016-present	University Distinguished Professor, University of New Mexico

### HONORS AND AWARDS:

1970	Alfred P. Sloan Foundation Fellowship.
1973	John van Geuns Fellowship, University of Amsterdam, The Netherlands.
1975	Humboldt Award (Special U.S. Scientist Award), Alexander von Humboldt Foundation, Göttingen, Germany.
1978	Distinguished Visiting Lecturer, University of Texas.
1980	Invited Visiting Professor, Ecole Polytechnique Federale de Lausanne, Switzerland.
1982	Japan Society for the Promotion of Science Fellowship.
1982	National Science Foundation Research Award for Special Creativity.
1983	Distinguished Lecturer, Peter Leermakers Symposium, Wesleyan University.
1983	Elected President, Inter-American Photochemical Society.
1983	Chevron Lecturer, University of Nevada.
1984	Humboldt Award, Alexander von Humboldt Foundation, Göttingen.
1990	National Science Foundation Research Award for Special Creativity.
1992	ACS Award in Colloid or Surface Chemistry
1993	Elected Chair, 1997 Gordon Research Conference on Organic Photochemistry
1994	University of North Carolina at Chapel Hill, Bicentennial Symposium Lecturer
1997	Editor-in-Chief, <i>Langmuir</i>
1998	Received 1998 Award of the Inter-American Photochemical Society
2001	National Science Foundation Science and Technology Pioneer Award
2003	Tarrant Distinguished Visiting Professor, University of Florida
2009	Witten Lecturer at University of North Carolina, Chapel Hill
2009	The Japanese Photochemistry Association Special Award <i>for distinguished contributions to basic and applied research in photochemistry and large contribution to photochemistry in Japan</i>
2009	Invited Visiting Professor, Osaka University
2010	Selected as ACS Fellow

2012 Selected as Special Visiting Fellow – Ciencia sem Fronteras Brazil  
2016 Nominated and selected as University Distinguished Professor, UNM  
2017 George S Hammond Award from the InterAmerican Photochemical Society for “Lifetime Contributions to Photochemistry”  
2017 Invited Visiting Professor at University of Health and Natural Sciences, Vienna, Austria

### RESEARCH INTERESTS:

Fundamental studies of photoinduced electron transfer reactions, chemical reactions at interfaces and in microheterogeneous media, molecular assembly and aggregation, photophysics and photochemistry of conjugated polymers, advanced materials based on self-assembly, biosensing and medical diagnostics based on fluorescence and related properties, light activated antimicrobials based on conjugated polyelectrolytes and oligomers and their mechanisms of action.

Publications: 371 in refereed journals. Patents: 20

(317) Ogawa, K.; Chemburu, S.; Lopez, G. P.; Whitten, D. G.; Schanze, K. S.  
“**Conjugated Polyelectrolyte-Grafted Silica Microspheres**” *Langmuir*, **2007**, 23, 4541-4548.

(318) K. Ogawa, K. E. Achyuthan, S. Chemburu, E. Ji, Y. Liu, G.P. Lopez, K.S. Schanze & D.G. Whitten, "Polyelectrolyte-Based Fluorescent Sensors", in: *Organic Semiconductors in Sensor Applications*, Springer Series in Materials Science, Volume 107, pp 37-58, 2008; Editors: D.A. Bernards, R.M. Owens & G. G. Malliaras, ISBN # 978-3-540-76313-0

(319) K. Achyuthan and D. G. Whitten, “**Design Consideration for High Throughput Screening and In Vitro Diagnostic Assays**”, *Combinatorial Chemistry and High Throughput Screening*, **2007**, **10**, 389-412

(320) Reema Zeineldin,+ Menake E. Piyasena,‡ Larry A. Sklar,# David Whitten,†\* and Gabriel P. Lopez, “**Detection of Membrane Biointeractions Based on Fluorescence Superquenching**”, *Langmuir* **2008** 24, 4125-4131

(321) Sireesha Chemburu, Eunkyung Ji, Yosune Casana, Yang Wu, Tione Buranda, Kirk Schanze, Gabriel Lopez and David Whitten, “**Conjugated Polyelectrolyte Supported Bead Based Assays for Phospholipase A2 Activity**” *J. Phys. Chem. B*, **2008**, **112**, 14492-14499 .

(322) Sireesha Chemburu, Thomas Corbitt, Linnea Ista, Eunkyung Ji, Julia Fulghum, Gabriel Lopez, Katsu Ogawa, Kirk Schanze, David Whitten, **“Light-Induced Biocidal Action of Conjugated Polyelectrolytes Supported on Colloids”** *Langmuir*, 2008, **24**, 11053-11062.

(323) Thomas S. Corbitt, Jonathan R. Sommer, Sireesha Chemburu, Katsu Ogawa, Linnea K. Ista, Gabriel P. Lopez, David G. Whitten, Kirk S. Schanze, **“Conjugated Polyelectrolyte Capsules: Light-Activated Antimicrobial Micro “Roach Motels”** *ACS Appl. Mater. Interfaces*, 2009 **1**, 48-52

(324) Zhijun Zhou, Yanli Tang, David G. Whitten & Komandoor E. Achyuthan, **“A new High-throughput Screening Protease Assay based upon Supramolecular Self-assembly”**, *ACS Appl. Mater. Interfaces*, 2009 **1**, 162-170

(325) Komandoor E. Achyuthan, Jaime L. McClain, Zhijun Zhou, David G. Whitten, and Darren W. Branch, ***Spectroscopic Analyses of the Noncovalent Self-Assembly of Cyanines Upon Various Nucleic Acid Scaffolds***, *Analytical Sciences*, 2009, **25**, 469-474.

(326) Yanli Tang,<sup>†</sup>Zhijun Zhou, Katsu Ogawa, Gabriel P. Lopez, Kirk S. Schanze, David G. Whitten, **“Synthesis, Self-Assembly and Photophysical Behavior of Oligo Phenylene Ethynylenes: From Molecular to Supramolecular Properties”**, *Langmuir*, 2009, **25**, 21-25.

(327) Yanli Tang, Zhijun Zhou, Katsu Ogawa, Gabriel P. Lopez, Kirk S. Schanze, David G. Whitten, **“Photophysics and Self-Assembly of Symmetrical and Unsymmetrical Cationic Oligophenylene Ethynylenes,”** *J. Photochem. Photobiol. A: Chemistry*, 2009 **207**, 4-6.

(328) Thomas S. Corbitt, Liping Ding, Eunkyung Ji, Linnea K. Ista, Katsu Ogawa, Gabriel P. Lopez, Kirk S. Schanze, David G. Whitten, **“Light and Dark Biocidal Activity of Cationic Poly(arylene ethylene) Conjugated Polyelectrolytes,”** *Photochem. Photobiol. Sci.* 2009 **8**, 998-1005, DOI: 10.1039/b902646k

(329) Liping Ding, Eva Y. Chi, Sireesha Chemburu, Eunkyung Ji, Kirk S. Schanze, Gabriel P. Lopez, David G. Whitten, **“Insight into the Mechanism of Antimicrobial Poly(phenylene ethynylene) Polyelectrolytes: Interactions with Phosphatidylglycerol Lipid Membranes”** *Langmuir*, 2009 **25**, 13742-13751, DOI: 10.1021/la901457t

(330) Liping Ding, Eva Y. Chi, Eunkyung Ji, Kirk S. Schanze, Gabriel P. Lopez, David G. Whitten, **“Insight into the Mechanism of Antimicrobial Conjugated Polyelectrolytes: Lipid Headgroup Charge and Membrane Fluidity Effects”** *Langmuir*, 2010 **26**, 5544-5550, DOI 10.1021/la9038045

(331) Yanli Tang, Komandoor E. Achyuthan, David G. Whitten, **“Label Free and Real Time Sequence Specific DNA Detection based on Supramolecular Self Assembly”** *Langmuir*, **2010** **26**, 6832-6837, DOI 10.1021/la 904008v

(332) Komandoor E. Achyuthan, David G. Whitten, Darren W. Branch, **“Supramolecular Self-Assembling Cyanine as an Alternative to Ethidium Bromide Displacement in DNA-Drug Model Interactions during High Throughput Screening”** *Analytical Sciences* **2010**, **26**, 55-61.

(333) Ying Wang, Yanli Tang, Zhijun Zhou, Eunkyung Ji, Gabriel P. Lopez, Eva Y. Chi, Kirk S. Schanze and David G. Whitten, **“Membrane Perturbation Activity of Cationic Phenylene Ethylene Oligomers and Polymers: Selectivity against Model Bacterial and Mammalian Membranes”** *Langmuir* **2010**, **26**, 12509-12514 DOI: 10.1021/la102269y.

(334) Zhijun Zhou, Thomas S. Corbitt, Anand Parthasarathy, Yanli Tang, Linnea K. Ista, Kirk S. Schanze, David G. Whitten, **"End-Only" Functionalized Oligo(phenylene ethynyls): Synthesis, Photophysical and Biocidal Activity"**, *J. Phys. Chem. Lett.*, **2010**, **1**, 3207-3212 DOI: 10.1021/jz101088k.

(335) Eunkyung Ji, David G. Whitten, Kirk S. Schanze, **"pH-Dependent Optical Properties of a Poly(phenylene ethynylene) Conjugated Polyampholyte"** *Langmuir*, **2011**, **27**, 1565-1568 DOI: 10.1021/la 104586t.

(336) Yanli Tang, Eric H. Hill, Zhijun Zhou, Deborah G. Evans, Kirk S. Schanze, and David G. Whitten, **"Synthesis, Self-Assembly and Photophysical Properties of Cationic Oligo(*p*-phenyleneethynylene)s"** *Langmuir*, **2011**, **27**, 4945-4955 DOI: 10.1021/la1050173.

(337) Yanli Tang, Thomas S. Corbitt, Anand Parthasarathy, Zhijun Zhou, Kirk S. Schanze, and David G. Whitten, **"Light-Induced Antibacterial Activity of Symmetrical and Asymmetrical Oligophenylene Ethynyls"** *Langmuir*, **2011**, **27**, 4956-4962 DOI: 10.1021/la105018g.

(338) Ying Wang, Taylor Canady, Zhijun Zhou, Yanli Tang, Dominique Price, David Bear, Eva Chi, Kirk Schanze, David G. Whitten, **"Cationic Phenylene Ethynylene Polymers and Oligomers Exhibit Efficient Antiviral Activity,"** *ACS Appl. Mater. & Interfaces*, **2011**, **3**, 2209-2214, DOI: 10.1021/am200575y.

(339) Eunkyung Ji, Thomas S. Corbitt, Kirk S. Schanze, David G. Whitten, **"Antibacterial Activity of Conjugated Polyelectrolytes with Variable Chain Lengths"**, *Langmuir*, **2011**, **27**, 10763-10769.

(340) Ying Wang, Emmalee M. Jones, Yanli Tang, Eunkyung Ji, Gabriel P. Lopez, Eva Y. Chi, Kirk S. Schanze, David G. Whitten, **"Effect of Polymer Chain Length on Membrane Perturbation Activity of Cationic Phenylene Ethynylene Oligomers and Polymers,"** *Langmuir*, **2011**, **27**, 10770-10775.

(341) Thomas S. Corbitt, Zhijun Zhou, Yanli Tang, Steven W. Graves, David G. Whitten, **"Rapid Evaluation of the Antibacterial Activity of Arylene Ethynylene Compounds"** *ACS Appl. Mater. & Interfaces*, 2011, 3, 2938-2943.

(342) Eunkyung Ji, Thomas S. Corbitt, Anand Parthasarathy, Kirk S. Schanze, David G. Whitten, **"Dark and Light-Activated Biocidal Activity of Conjugated Polyelectrolytes,"** *ACS Appl. Mater. & Interfaces*, 2011, 3, 2820-2829.

(343) Ying Wang, Zhijun Zhou, Jingshu Zhu, Yanli Tang, Taylor D. Canady, Eva Y. Chi, Kirk S. Schanze, David G. Whitten, **"Dark Antimicrobial Mechanisms of Cationic Phenylene Ethynylene Polymers and Oligomers against *Escherichia coli*"** *Polymers*, 2011, 3, 1199-1214.

(344) Linnea K. Ista, Dimitri Daschier, Eunkyung Ji, Anand Parthasarathy, Thomas S. Corbitt, Kirk S. Schanze, David G. Whitten, **"Conjugated Polyelectrolyte Grafted Cotton Fibers act as "Micro Flypaper" for the Removal and Destruction of Bacteria"**, *ACS Appl. Mater. & Interfaces*, 2011, 3, 2932-2937.

(345) Ying Wang, Thomas S. Corbitt, Stephen D. Jett, Yanli Tang, Kirk S. Schanze, Eva Y. Chi, David G. Whitten, **"Direct Visualization of Bactericidal Action of Cationic Conjugated Polymers and Oligomers"** *Langmuir*, 2012, 28, 65-70 DOI: 10.1021/la2044569

(346) Ying Wang, Eva Y. Chi, Kirk S. Schanze, David G. Whitten, **"Membrane Activity of Antimicrobial Phenylene Ethynylene Based Polymers and Oligomers"** *Soft Matter (invited Review)* 2012, 8, 8547-8558 DOI: 10.1039/c2sm25238d

(347) Eric H. Hill, Subhadip Goswami, Deborah G. Evans, Kirk S. Schanze, David G. Whitten, **"Photochemistry of a Model Cationic *p*-Phenylene Ethynylene in Water"** *J. Phys. Chem. Letters*, 2012, 3, 1363-1368 DOI:10.1021/jz3004427.

(348) Dimitri Dascier, Eunkyung Ji, Anand Parthasarathy, Kirk S. Schanze, David G. Whitten **"Efficacy of End-Only Functionalized Oligo(arylene-ethynylene)s in Killing Bacterial Biofilms"** *Langmuir*, 2012, 28, 11286-11290.

(349) Eric H. Hill, Kelly Stratton, David G. Whitten and Deborah G. Evans, **"Molecular Dynamics Simulation Study of the Interaction of Cationic Biocides with Lipid Bilayers: Aggregation Effects and Bilayer Damage"** *Langmuir*, 2012, 28, 14849-14854. DOI: 10.1021/la303158c.

350) Thomas S. Corbitt, Eunkyung Ji, Ying Wang, Anand Parthasarathy, Kristin N. Wilde, Eric H. Hill, Dimitri Dascier, Heather E. Canavan, Eva Chi, Kirk S. Schanze, David G. Whitten, **"Conjugated Polyelectrolyte Based Biocide Applications" in Conjugated Polyelectrolytes: Fundamentals and Applications in Emerging**

**Technologies**, Liu Bin and Guillermo C. Bazan, editors, 2013 Wiley-VCH Chapter 8, 263-294(invited book chapter).

**351)** Ying Wang, Stephen D. Jett, John Crum, Kirk S. Schanze, Eva Y. Chi and David G. Whitten, “**Understanding the Dark and Light-Enhanced Biocidal Activity of Cationic Conjugated Polyelectrolytes and Oligomers**” *Langmuir*, **2013**, *29*, 781-792, DOI: [10.1021/la3044889](https://doi.org/10.1021/la3044889).

**352)** Anand Parthasarathy, Subhadip Goswami, Thomas S. Corbitt, Eunkyung Ji, Dimitri Dascier, David G. Whitten, and Kirk S. Schanze, “**Photophysics and Light –Activated Biocidal Activity of Visible-Light-Absorbing Conjugated Oligomers**” *ACS Applied Materials and Interfaces*, **2013**, *5*, 4516-4520, DOI: [10.1021/am400282p](https://doi.org/10.1021/am400282p).

**353)** Ying Wang, Eva Y. Chi, Donald O. Natvig, Kirk S. Schanze, David G. Whitten, “**Antimicrobial Activity of Cationic Conjugated Polyelectrolytes and Oligomers against *Saccharomyces cerevisiae* Vegetative Cells and Ascospores**”, *ACS Applied Materials and Interfaces*, **2013**, *5*, 4559-4561(Forum Article) DOI: [10.1021/am400220s](https://doi.org/10.1021/am400220s).

**354)** Ying Wang, Kirk S. Schanze, Eva Y. Chi, David G. Whitten “**When Worlds Collide: Interactions at the Interface Between Biological Systems and Synthetic Cationic Polyelectrolytes and Oligomers**”, *Langmuir*, **2013**, *29*: Invited Feature Article: DOI: [10.1021/la40112263](https://doi.org/10.1021/la40112263).

**355)** Eric H. Hill, Deborah G. Evans, David G. Whitten, “**Photochemistry of “End – Only” oligo-*p*-Phenylene Ethynylenes: Complexation with Sodium Dodecyl Sulfate Reduces Solvent Accessibility**” *Langmuir* **2013**, *29* (31) 9712-9720 DOI: [10.1021/la401983h](https://doi.org/10.1021/la401983h)

**356)** Kristin N. Wilde, David G. Whitten, Heather E. Canavan, “**In Vitro Cytotoxicity of Antimicrobial Conjugated Electrolytes: Interactions with Mammalian Cells**”, *ACS Applied Materials and Interfaces*, **2013**, *5* DOI: [10.1021/am402476g](https://doi.org/10.1021/am402476g).

**357)** Eric H. Hill, Dominic Sanchez, Deborah G. Evans, and David G. Whitten, “**Structural Basis for Aggregation Mode of oligo-*p*-Phenylene Ethynylenes with Ionic Surfactants**” *Langmuir* **2013**, *29* (51), 15732-15737 (Letter) DOI: [10.1021/la4038827](https://doi.org/10.1021/la4038827).

**358)** Eric H. Hill, Harry C. Pappas, Deborah G. Evans and David G. Whitten, “**Cationic oligo-*p*-phenylene ethynylenes form complexes with surfactants for long-term light-activated biocidal applications**” *Photochem. Photobiol. Sci.* **2014** DOI: [10.1039/c3pp50277e](https://doi.org/10.1039/c3pp50277e).

**359)** Eric H. Hill, Deborah G. Evans and David G. Whitten “**The Influence of Structured Interfacial Water on the Photoluminescence of Carboxyester-Terminated Oligo-*p*-phenylene Ethynylenes**” *J. Phy. Org. Chem.* **2014** DOI: [10.1002/poc.3258](https://doi.org/10.1002/poc.3258).

**360) Eric H. Hill, Harry C. Pappas and David G. Whitten, “Activating the Antimicrobial Activity of an Anionic Singlet Oxygen Sensitizer Through Surfactant Complexation,” *Langmuir* 2014, 5052-5056 DOI 10.1021/la501230m.**

**361) Eric H. Hill, David G. Whitten and Deborah G. Evans, “Computational Study of Bacterial Membrane Disruption by Cationic Biocides: Structural Basis for Water Pore Formation,” *J. Phys. Chem. B*, 2014 DOI: 10/1021/jp504297s.**

**362) Lance E. Edens, Ying Wang, David G. Whitten and David J. Keller, “AFM Images of the Dark Biocidal Action of Cationic Conjugated Polyelectrolytes and Oligomers on *Escherichia coli*” *Langmuir* 2014 DOI: 10.1021/la502427c.**