

# Christy F. Landes

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## **Education**

Ph.D., School of Chemistry and Biochemistry, Georgia Institute of Technology.  
Directed by Prof. Mostafa El-Sayed.  
Major: physical chemistry. Minor: inorganic chemistry. Completed: May 2003

B.S. in Chemistry, George Mason University. Completed: 1998

## **Employment history**

7/17 - Present: Professor, Department of Chemistry, Department of Electrical and Computer Engineering, Rice University  
7/14 - 6/17: Associate Professor, Department of Chemistry, Department of Electrical and Computer Engineering, Rice University.  
1/12 - 6/14: Assistant Professor, Department of Electrical and Computer Engineering, Rice University.  
7/09 - 6/14: Assistant Professor, Department of Chemistry, Rice University.  
7/06 - 6/09: Assistant Professor, Department of Chemistry, University of Houston.  
3/04 - 6/06: NIH Postdoctoral Fellow; University of Texas at Austin.  
6/03 - 2/04: Postdoctoral Research Associate; University of Oregon.

## **Research Interests**

- Interfacial dynamics at the single molecule scale
- Separation and purification at the single analyte scale
- Image processing and analysis development
- Nanomaterials/biomolecular surface chemistry
- Plasmonic materials surface chemistry
- Biophysics of dynamic structure-function relationships
- Single molecule spectroscopy methods development

## **Honors and Awards**

- 2016: ACS Early-Career Award in Experimental Physical Chemistry
- 2011-2016: NSF CAREER Award
- 2009-2011: ACS PRF Doctoral New Investigator

- 2009-2012: Norman Hackerman-Welch Young Investigator
- 2005-2006: Ruth L. Kirschstein National Individual Service Award Postdoctoral Fellowship, National Institutes of Health
- 2003-2004: Sigma Xi Best PhD Thesis Award, Georgia Institute of Technology
- 2002-2003: House-Ashby-Flashka Award Winner, School of Chemistry and Biochemistry, Georgia Institute of Technology
- 2001-2002: Molecular Design Institute Fellowship, Office of Naval Research, Georgia Institute of Technology
- 1998: Cherry Emerson Fellowship, Georgia Institute of Technology
- 1998: American Chemical Society Outstanding Senior Chemistry Student Award, George Mason University

### **Publications**

77) Bishop, L.D.C.; and Landes, C.F. “From a Protein’s Perspective: Elution at the Single Molecule Level” (invited review) submitted.

76) Wang, W.; Shen, H.; Moringo, N.A.; Correjo, N.C.; Ye, F.; Robinson, J.T.; Landes, C.F. “Super-temporal resolved microscopy reveals desorption kinetics of  $\alpha$ -lactalbumin from thin nylon 6.6 films” *Langmuir* **2018** in press.

75) Hoener, B.S.; Kirchner, S.R.; Heiderscheid, T.S.; Collins, S.S.E.; Chang, W.S.; Link, S.; Landes, C.F. “Plasmonic Sensing and Control of Single Nanoparticle Electrochemistry” (invited review) *Chem* **2018** in press.

74) Moringo, N.A.; Shen, H.; Bishop, L.D.C.; Wang, W.; Landes, C.F. “Enhancing Analytical Separations using Super-resolution Microscopy” (invited review) *Ann. Rev. Phys. Chem.* **2018** in press.

73) Kirchner, S.R.; Smith, K.; Wang, W.; Cai, Y.Y.; Chang, W.S.; Kinnear, C.; Zhang, H.; Mulvaney, P.; Landes, C.F.; Link, S. “Snapshot hyperspectral imaging for revealing irreversible and heterogeneous plasmonic processes” *J. Phys. Chem. C* **2018**, 122, 6865-6875.

72) Shen, H.; Tauzin, L.J.; Baiyasi, R.; Wang, W.; Moringo, N.; Shuang, B.; Landes, C.F. “Single Particle Tracking from Theory to Biophysical Applications” (invited review) *Chemical Reviews* **2017**, 117, 7331-7376.

71) Hoener, B.S.; Zhang, H.; Heiderscheid, T.S.; Kirchner, S.R.; Indrasekara, A.S.D.S.; Baiyasi, R.; Cai, Y.; Nordlander, P.; Link, S.; Landes, C.F.; Change, W-S. “Spectral Response of Plasmonic Gold Nanoparticles to Capacitive Charging: Morphology Effects” *J. Phys. Chem Lett.* **2017**, 8, 2681-2688.

70) Moringo, N.A.; Shen, H.; Tauzin, L.J.; Wang, W.; Bishop, L.D.C.; Landes, C.F. “Variable lysozyme transport dynamics on oxidatively functionalized polystyrene films” *Langmuir* **2017**, 33, 10818-10828.

- 69) Dolino, D.M.; Chatterjee, S.; MacLean, D.M.; Flatebo, C.; Bishop, L.D.C.; Landes, C.F.; Jayaraman, V. "The structure-energy landscape of NMDA receptor gating" *Nature Chem. Bio.* **2017**, 13, 1232-1238.
- 68) Kisley, L.; Patil, U.; Dhamane, S.; Kourentzi, K.; Tauzin, L.J.; Willson, R.C.; Landes, C.F. "Competitive multicomponent anion exchange adsorption of proteins at the single molecule level" *Analyst* **2017**, 142, 3127-3131.
- 67) De Silva Indrasekara, A.S.; Shuang, B.; Hollenhorst, F.; Hoener, B.S.; Hoggard, A.; Chen, S.; Villarreal, E.; Cai, Y.Y.; Kisley, L.; Derry, P.J.; Chang, W.S.; Zubarev, E.R.; Ringe, E.; Link, S.; Landes, C.F. "Optimization of Spectral and Spatial Conditions to Improve Super-Resolution Imaging of Plasmonic Nanoparticles" *J. Phys. Chem. Lett.* **2017**, 8, 299-306.
- 66) Wang, W.; Shen, H.; Shuang, B.; Hoener, B.S.; Tauzin, L.J.; Kelly, K.; Landes, C.F. "Super Temporal-Resolved Microscopy (STReM)" *J. Phys. Chem Lett.* **2016** 7, 4524-4529.
- 65) Shen, H.; Tauzin, L.J.; Wang, W.; Hoener, B.; Shuang, B.; Kisley, L.; Hoggard, A.; Landes, C.F. "Single-Molecule Kinetics of Protein Adsorption on Thin Nylon 6,6 Films" *Anal. Chem.* **2016**, 88, 9926-9933.
- 64) Shaikh, S.A.; Dolino, D.M.; Lee, G.; Chatterjee, S.; MacLean, D.M.; Flatebo, C.; Landes, C.F.; Jayaraman, V. "Stargazin Modulation of AMPA Receptors" *Cell Reports*, **2016**, 17, 328-335.
- 63) Hoener, B.S.; Byers, C.P.; Indrasekara, S.; Hoggard, A.; Chang, W.S.; Link, S.; Landes, C.F. "Spectroelectrochemistry of Halide Anion Adsorption and Dissolution of Single Gold Nanorods" *J. Phys. Chem. C* **2016**, 120, 20604-20612.
- 62) Shuang, B.; Wang, W.; Shen, H.; Tauzin, L.J.; Flatebo, C.; Chen, J.; Kelly, K.F.; Landes, C.F. "Generalized Recovery Algorithm for 3-D Super-Resolution Microscopy" *Sci. Rep.* **2016**, 6, 30826.
- 61) Chen, J.; Pyle, J.R.; Piecco, K.W.S.; Kolomeisky, A.B.; Landes, C.F. "A Two-Step Method for smFRET Data Analysis" *J. Phys. Chem. B.* **2016**, 120, 7128-7132.
- 60) Byers, C.P.; Hoener, B.S.; Chang, W.S.; Link, S.; Landes, C.F. "Single-particle plasmon voltammetry (cpPV) for detecting anion adsorption" *Nano Letters* **2016**, 16, 2314-2321.
- 59) Tauzin, L.J.; Shen, H.; Moringo, N.A.; Roddy, M.H.; Bothof, C.A.; Griesgraber, G.W.; McNulty, A.K.; Rasmussen, J.K.; Landes, C.F. "Variable Surface Transport Modalities on Functionalized Nylon Films Revealed with Single Molecule Spectroscopy" *RSC Advances* **2016** 6, 27760-27766.

- 58) Dominguez-Medina, S.; Kisley, L.; Tauzin, L.J.; Hoggard, A.; Shuang, B.; Indrasekara, A.S.D.S.; Wang, L.-Y.; Chen, S.; Derry, P.J.; Liopo, A.; Zubarev, E.R.; Landes, C.F.; Link, S. "Adsorption and unfolding of a single protein triggers nanoparticle aggregation" *ACS Nano* **2016** 10, 2103-2112.
- 57) Poongavanam, M.V.; Kisley, L.; Kourentzi, K.; Landes, C.F.; Willson, R.C. "Ensemble and Single-Molecule Biophysical Characterization of D17.4 DNA Aptamer-IgE Interactions" *BBA Proteins and Proteomics* **2016** 1864, 154-164.
- 56) Dominguez-Medina, S.; Chen, S.; Blankenburg, J.; Swanglap, P.; Landes, C.F.; Link, S. "Measuring the Hydrodynamic Size of Nanoparticles using Fluctuation Correlation Spectroscopy" *Ann. Rev. Phys. Chem.* **2016**, 67, 489-514.
- 55) Kisley, L.; Poongavanam, M.-H.; Kourentzi, K.; Willson, R.C.; Landes, C.F. "pH dependence of single protein adsorption and diffusion at a liquid chromatographic interface" *J. Sep. Sci.* **2016** 39, 682-688.
- 54) Byers, C.P.; Zhang, H.; Swearer, D.F.; Yorulmaz, M.; Hoener, B.S.; Huang, D.; Hoggard, A.; Chang, W.S.; Mulvaney, P.; Ringe, E.; Halas, N.J.; Nordlander, P.; Link, S.; Landes, C.F. "From tunable core-shell nanoparticles to plasmonic drawbridges: Active control of nanoparticle optical properties" *Science Advances* **2015**, 1, e1500988.
- 53) Kisley, L.; Brunetti, R.; Tauzin, L.J.; Shuang, B.; Yi, X.; Kirkeminde, A.W.; Higgins, D.A.; Weiss, S.; Landes, C.F. "Characterization of Porous Materials by fcsSOFI" *ACS Nano* **2015**, 9 9158-9166.
- 52) Cooper, D.; Dolino, D.; Jaurich, H.; Shuang, B.; Ramaswamy, S.; Nurik, E.; Chen, J.; Jayaraman, V.; Landes, C.F. "Conformational Transitions in the Glycine-Bound GluN1 NMDA Receptor LBD via Single Molecule FRET" *Biophys. J.* **2015**, 109, 66-75.
- 51) Huang, D.; Byers, C.P.; Wang, L.-Y.; Hoggard, A.; Hoener, B.; Dominguez-Medina, S.; Chen, S.; Chang, W.-S.; Landes, C.F.; Link, S. "Photoluminescence of a Plasmonic Molecule" *ACS Nano* **2015**, 9, 7072-7079.
- 50) Taylor, J.N.; Li, C.B.; Cooper, D.R.; Landes, C.F.; Komatsuzaki, T. "Error-based extraction of states and energy landscapes from experimental single-molecule time-series" *Sci. Rep.* **2015**, 5, 9174.
- 49) Landes, C.F. "Single-molecule tracking and super-resolution imaging shed light on cholera toxin transcription activation" (invited micro-commentary) *Molecular Microbiology* **2015** 96, 1-3.
- 48) Kisley, L.; Landes, C.F. "Molecular Approaches to Chromatography using Single Molecule Spectroscopy" (invited review) *Anal. Chem.* **2015**, 87, 83-98.

- 47) Dolino, D. M.; Cooper, D.; Ramaswamy, S.; Jaurich, H.; Landes, C.F.; Jayaraman, V. "Structural Dynamics of the Glycine-Binding Domain of the N-Methyl-D-Aspartate Receptor" *J. Biol. Chem.* **2015**, 290, 797-804.
- 46) Hu, Z.; Adachi, T.; Haws, R.; Shuang, B.; Ono, R.J.; Bielawski, C.W.; Landes, C.F.; Rossky, P.J.; Vanden Bout, D.A. "Excitonic Energy Migration in Conjugated Polymers: The Critical Role of Interchain Morphology", *J Am. Chem. Soc.* **2014**, 136, 16023-16031.
- 45) Kisley, L.; Chen, J.; Mansur, A.P.; Shuang, B.; Kourentzi, K.; Poongavanam, M. V.; Chen, W.S.; Dhamane, S.; Willson, R.P.; Landes, C.F. "Unified Super-Resolution Experiments and Stochastic Theory Provide Mechanistic Insight into Protein Ion-Exchange Adsorptive Separations" *PNAS*, **2014**, 111, 2075-2080.
- 44) Landes, C.F.; Link, S.; Wine, P.H.; Zhang, Z.J. "2013 Southeastern Regional ACS Meeting. Nanochemistry and Spectroscopy: Symposium Honoring Mostafa El-Sayed" (editorial) *J. Phys. Chem. B* **2014**, 14009-14009.
- 43) Shuang, B.; Cooper, D.; Taylor, J. N.; Kisley, L.; Chen, J.; Wang, W. Li, C-B.; Komatsuzaki, T.; Landes, C.F. "Fast Step Transition and State Identification (STaSI) for Single-Molecule Data Analysis" *J. Phys. Chem. Lett.* **2014**, 5, 3157-3161.
- 42) Tauzin, L.J.; Shuang, B.; Kisley, L.; Mansur, A.; Chen, J.; de Leon, A.; Advincula, R.C.; Landes, C.F. "Charge-Dependent Transport Switching of Single Molecular Ions in a Weak Polyelectrolyte Multilayer" *Langmuir*, **2014**, 30, 8391-8399.
- 41) Shuang, B.; Chen, J.; Kisley, L.; Landes, C.F. "Troika of Single Particle Tracking Programming: SNR Enhancement, Particle Identification, and Mapping" (invited perspective), *PCCP*, **2014**, 16, 624-634.
- 40) Chen, J.; Poddar, N.K.; Tauzin, L.T.; Cooper, D.; Kolomeisky, A.B.; Landes, C.F. "Single-Molecule FRET Studies of HIV TAR-DNA Hairpin Unfolding Dynamics" *J. Phys. Chem. B* **2014**, 118, 12130-12139.
- 39) Kisley, L.; Chen, J.; Mansur, A.P.; Dominguez-Medina, S.; Kulla, E.; Kang, M.; Shuang, B.; Kourentzi, K.; Poongavanam, M.V.; Dhamane, S.; Willson, R.C.; Landes, C.F. "High ionic strength narrows the population of sites participating in protein ion-exchange adsorption: A single-molecule study" *J. Chromatography A*, **2014**, 1343, 135-142.
- 38) Byers, C.P.; Hoener, B.S.; Chang, W.S.; Yorulmaz, M.; Link, S.; Landes, C.F. "Single-particle spectroscopy reveals heterogeneity in electrochemical tuning of the localized surface plasmon" *J. Phys. Chem. B*, **2014**, 118, 14047-14055.
- 37) Chen, J.; Bremauntz, A.; Kisley, L.; Shuang, B.; Landes, C.F. "Super-Resolution mbPAINT for Optical Localization of Single-Stranded DNA" *ACS Appl. Materials and Interfaces*, **2013**, 5, 9338-9343.

- 36) Kawai, S.; Cooper, D.; Landes, C.F.; Mootz, H.D.; Yang, H.; Komatsuzaki, T. "Numerical Construction of Estimators for Single-molecule Fluorescence Measurements" *J. Phys. Chem. B*, **2013**, 117, 8061-8074.
- 35) Cooper, D.; Uhm, H.; Tauzin, L.; Poddar, N.; Landes, C.F. "Photobleaching Lifetimes of Cyanine Dyes Used for Single Molecule Förster Resonance Energy Transfer in the Presence of Various Oxygen Scavenging Systems" *Chem. Bio. Chem.* **2013**, 14, 1075-1080.
- 34) Kisley, L.; Chang, W.S.; Cooper, D; Mansur, A.; Landes, C.F. "Extending single molecule fluorescence observation time by amplitude modulated excitation" *Methods and Applications in Fluorescence*, **2013**, 1, 037001-037007.
- 33) Dominguez-Medina, S.; Blankenburg, J.; Olson, J.; Landes, C.F.; Link, S. "Stable isotonic saline solutions of gold nanoparticles via albumin adsorption" *ACS Sustainable Chemistry and Engineering*, **2013**, 1, 833-842.
- 32) Shuang, B.; Byers, C.P.; Kisley, L.; Wang, L.Y.; Zhao, J.; Morimura, H.; Link, S.; Landes, C.F. "Improved Analysis for Determining Diffusion Coefficients from Short Single-molecule Trajectories with Photoblinking" *Langmuir*, **2013**, 29, 228-234.
- 31) Daniels, C.R.; Tauzin, L.J.; Foster, E.; Advincula, R.C.; Landes, C.F. "pH Responsive, Charge Selective Polymer-mediated Transport Probed by Traditional and Scanning FCS" *J. Phys. Chem. B*, **2013**, 117, 4284-4290.
- 30) Ramaswamy, S.; Cooper, D; Poddar, N.; MacLean, D.M.; Rambhadran, A.; Taylor, J. N.; Uhm, H.; Landes, C.F.; Jayaraman, V. "Role of Conformational Dynamics in  $\alpha$ -amino-3-hydroxy-5-methylisoxazole-4-propionic Acid (AMPA) Receptor Partial Agonism" *J. Biol. Chem.* **2012**, 52, 43557-43564.
- 29) Reznik, C.; Landes, C.F. "Transport in Supported Polyelectrolyte Brushes" *Accounts of Chemical Research*, **2012**, 45, 1927-1935.
- 28) El-Sayed, M.; Masuhara, H.; Pileni, M.P.; Landes, C. "Nano and Molecular Science and Technology Special Issue Honoring Paul Barbara" (editorial) *Accounts of Chemical Research*, **2012**, 45, 1842-1843.
- 27) Daniels, C.; Kisley, L.; Kim, H.; Chen, W.; Vivek, M.; Reznik, C.; Kourentzi, K.; Willson, R.C.; Landes, C.F. "Single-molecule Observations of Protein Interactions with Clustered-charge Peptide Adsorbates" *J. Molecular Recognition*, **2012**, 25, 435-442.
- 26) Dominguez-Medina, S.; McDonough, S.; Swanglap, P.; Landes, C.F.; Link, S. "In situ Measurement of Bovine Serum Albumin Interaction with Gold Nanospheres" *Langmuir*, **2012**, 28, 9131-9139.

- 25) Landes, C.F.; Rambhadran, A.; Taylor, J.N.; Salatan, F.; Jayaraman, V. "Structural Landscape of the Isolated Agonist Binding Domain of the AMPA Receptor Studied by Single Molecule FRET", *Nature Chemical Biology*, **2011**, 7, 168-173.
- 24) Tcherniak, A.; Dominguez-Medina, S.; Chang, W.S.; Swanglap, P.; Slaughter, L.S.; Landes, C.F.; Link, S. "One-photon Plasmon Luminescence and its Application to Correlation Spectroscopy as a Probe for Rotational and Translational Dynamics of Gold Nanorods" *J. Phys. Chem. C*, **2011** 115, 15938-15949.
- 23) Daniels, C.R.; Reznik, C.; Kilmer, R.; Felipe, M.J.; Tria, M.C.R.; Kourentzi, K.; Willson, R.C.; Advincula, R.C.; Landes, C.F. "Permeability of Anti-Fouling Pegylated Surfaces Probed by Fluorescence Correlation Spectroscopy" *Colloids and Surfaces*, **2011**, 88, 31-38.
- 22) Reznik, C.; Berg, R.; Foster, E.; Advincula, R.C.; Landes, C.F. "Transient 3-dimensional Orientation of Molecular Ions in an Ordered Polyelectrolyte Membrane" *J. Phys. Chem. Letters*, **2011**, 2, 592-598.
- 21) Taylor, J.N.; Landes, C.F. "Improved Resolution of Complex Single-Molecule FRET Systems via Wavelet Shrinkage" *J. Phys. Chem. B* **2011**, 115, 1105-1114.
- 20) Daniels, C.R.; Reznik, C.; Landes, C.F. "Dye Diffusion at Surfaces: Charge Matters" *Langmuir*, **2010**, 26, 4807-4812.
- 19) Taylor, J. N.; Makarov, D.E.; Landes, C.F. "Denoising Single-Molecule FRET Trajectories with Wavelets and Bayesian Inference" *Biophys. J.*, **2010**, 98, 164-173.
- 18) Reznik, C.; Estillore, N.; Advincula, R.; Landes, C.F. "Single Molecule Spectroscopy Reveals Heterogeneous Ion Transport in a Polyelectrolyte Polymer Brush" *J. Phys. Chem. B* **2009**, 113, 14611-14618.
- 17) Tcherniak, A.; Reznik, C.; Link, S.; Landes, C.F. "Fluorescence Correlation Spectroscopy: Criteria for Analysis in Complex Systems" *Analytical Chem.*, **2009**, 81, 746-754.
- 16) Darugar, Q.; Kim, H.; Gorelick, R.J.; Landes, C.F. "HTLV-1 Nucleocapsid Protein-induced Structural Changes in TAR-DNA Hairpin Measured by Single-molecule FRET", *J. Virology*, **2008**, 82, 12164-12171.
- 15) Taylor, J.N.; Darugar, Q.; Kourentzi, K.; Willson, R. C.; Landes, C.F. "Dynamics of an anti-VEGF DNA Aptamer: A Single Molecule Study" *BBRC*, **2008**, 373, 213-218.
- 14) Reznik, C.; Darugar, Q.; Wheat, A.; Fulghum, T.; Advincula, R.C.; Landes, C.F. "Single Ion Diffusive Transport Within a Poly(styrene sulfonate) Polymer Brush Matrix Probed by Fluorescence Correlation Spectroscopy", *J. Phys. Chem. B (cover article)*, **2008**, 112(35), 10890-10897.

- 13) Landes, C.F.; Zeng, Y.; Liu, H.W.; Musier-Forsyth, K.; Barbara, P.F. "Single Molecule Study of the Inhibition of HIV-1 Transactivation Response Region DNA:DNA Annealing by Argininamide", *J. Am. Chem. Soc.*, **2007**, 129, 10181-10188.
- 12) Zeng, Y.; Liu, H.; Landes, C.F.; Kim, Y.J.; Ma, X.; Zhu, Y.; Musier-Forsyth, K.; Barbara, P.F. "Probing Nucleation, Reverse Annealing, and Chaperone Function along the Reaction Path of HIV-1 Single-Strand Transfer" *Proc. Natl. Acad. Sci. USA*, **2007**, 104, 12651-12656.
- 11) Liu, H.; Zeng, Y.; Landes, C.F.; Kim, Y.J.; Zhu, Y.; Ma, X.; Vo, M.; Musier-Forsyth, K.; Barbara, P.F. "New Insights on the Role of Nucleic Acid/Protein Interactions in Chaperoned Nucleic Acid Rearrangements of HIV-1 Reverse Transcription" *Proc. Natl. Acad. Sci. USA*, **2007**, 104, 5261-5267.
- 10) Cosa, G.; Zeng, Y.; Liu, H.W.; Landes, C.F.; Musier-Forsyth, K.; Barbara, P. "Evidence for Non-Two-State Kinetics in the Nucleocapsid Protein Chaperoned Opening of DNA Hairpins" *J. Phys. Chem. B.*, **2006**, 110, 2419-2426.
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- 8) Darugar, D.; Landes, C.; Link, S.; Schill, A.; El-Sayed, M.A. "Why is the Thermalization of Excited Electrons in Semiconductor Nanoparticles So Rapid? Studies on CdSe Nanoparticles" *Chem. Phys. Lett.* **2003**, 373, 284.
- 7) Landes, C.; Braun, M.; El-Sayed, M.A. "The Effect of Surface Adsorption on the Hyper-Rayleigh Scattering of Large and Small CdSe Nanoparticles" *Chem. Phys. Lett.* **2002**, 363, 465.
- 6) Landes, C.; El-Sayed, M.A. "Thermodynamic and Kinetic Characterization of the Interaction Between N-Butylamine and ~1 nm CdSe NPs" *J. Phys. Chem. A* **2002**, 106, 7621.
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- 3) Landes, C.; Burda, C.; Braun, M.; El-Sayed, M. A. "Photoluminescence of CdSe Nanoparticles in the Presence of a Hole Acceptor: n-Butylamine" *J. Phys. Chem. B* **2001**, 105(15), 2981-2986.



2) Landes, C.; Braun, M.; Burda, C.; El-Sayed, M.A. "Observation of Large Changes in the Band Gap Absorption Energy of Small CdSe Nanoparticles Induced by the Adsorption of a Strong Hole Acceptor" *Nano Lett.* **2001**, *1*, 667.

1) Burda, C.; Green, T.; Landes, C.; Link, S.; Little, R.; Petroski, J.; El-Sayed, M. A. "Optical spectroscopy of nanophase material" *Charact. Nanophase Mater.* **2000**, 97-241.

## Presentations

(Future)

Invited Plenary Presentation: 4<sup>th</sup> Biennial Israeli-American Kavli Frontiers of Science Symposium, Israel. Sept. 16-18, 2019. Host: Shane Ardo and Aharon Blank

Invited Oral Presentation: Department of Chemistry, Purdue University, West Lafayette, IN. Apr. 30, 2019. Host: Shelley Claridge.

Invited Oral Presentation: ACS National Meeting, Orlando, FL. Mar. 31-Apr. 4, 2019. Host: Suchun Yan and Steffen Lindert.

Invited Oral Presentation: Department of Chemistry, Northwestern University, Evanston, IL. Nov. 30, 2018. Host: Franz Geiger.

Invited Oral Presentation: Department of Chemistry, UTMB, Baltimore, MD. Nov. 9, 2018. Host: Zeev Rosenzweig.

Invited Oral Presentation: ACS National Meeting, Boston, MA. Aug. 19-23, 2018. Host: Ning Fang.

Invited Oral Presentation: ACS National Meeting, Boston, MA. Aug. 19-23, 2018. Host: Peter Nordlander.

Invited Oral Presentation: Single-Molecule Approaches to Biology GRC, Mt. Snow, VT. July 15-20, 2018. Host: Julie Biteen.

Invited Oral Presentation: Excited State Processes in Electronic and Bio Nanomaterials, Santa Fe, NM, Jun 4-7, 2018. Host: Sergei Tretiak.

(Past)

Invited Oral Presentation: OSA Conference on Lasers and Electro-Optics (CLEO 2018), May 14-18, San Jose, CA. Host: Amit Agrawal.

Invited Oral Presentation: Department of Chemistry, Columbia University, May 3, 2018.  
Host: Laura Kaufman.

Invited Oral Presentation: Department of Chemistry, University of Michigan, Apr. 17,  
2018. Host: Julie Biteen.

Invited Oral Presentation: "Towards Predictive Separations using 4D Super-Resolution  
Microscopy" Priestley Medal Award Symposium Honoring Prof. Geri Richmond. Mar.  
19, 2018. New Orleans, LA. Host: Rob Walker.

Invited Oral Presentation: Pittcon, Orlando, Florida, Feb. 28-Mar. 3, 2018. Host: Josh  
Vaughan.

Invited Oral Presentation: Department of Chemistry, UCSD, Feb. 20, 2018. Host: Vicki  
Grassian

Invited Oral Presentation: International Conference on SERS, Xiamen, China, Dec. 5-9,  
2017. Host: Zhong-Qun Tian.

Invited Oral Presentation: Department of Chemistry, University of Notre Dame, Nov. 28,  
2017. Host: Graduate Student Association.

Invited Oral Presentation: McElvain Seminar, Department of Chemistry, University of  
Wisconsin, Nov. 16, 2017. Host: Graduate Student Association.

Invited Oral Presentation: "Resolving interfacial protein dynamics by Super Temporal-  
Resolved Microscopy (STReM)" Midwest Regional American Chemical Society  
Meeting, University of Kansas, Oct. 19-20 2017. Host: Carey Johnson.

Invited Oral Presentation: "Single particle tracking: Recent advances in methods and  
applications" Midwest Regional American Chemical Society Meeting, University of  
Kansas, Oct. 19-20 2017. Host: Carey Johnson.

Invited Oral Presentation: Department of Chemistry, Ohio University, Sept. 28, 2017.  
Host: Jixin Chen.

Invited Oral Presentation (declined): Methods and Applications in Fluorescence, Brugge,  
Belgium, Sep. 10-13, 2017. Host: Johan Hofkens.

Invited Oral Presentation: Environmental Nanotechnology GRC, Stowe, VT, June 18-23,  
2017. Host: Sharon Walker.

Invited Oral Presentation: 20<sup>th</sup> Argentinian Congress on Physical and Inorganic  
Chemistry, Cordoba, Argentina, May 16-19, 2017. Host: Luis A. Otero.

Invited Oral Presentation: NanoCordoba, Carlos Paz, Argentina, May 19-20, 2017. Host: Rodrigo Palacios.

Invited Oral Presentation: ACS Spring Meeting, San Francisco, CA, March 2-6, 2017. Host: Wolfgang Parak.

Invited Oral Presentation: Biophysical Society Annual Meeting, New Orleans, LA, February 11, 2017. Host: Julie Biteen.

Invited Oral Presentation: Department of Chemistry, University of Illinois, Urbana-Champaign, IL, Feb. 8, 2017. Host: Prashant Jain.

Invited Oral Presentation: Keynote Speaker at ACS Southwest Regional Meeting, Nov. 10-13, 2016. Host: Lisa Biswal

Invited Oral Presentation: ACS National Awards Symposium, Philadelphia, PA, Aug. 23, 2016. Host: Greg Engel.

Invited Oral Presentation: Department of Chemistry, Massachusetts Institute of Technology, Boston, MA, 2017 TBD. Host: Gabriela Schlau-Cohen.

Invited Oral Presentation: "Electrochemical control of plasmonic nanomaterial surface chemistry" META, Malaga, Spain, July 25-28, 2016. Host: Sasha Govorov.

Invited Oral Presentation: "Active Electrochemical Tuning of the Plasmon Response" Plasmonics and Nanophotonics GRC, Sunday River Resort, Newry, ME, July 10-15, 2016. Host: Harald Giessen

Invited Oral Presentation: Department of Chemical and Biological Engineering, University of Pennsylvania, Philadelphia, PA, May 5, 2016. Host: John Vohs.

Invited Oral Presentation: Department of Chemistry, Penn State University, State College PA, Apr. 28, 2016. Host: Tae Hee Lee.

Invited Oral Presentation: Department of Chemistry, University of California, Los Angeles, CA. Apr. 18, 2016. Host: Shimon Weiss.

Invited Oral Presentation: Department of Chemistry, University of California, Irvine, CA, Apr. 14, 2016.

Invited Oral Presentation: Frontiers of Plasmonics, Hefei, China. Apr. 6-10, 2016. Host: Zhenchao Dong and Zhenyu Zhang.

Invited Oral Presentation: Department of Chemistry, University of Washington, Seattle, WA, Mar. 1, 2016. Host: David Masiello.

Invited Oral Presentation: “Maximizing information and minimizing computation when imaging in 4D” International Conference on Nanoscience and Nanotechnology, Canberra, Australia, Feb. 7-11, 2016. Host: Justin Gooding.

Invited Oral Presentation: Department of Chemistry, University of Pennsylvania, Philadelphia, PA Jan. 20, 2016. Host: Joe Subotnik.

Contributed Oral Presentation: “Imaging Porous Nanomaterials” Quantitative Bioimaging Conference, Delft, The Netherlands Jan. 13-15, 2016.

Invited Oral Presentation: “Active Control of Broadband Plasmonic Response” PQE, Snowbird, UT, Jan. 3-7, 2016. Host: Peter Nordlander.

Invited Oral Presentation: “Active Control of Surface Chemistry on Plasmonic Nanomaterials” Single-Molecule Fluorescence and Imaging Symposium, Pacificchem, Honolulu, HI, Dec. 15-20, 2015. Host: Hiroaki Misawa.

Invited Oral Presentation: “Hit ‘em where they ain’t: super-resolution imaging of porous nanomaterials” Challenges in Plasmonic Photochemistry Symposium, Pacificchem, Honolulu, HI, Dec. 15-20, 2015. Host: Peng Chen.

Invited Oral Presentation: “Imaging Porous Nanomaterials” Japanese Annual Meeting on Photochemistry, Osaka, Japan, Sep. 9-11, 2015. Host: Hiroaki Misawa

Invited Oral Presentation: “Single-Molecule Methods to Quantify Adsorptive Separations” Physical Chemistry of Interfaces and Nanomaterials XIV, SPIE, Aug. 9-13, 2015. Host Eric Bittner

Invited Oral Presentation: “Hit ‘em where they ain’t: super-resolution imaging of porous nanomaterials” META15, New York, NY, Aug. 4-7, 2015. Host: Alexander Govorov.

Invited Oral Presentation: “How do you measure something smaller than your ruler: The 2014 Nobel in Chemistry, Super-Resolution Imaging” Whitman College, Walla Walla, WA, Apr. 3, 2015. Host: Marion Gotz.

Invited Oral Presentation: “Active Control of Surface Chemistry on Plasmonic Nanomaterials” 2015 Spring ACS National Meeting in Denver, CO, Mar 22-26, 2015. Host: Eric Borquet.

Invited Oral Presentation: “A Mechanistic Study of Serum Albumin Interaction with Therapeutic Nanoparticles” 2015 Spring ACS National Meeting in Denver, CO, Mar 22-26, 2015. Host: David Masiello.

Invited Oral Presentation: “Single Molecule Methods to Quantify Adsorptive Separations” 2015 Pittcon Conference New Orleans, LA, Mar. 8-12, 2015. Host: Gufeng Wang.

Invited Oral Presentation: “Single Molecule Methods to Quantify Adsorptive Separations” Quantitative Bioimaging III, Paris, France, Jan. 7-9, 2015. Host: Raimund Ober.

Invited Oral Presentation: “Spectroelectrochemistry of plasmonic nanoparticles” ACS National Meeting San Francisco, CA, August 10-14, 2014. Host: Franz Geiger.

Invited Oral Presentation: “Super-resolution methods for understanding adsorptive protein separations” ACS National Meeting, San Francisco, CA, August 10-14, 2014. Host: Ning Fang.

Invited Oral Presentation “Unified super-resolution experiments and stochastic theory provide mechanistic insight into protein ion-exchange adsorptive separations” ACS National Meeting, Dallas, TX, March 17, 2014. Host: Dan Schwartz.

Invited Oral Presentation: “Charge Clustering Dominates Protein Ion-Exchange Separations” in 2014 Chromatography Forum of Delaware Valley Nogare Award Symposium Honoring Dr. Mary Wirth, 2014 Pittsburgh Conference, Chicago, IL, Mar. 2-6, 2014. Host: Mary Wirth

Invited Oral Presentation: “Super-Resolution Analysis of Protein Ion-Exchange Separations” Workshop on Applications of Supported Bilayers at the 58<sup>th</sup> Annual Meeting of the Biophysical Society, San Francisco, CA, Feb. 15-19, 2014. Host: Vasanthi Jayaraman

Invited Oral Presentation: “Solute Dynamics in Thin Films” 3M Corporate Research Laboratory, St. Paul, MN, Feb. 7, 2014, Host: Corey Radloff.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of British Columbia, Vancouver, British Columbia, Canada, Jan. 21, 2014, Host: Tim Storr.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Victoria, Victoria, British Columbia, Canada, Jan. 20, 2014, Host: Keng Chou.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Victoria, Victoria, British Columbia, Canada, Jan. 20, 2014, Host: Dennis Hore.

Invited Oral Presentation: “Spectroelectrochemistry of Single Gold Nanorods” Physics of Quantum Electronics Conference, Snowbird, UT, Jan. 5-9 2014. Hosts: Peter Nordlander and Naomi Halas.

Contributed Oral Presentation: “Overcoming Signal Intermittency in Short Particle Tracking Trajectories” 26<sup>th</sup> International Conference on Photochemistry, Leuven, Belgium, July 21-26 2013. Hosts: Johan Hofkens and Hiroaki Misawa.

Invited Oral Presentation: “Fundamentals of Fluorescence Spectroscopy at the Single Molecule/Particle Limit” 2<sup>nd</sup> International Summer Course, National Chiao Tung University, Taiwan June 25-26 2013. Host: Hiroshi Masuhara.

Invited Oral Presentation: “Overcoming Signal Intermittency in Particle Tracking Experiments” 2<sup>nd</sup> International Workshop on Single Molecule/Nanoparticle Spectroscopy and Imaging, National Chiao Tung University, Taiwan June 27-28 2013. Hosts: Hiroshi Masuhara and Ian Liao.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Colorado State University, Ft. Collins, CO May 2, 2013. Host: Nancy Levinger.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Chicago James Frank Institute Seminar, Chicago, IL Apr. 16, 2013. Host: Greg Engel.

Contributed Oral Presentation: “Understanding Molecular-Scale Separations on Agarose Supported Peptide Surfaces” ACS National Meeting, New Orleans, LA, Apr. 7-11, 2013.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Notre Dame Chemistry and Biochemistry Departmental Seminar, South Bend, IN Mar. 28, 2013. Hosts: Steven Corcelli and Greg Hartland.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Houston Biochemistry Departmental Seminar, Houston, TX Mar. 20, 2013. Host: Yuhong Wang.

Invited Oral Presentation: “Environmental Separations from a Single Molecule Perspective” Research Partnership Workshop on Water, Energy and the Environment for Women Scientists from the U.S., Morocco, Algeria and Tunisia, Casablanca, Morocco, March 6-8, 2013. Host: Geraldine Richmond.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Ohio State University Chemistry and Biochemistry Departmental Seminar, Columbus, OH. Jan. 24, 2013. Host: Karin Musier-Forsyth.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Los Alamos National Lab, Los Alamos, NM, Jan. 17, 2013. Host: Sergei Tretiak.

Contributed Oral Presentation: “Understanding Molecular-Scale Separations on Agarose Supported Peptide Surfaces” Quantitative Bioimaging, Albuquerque, NM, Jan. 11-12, 2013. Hosts: Keith Lidke, Raimund Ober, and Bernd Rieger.

Invited Oral Presentation: “Overcoming Signal Intermittency in Short Particle Tracking Trajectories” Physics of Quantum Electronics Colloquium, Snowbird, UT, Jan. 9, 2013. Host: Peter Nordlander.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Maryland Chemistry Departmental Seminar, College Park, Md, Nov. 12, 2012. Hosts: Garyk Papoian and John Fourkas.

Invited Oral Presentation: “Diffusion Coefficient Estimation for Short Single-Particle Trajectories with Photoblinking” Southwest Regional ACS Meeting, Baton Rouge, La, Nov. 6, 2012. Host: Doug English

Invited Oral Presentation: “In Situ Measurement of Bovine Serum Albumin Interaction with Gold Nanospheres” Southwest Regional ACS Meeting, Baton Rouge, LA, Nov. 6, 2012. Host: Ken Knappenberger.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Southern Biomedical Engineering Conference, Houston, TX May 5, 2012. Host: Michael Diehl.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” University of Wisconsin Chemistry Departmental Seminar, Madison, WI, Apr. 24, 2012. Hosts: Randall Goldsmith and Arun Yethiraj.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Georgia Institute of Technology Chemistry Departmental Seminar, Atlanta, GA, Apr. 17, 2012. Host: Christine Payne.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Emory University Chemistry Departmental Seminar, Atlanta, GA, Apr. 16, 2012. Host: Tim Lian.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” Frontiers of Plasmonics II, Chengdu, China, Apr. 8-12, 2012. Host: Hongxing Xu.

Invited Oral Presentation: “When Complexity Meets Function: Enhanced Analysis of Noisy Single Molecule Data” ACS Spring 2012 National Meeting, San Diego, CA Mar. 25, 2012. Hosts: Jianshu Cao and Rob Dickson.

Invited Oral Presentation: “When Complexity Meets Function: Enhanced Analysis of Noisy Single Molecule Data” Trinity University Chemistry Departmental Seminar, San Antonio, TX, Feb. 9, 2012. Host: Bert Chandler.

Invited Oral Presentation: “When Complexity Meets Function: Enhanced Analysis of Noisy Single Molecule Data” Physics of Quantum Electronics 2012, Snowbird, UT Jan. 3, 2012. Host: Peter Nordlander.

Invited Oral Presentation: “In Search of Concurrence between Biological and Synthetic Single Molecule Structure/Function” 1<sup>st</sup> Joint Meeting of Women Chemists from the United States and China, Beijing, China, Oct. 25, 2011. Host: Geri Richmond.

Invited Oral Presentation: “Wavelet shrinkage to resolve single molecule FRET structural landscape of the isolated ligand binding domain of the AMPA receptor”, ACS Fall National Meeting, Denver, CO August 29, 2011. Host: Geri Richmond.

Invited Oral Presentation: “Transient 3D Transport in Ordered Polyelectrolyte Membranes”, ACS Fall National Meeting, Denver, CO August 29, 2011. Host: Christine Payne.

Invited Oral Presentation: “In Search of Concurrence Between Biological and Synthetic Single Molecule Structure/Function”, University of New Mexico Chemistry Departmental Seminar, Albuquerque, NM, April 15, 2011. Host: John Grey.

Invited Oral Presentation: “Dynamic Heterogeneity and Function”, Physical Chemistry Group Meeting, Johannes Gutenberg University Mainz, Mainz, Germany, January 10, 2011. Host: Carsten Soennichsen.

Invited Oral Presentation: “When ~~Structure~~ Complexity Meets Function: Enhanced Analysis of Noisy Single Aptamer Data” ACS National Meeting, San Francisco, CA Mar. 22, 2010. Host: Clemens Burda.

Invited Oral Presentation: “Single Molecule Biophysical Chemistry” Austin College Chemistry Departmental Seminar, Sherman, TX, Feb. 10, 2010. Host: Karla McCain.

Invited Oral Presentation: “In search of concurrence between biological and synthetic single molecule structure and function” Texas A&M Chemistry Departmental Seminar, College Station, TX, Nov. 24, 2009. Hosts: Paul Cremer and James Batteas.

Invited Oral Presentation: “Weak-binding aptamers: the role of structural dynamics in inhibitor functionality” NCTU-NAIST Workshop on Molecular/Nano Science, Hsinchu, Taiwan, Nov. 13, 2009. Host: Hiroshi Masuhara.

Invited Oral Presentation: “Dynamic Complexity Meets Functionality” Nanobiology Training Program Summer Symposium, Houston, TX July 10, 2009.



Invited Oral Presentation: "Dynamic Complexity Meets Functionality" Chemical Dynamics in Complex Environments, Telluride, CO, June 22-26, 2009. Hosts: Rigoberto Hernandez and Ward Thompson.

Invited Oral Presentation: "Signal Transduction in Single Molecules: How Can Biology Inform Materials Design?" University of Arkansas Departmental Seminar, Houston, TX December 4, 2008. Host: Colin Heyes.

Invited Oral Presentation: "Signal Transduction in Single Molecules: How Can Biology Inform Materials Design?" Rice University Departmental Seminar, Houston, TX October 17, 2008. Host: Seiichi Matsuda.

Invited Oral Presentation: "Signal Transduction in Single Molecules: How Can Biology Inform Materials Design?", C. Landes, Baylor University Chemistry Departmental Seminar, Waco, TX, October 10, 2008.

Invited Oral Presentation: "Single-Molecule Dynamics of a DNA Aptamer Targeting VEGF Protein", C. Landes, American Physical Society Annual Meeting, New Orleans, LA, March 13, 2008.

Invited Oral Presentation: "Nucleic Acid Structural Dynamics" C. Landes, University of Houston Department of Biology and Biochemistry Departmental Seminar, Houston, TX, Oct. 31, 2007.

Invited Oral Presentation: "Nucleic Acid Structural Dynamics" C. Landes, Mary Baldwin College Department of Chemistry Departmental Seminar, Staunton, VA, Oct. 9, 2007.

Invited Oral Presentation: "Modern Biophysics Research: Choices for Undergraduate and Graduate School" C. Landes, Central Shenandoah Valley Governor's School Biophysics Class Guest Lecturer, Fishersville, VA, Oct. 10, 2007.

Invited Oral Presentation: "Single-Molecule Biophysics: Understanding Complexity in Disease-Related Biological Processes" C. Landes, James Madison University Department of Chemistry and Biochemistry Departmental Seminar, Harrisonburg, VA, Oct. 5, 2007.

Invited Oral Presentation: "Single Molecule Studies of NC-Chaperoned HIV-1 TAR DNA:DNA Annealing" C. Landes, H.W. Liu, Y.N. Zeng, G. Cosa, K. Musier-Forsyth, P.F. Barbara, 5<sup>th</sup> International Retroviral NC Symposium, Montreal, Canada, Sept. 18-20, 2005.

Invited Oral Presentation: "Single-Molecule Spectroscopic Studies on the Minus-Strand Transfer Step in HIV-1" C. Landes, H.W. Liu, Y.N. Zeng, G. Cosa, K. Musier-Forsyth, P. F. Barbara, George Mason University Chemistry Departmental Seminar, April 28, 2005.

Invited Oral Presentation: “The Effects of Surface Interactions on the Opto-Electronic Properties of CdSe Nanoparticles” C. Landes, M.A. El-Sayed, SACNAS Annual Meeting, Austin, TX, October 22, 2004.

Invited Oral Presentation: “Single Molecule Techniques to Study the Nucleocapsid Protein Chaperoned Minus Strand Transfer Step in the Reverse Transcription of HIV-1” C. Landes, Nucleocapsid Protein Mini-Symposium, University of Minnesota, October 8, 2004.

Invited Oral Presentation: “The Effects of Surface Interactions on the Opto-Electronic Properties of CdSe Nanoparticles” C. Landes, M.A. El-Sayed, Chemistry Department Seminar, Xiamen University, in conjunction with the International Symposium on Physical Chemistry of Surface Nanostructures and Related Nanomaterials, Xiamen, China, Oct. 18-21, 2003.

Invited Oral Presentation: “Spectroscopic Investigations of Interfacial Processes in Tribology: Coupling Experiment and Theory” G. Richmond, C. Landes 2003 DARPA/AFOSR/ONR Tribology Program Review, Annapolis, MD Aug. 13-14, 2003.

Invited Oral Presentation: “Inducing Phase Changes in Small CdSe Nanocrystals as a Result of Surface Adsorption” C. Landes *Symposium in Honor of Professor Mostafa El-Sayed* Universite Pierre & Marie Curie, Paris France, Sept. 23, 2002.

## **Service**

### Professional Editorial Service:

- Editorial Committee Member: *Annual Review of Physical Chemistry*. January 2017 – December 2021.
- Editorial Advisory Board Member: *ACS Nano*. January 2016 – present.
- Associate Editor: *Royal Society of Chemistry Advances*. November 2015 – October 2016.
- Editorial Advisory Board Member: *Royal Society Advances*. March 2014 – June 2015.
- Guest Editor: *Journal of Physical Chemistry B*, Special Issue Honoring Mostafa El-Sayed (Dec. 11, 2014).
- Guest Editor: *Accounts of Chemical Research*, Special Issue Honoring Paul Barbara (Nov. 20, 2012).

### Other Professional Service:

- Member: Defense Science Study Group. 2016-2018.
- Organizer: ACS National Meeting Physical Chemistry Symposium. Spring 2018.
- Awards Committee: ACS National Award Selection Committee. 2019-2021.
- Awards Committee: ACS Physical Chemistry Division, 2017.
- Awards Committee: Journal of Physical Chemistry, 2017.
- Chair: Biophysical Subdivision of the Division of Physical Chemistry, American Chemical Society. 2017-2018.

- Chair-Elect: Biophysical Subdivision of the Division of Physical Chemistry, American Chemical Society. 2016-2017.
- Co-Chair: 94<sup>th</sup> ACS Colloids and Surface Science Symposium at Rice University in Houston. June 7-10, 2020.
- Organizer: ACS National Meeting Physical Chemistry Symposium. March 13-17, 2016.
- Organizer: Rice Workshop on Light-Driven Processes in Bio-Inspired Materials. Dec. 14-16, 2014.
- Organizer: ACS National Meeting Physical Chemistry Symposium. August 28-September 1, 2011.
- Organizer: ACS Southwest Regional Meeting Physical Chemistry Symposium. November 9-12, 2011.
- Organizer: ACS National Meeting Physical Chemistry Symposium. March 21-25, 2010.
- Session Chair: APS National Meeting. March 13, 2008.
- Organizer: 11<sup>th</sup> Annual Workshop for the Consortium of Nanostructured Materials, Oct. 17-18, 2002, Atlanta, GA
- Reviewer: *Nature*, *Nature Nanotechnology*, *Nature Chemical Biology*, *Journal of the American Chemical Society*, *Proceedings of the National Academy of Sciences*, *Accounts of Chemical Research*, *ACS Nano*, *Nanoletters*, *Journal of Physical Chemistry*, *Journal of Chemical Physics*, *Chemical Physics Physical Chemistry*, *Biophysical Chemistry*, *Journal of Colloid and Interface Science*, *Langmuir*, *Analytical Chemistry*, *Nucleic Acids Research*, *Proteins: Structure, Function and Bioinformatics*, *Angewandte Chemie*.
- Foreign expert reviewer: JST (Japan Science and Technology Agency) PRESTO project reviewer, Oct. 24-25, 2014.
- Ad-hoc Panelist: NIH Nanotechnology Study Section, June 2-3, 2016.
- Panelist: National Science Foundation Chemical and Biological Engineering Separations CAREER Panel, Oct. 7, 2013. (delayed due to furlough)
- Ad-hoc Panelist: NIH NIDA CEBRA Panel, November 29, 2012.
- Panelist: National Science Foundation Chemical and Biological Engineering Separations Panel. December 5-6, 2011.
- Panelist: National Science Foundation, Chemistry Division, Experimental Physical Chemistry Panel. April 6-7, 2009.
- Ad-hoc reviewer: Department of Energy.
- Ad-hoc reviewer: National Science Foundation Chemistry Division.

University:

- Chair: University Committee on Research, 2015-2017.
- Advisory Board of the Smalley-Curl Institute (SCI), 2015-present.
- University Committee on Research, 2014-2017.
- Applied Physics Graduate Admissions Committee, 2010-present.
- Shared Equipment Authority Faculty Board, 2011-present.
- Rice Quantum Institute Summer REU mentor, 2010-present.

College System:

- Faculty Associate: Wiess College, 2009-present.
- New Student Mentor: Wiess College, 2014-2015.
- Division Adviser: Wiess College, 2010-2014.

Department:

- Chair: Awards Committee, 2017-present.
- Chair: External Review Committee, 2016.
- Chair: Alumni Committee, 2013-present.
- Undergraduate Curriculum Committee, 2009-2016.
- Major Track Adviser (Med Chem), 2010-2014.
- Graduate Admissions Committee, 2009-2015.
- Graduate Recruiting Committee, 2009-2015.
- Awards Committee, 2011-2012.

Outreach or Community Service:

- Creator: MATLAB intro course. Available at [lrg.rice.edu](http://lrg.rice.edu).
- Mentor: Rice Triad Program for Tenure-Track Faculty, Fall 2015-present.
- Speaker: Rice Science Café, Black Labrador Pub, Houston, TX, Dec. 2, 2014.
- Speaker: Project Grad Summer Program for High School Students (2009-present).
- Faculty Mentor: COACH (Committee on the Advancement of Women Chemists) 2013: Casablanca, Morocco and Indianapolis, IN USA; 2012: Beijing, China. Host: Prof. Geraldine Richmond.
- Speaker at Primarily Undergraduate Institutions (PUIs): Whitman College (2015); Trinity University (2012); Austin College (2010); James Madison University (2007); Mary Baldwin College (2007); George Mason University (2005).
- High School Outreach: Presentation at Central Shenandoah Valley Governor's School for the Gifted (2007)
- Mentor: Texas Academy of Math and Science Summer Research. Andrea Wheat (co-author on 2008 JPCB paper), 2007.

**Courses Taught**

- Spring 2018: Chem 559 Spectroscopy at the Single Molecule/Particle Limit
- Fall 2017: Chem 367 Materials Chemistry Laboratory
- Fall 2017: Chem 600 Graduate Seminar
- Spring 2017: Chem 559 Spectroscopy at the Single Molecule/Particle Limit
- Spring 2016: Chem 559 Spectroscopy at the Single Molecule/Particle Limit
- Fall 2015: Chem 151 Honors Chemistry
- Spring 2015: Chem 391, 491, 493 Undergraduate Research
- Spring 2015: Chem 600 Graduate Seminar
- Fall 2014: Chem 220 Undergraduate Seminar
- Fall 2014: Chem 151 Honors Chemistry
- Spring 2014: Chem 559 Spectroscopy at the Single Molecule/Particle Limit
- Fall 2013: Chem 151 Honors Chemistry

- Spring 2013: Chem 600 Graduate Seminar
- Fall 2012: Chem 121 General Chemistry
- Spring 2012: Chem 600 Graduate Seminar
- Fall 2011: Chem 121 General Chemistry
- Fall 2010: Chem 121 General Chemistry
- Fall 2009: Chem 310 Physical Chemistry Co-creator of new undergraduate chemistry course.
- Spring 2009: Chem 6314 Spectroscopy (University of Houston)
- Fall 2008: Chem 4373 Survey of Physical Chemistry (University of Houston)
- Spring 2008: Chem 4373 Survey of Physical Chemistry (University of Houston)
- Fall 2007: Chem 4373 Survey of Physical Chemistry (University of Houston)
- Spring 2007: Spectroscopy (University of Houston)
- Fall 2006: Chem 4373 Survey of Physical Chemistry (University of Houston)

### **Students Mentored**

#### Postdoctoral researchers:

- 1) Dr. Qusai Darugar (PhD, Georgia Tech). 2006 - 2008. Currently: Permanent Scientific Research Staff, Baker-Hughes.
- 2) Dr. Nitesh Poddar (PhD, Jamia Millia Islamia). 2009 - 2012. Currently: Assistant Professor of Biotechnology, IIET, Invertis University, Bareilly India.
- 3) Dr. Jixin Chen (PhD, TAMU). 2012 - 2014. Currently: Assistant Professor of Chemistry, Ohio University.
- 4) Dr. Swarnapali (Pali) Indrasekara (PhD, Rutgers). September 2014 – May 2016. Currently, postdoctoral research at Duke University. Starting Fall 2018: Assistant Professor, UNC Charlotte.
- 5) Dr. Hao Chen (PhD, Cornell). August 2014 – August 2018. Starting Fall 2018: Assistant Professor of Chemistry, Kent State University.
- 6) Dr. Sean Collins, Carl and Lillian Illig Postdoctoral Fellow (PhD, Melbourne). January 2017 – present.
- 7) Dr. Chayan Dutta (PhD, USC). January 2018 – present.

#### PhD students:

- 1) Dr. Carmen Reznik, Chemistry. 2006 - 2011. PhD January 2011. Margrave Thesis Award. Currently: Permanent Scientific Research Staff, Shell.
- 2) Dr. Charlisa Daniels, Chemistry. 2007 - 2012. PhD April 2012. Currently: Assistant Professor of Chemistry, Northern Kentucky University.
- 3) Dr. Nick Taylor, Chemistry. 2006 - 2012. PhD May 2012. Currently: Specially Appointed Assistant Professor, Hokkaido University.
- 4) Dr. Lydia Kisley, Chemistry. 2010 - 2015. PhD May 2015. Margrave Thesis Award. NSF Graduate Fellowship; NRC Postdoctoral Fellowship (declined). Forbes 30 under 30

(Healthcare). Beckman Postdoctoral Fellow, UIUC. 2017-2019. Starting January 2019: Assistant Professor of Physics, Case Western Reserve University.

- 5) Dr. David Cooper, Chemistry. 2010 – 2015. PhD May 2015. Visiting Assistant Professor, Southwestern University, 2015-2018. Starting August 2018: Assistant Professor of Chemistry, Nevada State College.
- 6) Dr. Chad Byers, Applied Physics. 2012 – 2015. PhD December 2015. NSF Graduate Fellowship. Currently: Technical Research Staff, Intel.
- 7) Bo Shuang, Chemistry. 2011 – 2016. PhD May 2016. Margrave Thesis Award. Currently: Technical Research Staff, Dow Chemical Company.
- 8) Joey Tauzin, Chemistry. 2012 - 2016. PhD May 2016. Currently: Research Scientist, Rice University.
- 9) Ben Hoener, Chemistry. October 2013 – May 2018. Currently: Technical Research Staff, Intel.
- 10) Wenxiao Wang, Electrical and Computer Engineering. October 2013 - present.
- 11) Sudeshna Chatterjee, Chemistry. October 2014 - present.
- 12) Charlotte Flatebo, Applied Physics. October 2015 – present. NSF GRFP Honorable Mention. NDSEG Graduate Fellowship.
- 13) Nicholas Moringo, Chemistry. October 2015 – present. NSF Graduate Research Fellowship.
- 14) Rashad Baiyasi, Electrical and Computer Engineering. October 2015 – present. 2016 ECE Best Qualifying Exam Award.
- 15) Logan Bishop, Chemistry. October 2017 – present. NDSEG Graduate Fellowship Waitlist. NSF GRFP Fellowship.
- 16) Asastasiia Misiura, Chemistry. October 2018 – present.

Master's student:

- 1) Ferandre Salatan, Chemistry. 2009 - 2010. MS May 2010. Currently: Research Assistant, MD Anderson Cancer Center, Houston, TX.

Undergraduate students:

- 1) Hannah Kim, UH Bioengineering. January 2007 - August 2010. Graduated, BS Engineering 2011. Currently: Employed in industry.
- 2) Rosalie Berg, Rice Chemistry. January 2010 - May 2012. BS Chemistry 2012. Currently: Process Technologist, KiOR, Inc.
- 3) Matthew Diasio, Rice Physics. January 2010 - May 2012. BS Chemistry 2012. Currently: Graduate student at UVa.
- 4) Kerry Wang, Rice Chemical Engineering. January 2010 - May 2012. Currently: Graduate student at UMn.

- 5) Albert Riedel Mishaan, Rice Materials Science. January 2011 - May 2012.
- 6) Heui Uhm, Rice Chemistry. January 2011 - August 2012. Currently: Undergraduate at Rice.
- 7) Julia Zhao, Rice Chemistry. May 2012 - Spring 2013. Currently: NSF Graduate Fellow at MIT.
- 8) Andrea Mansur, Rice Chemistry. January 2012 - Spring 2014. Currently: Laboratory technician at Shell.
- 9) Alberto Enriquez, Rice Chemistry. January 2013 - 2015. Currently: MD/PhD student: UT Southwestern.
- 10) Rachel Brunetti, Summer RQI Undergraduate Fellow. 2014. NSF GRFP Honorable Mention. Currently: PhD student at UCSF.
- 11) Margaret Roddy, Rice Chemical Engineering. June 2015 – May 2016. Currently: Goldman Sachs, Houston, TX.
- 12) Theresa Leibig, Rice Chemistry. January 2018-present.

**Funding**

(pending)

**Sponsor:** Department of Energy (BES)

Title: Mechanistic Investigations of Hot Carrier Induced Electrocatalysis by Single-Particle Spectroscopy

Duration: 06/15/2018-05/14/2021

Amount Requested: \$1,026,404, PI with co-PI Link

**Sponsor:** John S. Dunn Foundation Collaborative Research Award Program for the BioScience Research Collaborative (Preproposal)

Title: Understanding the Functions of Clathrin Mediated Endocytosis in Epithelial-to-Mesenchymal Transition during Lung Cancer Metastasis

Duration: 01/01/2019-12/31/2020

Amount Requested: \$98,000 (\$49,000 to CFL), co-PI with PI Kurie

(current)

**Sponsor:** The Robert A. Welch Foundation

Title: A Mechanistic Description of Chromatographic Separations from the Single Molecule Perspective

Duration: 06/01/2018-05/31/2021

Amount Requested: \$330,000, PI

**Sponsor:** National Science Foundation (CHEM)

Title: Instrument Development: 4-D Super Time Resolved Microscopy (4-D STREM) for Understanding Dynamics in Porous Materials

Duration: 07/01/2018-06/30/2021

Amount Requested: \$470,000 PI

(Past)

**Sponsor:** The Robert A. Welch Foundation Grant # C-1787

Title: Identifying Hidden Conformations in Multi-State Bio-Molecules

Duration: 06/01/2015-05/31/2018

Amount: \$195,000, PI

**Sponsor:** Department of Energy

Title: Single Particle Spectro-Electrochemistry of Individual Plasmonic Nanostructures

Duration: 09/15/2016-04/14/2018

Amount Requested: \$495,003, PI with co-PI Link

**Sponsor:** National Institutes of Health NIGMS

Title: Structure and Function of NMDA Receptors

Duration: 09/01/2015-08/30/2019



Amount: \$380,707 to Landes, (with PI Jayaraman)

**Sponsor:** National Science Foundation (CBET)

Title: Probing Dynamics and Structure of the Nanoparticle Protein Corona to Understand its Impacts on Environmental Health and Safety

Duration: 09/01/2014-08/31/2017

Amount: \$300,000 (with PI Link)

**Sponsor:** National Science Foundation (CHEM)

Title: CAREER: Transport in Supported Polyelectrolyte Brushes

Duration: 12/01/2011-11/30/2016

Amount: \$623,250 PI

**Sponsor:** ACS Petroleum Research Fund New Directions

Title: Spectro-electrochemical microscopy of single nanoparticle catalysts

Duration: 09/01/2014 – 08/31/2016

Amount: \$110,000, PI

**Sponsor:** IBB Hamill Innovations Grant Program

Title: Characterization of the Conformational Landscape of the NMDA Receptor by a Combined Theoretical/Experimental Approach

Duration: 01/01/2014-12/31/2014

Amount: \$10,000 (with PI Clementi)

**Sponsor:** Rice University Brasil@Rice

Title: Travel Grant

Duration: 05/01/2014-04/30/2015

Amount: \$5,000, PI

**Sponsor:** Rice University Faculty Initiative Fund

Title: Interfacial Dynamics Workshop

Duration: 09/01/2014 – 08/31/2015

Amount: \$5,000, PI

**Sponsor:** National Institutes of Health (NIGMS)

Title: Structure and Function of NMDA Receptors

Duration: 09/30/11-09/29/15

Amount: \$571,874 (\$296,000 to Landes, PI Jayaraman)

**Sponsor:** 3M

Title: Stationary Phase Tuning at ‘Super-Resolution’ for Separations

Duration: 08/01/2015 – 07/31/2016

Amount: \$100,000, PI

**Sponsor:** The Robert A. Welch Foundation

Title: Exploiting Molecular Fluorescence to Probe Local Chemical Dynamics

Duration: 06/01/12-05/31/15

Amount: \$180,000, PI

**Sponsor:** National Science Foundation (CBET)

Title: Collaborative Research: Ion-Exchange Adsorption of Proteins: A Single-molecule investigation

Duration: 09/01/11-08/31/14

Amount: \$408,122 (\$204,227 to Landes; PI Willson)

**Sponsor:** Dunn Foundation Event Award

Title: Workshop: Plasmon-hybrid Superstructures for Functionally Biomimetic Light-Driven Processes

Duration: 01/01/2014-12/31/2014

Amount: \$8,000 (PI: Landes, with Co-PI Link)

**Sponsor:** Rice University/Welch Foundation

Title: Norman Hackerman Welch Junior Investigator

Duration: 7/1/09-6/30/12

Amount: \$250,000, PI

**Sponsor:** Department of Energy

Title: From ultrafast electron transfer to single molecule spectroscopy: Forces driving contemporary themes in physical chemistry

Duration: 7/1/2011-6/30/12

Amount: \$8,000, PI

**Sponsor:** Welch Foundation

Title: Travel Support for a Workshop in Honor of Paul Barbara: From ultrafast electron transfer to single molecule spectroscopy: Forces driving contemporary themes in physical chemistry

Duration: 7/1/2011-6/30/2012

Amount: \$5,000, PI

**Sponsor:** John S. Dunn Gulf Coast Consortium for Chemical Genomics

Title: Selective agonists and antagonists for AMPA receptors

Duration: 10/01/10 – 09/30/11

Amount: \$100,000 (\$30,000 to Landes; PI Jayaraman)

**Sponsor:** ACS Petroleum Research Fund Doctoral New Investigator

Title: Transport in Supported Polyelectrolyte Membranes

Duration: 1/1/2010-12/31/2011

Amount: \$100,000, PI

### **Provisional Patent Applications**

- 1) 06/20/2013: Methods for Preventing Nanoparticle Aggregation under Harsh Environmental Conditions with a Protein Monolayer. Co-Inventor with: S. Dominquez-Medina, J. Blankenburg, J. Olson, S. Link.
- 2) 02/15/2013: Super-resolution Optical Genome Sensing and Sequencing. Co-Inventor with: J. Chen, L. Kisley, B. Shuang.
- 3) 01/18/2013: Parallel Fluorescence-Based Imaging Identification of Open Through-Silicon Via (TSV) Microelectrodes. Co-Inventor with G. Woods, C. Byers, J. Chen.
- 4) 10/06/2011: Apparatus for Generating Controlled Temperature Gradients on Glass Coverslips for use in Fluorescent Microscopy. Co-Inventor with: K. Wang.

### **Collaborators**

- 1) Stephan Link, Rice University
- 2) Tamiki Komatsuzaki, Hokkaido University
- 3) Rigoberto Advincula, Case Western Reserve University
- 4) Vasanthi Jayaraman, University of Texas Health Science Center at Houston
- 5) Richard Willson, University of Houston
- 6) David Vanden Bout, University of Texas at Austin
- 7) Peter Rosky, Rice University
- 8) Dimitri Makarov, University of Texas at Austin
- 9) Karin Musier-Forsyth, Ohio State University
- 10) Rob Gorelick, National Cancer Institute
- 11) Anatoly Kolomeisky, Rice University
- 12) Shimon Weiss, UCLA
- 13) Dan Higgins, Kansas State University
- 14) Paul Mulvaney, University of Melbourne
- 15) Kevin Kelly, Rice University
- 16) Naomi Halas, Rice University
- 17) Peter Nordlander, Rice University
- 18) Emilie Ringe, Rice University
- 19) Jacob Robinson, Rice University

### **Graduate and Postdoctoral Advisors**

- Graduate Advisor: Mostafa El-Sayed, Department of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA
- Postdoctoral Advisor: Geraldine Richmond, Department of Chemistry, University of Oregon, Eugene, OR
- Postdoctoral Advisor: Paul Barbara, Department of Chemistry and Biochemistry, University of Texas at Austin, Austin, TX