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Dr. Javier is a Technical Business Leader and Science, Engineering and Technology Analyst. He leads multidisciplinary teams in technology forecasting studies, and originates and leads the development of scientometric analysis software and services. He is also a subject matter expert in applied nanotechnology, quantum dot nanocomposites, laser spectroscopy, metamaterials, infrared materials and capacitors. He has an h-index of 7 and his publications on the physics of nanostructures have been cited more than 800 times.

Ph.D. Chemistry (2006) University of California at Santa Barbara Santa Barbara, California 93106

Dissertation: Electronic Spectroscopy and Energy Transfer in Quantum Dot Nanocomposites [20]
Advisor: G.F. Strouse

B.S. Chemistry (2000) University of La Verne 1950 3rd St., La Verne, California 91750

Summa Cum Laude, Honors in Chemistry

Sciligent, LLC 2050 Jamieson Ave Ste. 1410, Alexandria, Virginia 22314

Managing Director September 2013 – Present

- Dr. Javier founded this science support and analytical consulting company which specializes in applying scientometric methods to help the private and public sectors invest wisely in research and development. These services include R&D Portfolio Analysis, Technology Roadmapping, Technology Assessments, Workshop Planning, New Program Starts etc... Find out more at http://www.sciligent.com.
• Dr, Javier has experience with applying many popular analytical methods in scientometrics including: Co-Author Networks, Author Co-Citation (ACA) Networks, Latent Dirichlet Analysis (LDA), Technology Forecasting with Data Envelopment Analysis (TF-DEA), Diffusion og Innovations (DoI) Theory in Social Networks, Disruptive Innovation/Technology Theory
• Dr. Javier has also developed novel applications of analytical methods including: The Bass Model for Technology Diffusion, Statistical Common Author Networks (SCAN) [3] and Co-Affiliation Collaboration Networks.

Booz Allen Hamilton, Inc. 3811 N. Fairfax Drive Ste. 600, Arlington, Virginia 22203

Lead Associate July 2012 – August 2013

- Dr. Javier led the development of a cross-market functional service offering called Scientific Network Analysis (Sci-Net), an application of social network analysis to collaborative scientific networks for the purpose of science and technology analysis. He generated over \$2.0 million in revenue in the 3 years that he led the development of Sci-Net while providing this service to 11 separate agencies in the federal government and dozens of individual clients: IARPA, DARPA DSO&TTO, ARPA-E, ASD(R&E), OUSDI, ONR Code 30 & 33, AFRL RYD, NASA Marshall, DHS S&T, ARCIC, NSWC Dahlgren
• He has led teams of 3-12 people in performing several technology assessment and scouting studies that developed technology roadmaps and science and technology investment plans and participated in the development of several proposals and white papers on technology forecasting and is widely regarded as a published [1-3] expert in developing novel quantitative methods in science and technology analysis.

- Dr. Javier engaged in applications of **intrapreneurial management and business development** methods, especially in the development of Sci-Net. He implemented **Lean Principles** by combining **JIT/TPS/Kaizen methods** with **Agile Software Development** to drive the development of the Sci-Net software, which included several **agile sprints** and **strategic pivots** motivated by **cohort analysis**.

Associate July 2009 – July 2012

- Dr. Javier has served as a **Science and Engineering Technical Analyst (SETA)** to several Department of Defense Agencies, including the following agencies and their associated programs:
 - **Defense Advanced Research Project Agency (DARPA):** Integrated High Energy Density Capacitors (IHEDC), Control of Material Properties through Advanced StructureS (COMPASS), Hemispherical Array Detector and Imager (HARDI)
 - **Air Force Research Laboratory:** Applied RF and Optical Metamaterials
 - **Office of Naval Research:** Alternative Fuels, Solar Fuels
- **New Start Development:** Dr. Javier led the ideation and development of new programs within the Department of Defense, including the identification of emerging areas of scientific research, the creative development of **novel defense application** ideas for these new emerging areas, the preparation of **presentation materials** to promote the program, the due **scientific due diligence** to model and calculate the feasibility of the program’s metrics, the development of solutions to the **Heilmeier Catechism**, the identification of **potential performers** for the program, and **drafting the program solicitation BAA**.
- **Technical Program Management:** Dr. Javier tracked the programs he managed by **organizing and leading monthly teleconferences with contract performers**, traveling to and attending **kickoff meetings, in-person reviews, close-out meetings and site visits**, providing technical commentary based on **analysis of proposals and white papers**, and developing **written reports** including program closeout reports.
- **Job Manager:** Dr. Javier produced and maintained **spend plans** and budgets, produced monthly and administrative **financial reports**, managed the labor and travel activities of 3-12 people on several contracts, and successfully planned and executed the spending of short-term transactional contracts up to \$350k to within a few dollars of the budget.

Senior Consultant July 2008 – July 2009

U.S. Naval Research Laboratory4555 Overlook Ave., SW Washington, DC 20375

Postdoctoral Research Associate October 2006 – July 2008

Dr. Javier developed an unconventional technique for using an off-the-shelf handheld airbrush to spray-deposit a custom formulation of photovoltaic paint based on semiconductor nanorods [5]. He showed this method produced nanometer-thin, uniform films that functioned successfully as photovoltaic cells to provide on-demand, portable solar power for the warfighter [19]. He designed, built and programmed a low-cost white LED-based photoconductivity instrument. He developed methods for the statistical deposition of nanometals onto metallic thin films for surface plasmon polariton (SPP) coupling in integrated nanoplasmonic lasers. He performed resistivity measurements of nanosheet materials [4].

Florida State UniversityDept. of Chemistry, Tallahassee, Florida 32306

Adjunct ProfessorMay 2005 – August 2006

Dr. Javier taught large (200+ person lower division) and small (<10 upper division) undergraduate courses for majors and non-majors in introductory chemistry and advanced analytical instrumentation. He managed several teaching assistants and coordinated laboratory sessions. He drafted original tests, quizzes and lesson plans.

University of California at Santa BarbaraDept. of Chemistry, Santa Barbara, California 93106

Research Assistant June 2000 – June 2004

Dr. Javier performed directed assembly of optical nanomaterials to show how carefully engineered control of resonance effects induces ultrafast energy transfer in nanocomposite materials composed of semiconductor quantum dots coupled to either metal nanocrystals [12] or conjugated polymers [13](*cited 30+ times*). His time-resolved photoluminescence

measurements produced one of the first observations of the surface-trapped charged exciton in CdSe quantum dots [10](cited 35+ times). He used laser μ -photoluminescence to reveal the intensity-dependent relationship of blinking and photo-brightening in small clusters of quantum dots [8]. He showed how photothermal melting of dilute, quantum dot-doped thin polymer films can enhance energy transfer through resonant coupling [6, 9] and demonstrated its use for all-optical write-once-read-many (WORM) memory. He modeled quantum-dot nanocomposite systems, including *ab initio*, multi-dimensional fitting, and Monte Carlo methods. He formulated the theory for Nanometal Surface Energy Transfer (NSET) which describes how DNA/nanometal-based bioconjugates achieve unprecedented long-distance measurements as optical rulers [7] (cited 130+ times). He synthesized noble metal and alloy nanocrystals (Ag, Au, Ag/Au) and helped pioneer the very popular cluster-growth method for colloidal quantum dot synthesis [11](cited 200+ times).

The Johns Hopkins Medical School Gastroenterology Dept., Baltimore, Maryland 21205
MSIP Research Fellow June 1999 – August 1999

Dr. Javier developed anti-sense RNA techniques to inhibit long-term potentiation of Ca^{2+} ion channels in immortalized rat bone cells. He trained in mammalian tissue culture techniques, laser confocal imaging and fluorescence image analysis and processing.

Cornell University Cornell Center for Materials Research, Ithaca, New York 14853
CCMR-REU Research Fellow June 1998 – August 1998

Dr. Javier synthesized water-soluble, ethylene glycol-based fourth generation dendritic star polymers and characterized them with gel permeation chromatography and differential scanning calorimetry.

Awards & Honors

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- Team and Performance Awards (2010-2013) Booz Allen Hamilton
 - Science and Engineering Ideasfest Winner (2010) Booz Allen Hamilton
 - Naval Research Laboratory Postdoctoral Fellowship (2006-2008) American Society for Engineering Education
 - Graduate Research Mentorship Program (GRMP) Fellowship (2004) University of California at Santa Barbara
 - Summa Cum Laude*, Honors in Chemistry (2000) University of La Verne
 - Minority Scientist Internship Program (MSIP) Fellowship (1999) The Johns Hopkins Medical School
 - Research Experience for Undergraduates (CCMR-REU) Fellowship (1998) Cornell Center for Materials Research
 - Various merit-based, “full-ride” undergraduate scholarships (1997-2000) University of La Verne

Other Professional Activities

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- Dr. Javier serves as a reviewer and referee for the *Journal of the American Society for Information Science and Technology (JASIST)* in the area of **scientometrics**
 - Dr. Javier serves on the advisory board of **Innocation**, a small non-profit startup in Washington, DC

Peer-Reviewed Publications

[1] H. Jayaram, M. Flories, F.G. Serpa, and A. Javier. "Statistically-Derived Generative Models of Dynamic Scientific Collaboration Networks". *manuscript in preparation*, 2013.

[2] J. Durante, J.T. Whitehouse, and A. Javier. "Correlation of Newick Tree Distance and Conditioned Key Term Probabilities in Scientific Collaboration Networks". *manuscript in preparation*, 2013.

[3] F.G. Serpa, A.M. Graves, and A. Javier. "Statistical Common Author Networks". *Journal of the American Society of Information Science and Technology*, 64:2507–2512, 2013. URL: <http://onlinelibrary.wiley.com/doi/10.1002/asi.22956/abstract#!>

- [4] R.A. Quinlan, A. Javier, E.E. Foos, L. Buckley, M. Zhu, K. Hou, E. Widenkvist, M. Drees, U. Jansson, and B.C. Holloway. "Transfer of carbon nanosheet films to nongrowth, zero thermal budget substrates". *Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures*, 29:030602, 2011. URL: <http://dx.doi.org/10.1116/1.3574524>.
- [5] A. Javier and E.E. Foos. "Nanocrystal photovoltaic paint sprayed with a handheld airbrush". *IEEE Transactions on Nanotechnology*, 8(5):569–73, September 2009. URL: <http://dx.doi.org/10.1109/TNANO.2009.2020796>.
- [6] A. Javier, R.W. Meulenberg, C. Steven Yun, and G.F. Strouse. "Photothermal melting and energy migration in conjugated oligomer films doped with CdSe quantum dots". *Journal of Physical Chemistry B*, 109(15):6999–7006, 21 April 2005. URL: <http://pubs.acs.org/doi/abs/10.1021/jp044303h>.
- [7] CS Yun, A. Javier, T. Jennings, M. Fisher, S. Hira, S. Peterson, B. Hopkins, NO Reich, and GF Strouse. "Nanometal surface energy transfer in optical rulers, breaking the FRET barrier". *Journal of the American Chemical Society*, 127(9):3115–3119, 2005. URL: <http://pubs.acs.org/doi/abs/10.1021/ja043940i>.
- [8] A. Javier and G.F. Strouse. "Activated and intermittent photoluminescence in thin CdSe quantum dot films". *Chemical Physics Letters*, 391(1-3):60–3, 11 June 2004. URL: <http://www.sciencedirect.com/science/article/pii/S0009261404006475>.
- [9] A. Javier, C.S. Yun, and G.F. Strouse. "Quantum dot-organic oligomer nanostructures: electronic excitation migration and optical memory design". In O.D. Velev, T.J. Bunning, Y. Xia, and P. Yang, editors, *Unconventional Approaches to Nanostructures with Applications in Electronics, Photonics, Information Storage and Sensing Symposium (Mater. Res. Soc. Symposium Proceedings Vol.776)*, pages 17–22, 2003 2003. URL: http://72.22.18.215/s_mrs/sec_subscribe.asp?CID=2606&DID=179601&action=detail.
- [10] A. Javier, D. Magana, T. Jennings, and G.F. Strouse. "Nanosecond exciton recombination dynamics in colloidal CdSe quantum dots under ambient conditions". *Applied Physics Letters*, 83(7):1423–5, 18 August 2003. URL: http://apl.aip.org/resource/1/applab/v83/i7/p1423_s1.
- [11] S.L. Cumberland, K.M. Hanif, A. Javier, G.A. Khitrov, G.F. Strouse, S.M. Woessner, and C.S. Yun. "Inorganic clusters as single-source precursors for preparation of CdSe, ZnSe, and CdSe/ZnS nanomaterials". *Chemistry of Materials*, 14(4):1576–84, April 2002. URL: <http://pubs.acs.org/doi/abs/10.1021/cm010709k>.
- [12] S.L. Cumberland, M.G. Berrettini, A. Javier, and G.F. Strouse. "Synthesis and characterization of a 1:6 Au-CdSe nanocomposite". *Chemistry of Materials*, 15(5):1047–56, March 2003. URL: <http://pubs.acs.org/doi/abs/10.1021/cm010588o>.
- [13] A. Javier, C.S. Yun, J. Sorena, and G.F. Strouse. "Energy transport in CdSe nanocrystals assembled with molecular wires". *Journal of Physical Chemistry B*, 107(2):435–42, 16 January 2003. URL: <http://pubs.acs.org/doi/abs/10.1021/jp0263774>.

Conference Presentations & Posters

- [14] A. Javier and E.E. Foos. "Nanocrystal Photovoltaic Paint Sprayed with a Handheld Airbrush". In *Materials Research Society Conference: (H13.13) Session H*, 2007.
- [15] A. Javier and G. Strouse. "Excitation-power dependent photo-induced luminescence activation and intermittency in dilute quantum dot thin films". In *American Physical Society Conference, Abstract Number 22030, Section G16*, volume 1, page 16008, 2003. URL: <http://adsabs.harvard.edu/abs/2003APS..MARG16008J>.
- [16] Artjay Javier. "Quantum Dot-Organic Oligomer Nanostructures: Electronic Excitation Migration and Optical Memory Design". In O.D. Velev, editor, *Unconventional approaches to nanostructures with applications in electronics, photonics, information storage and sensing: symposium held April 21-25, 2003, San Francisco, California, USA*. Materials Research Society, 2003. Materials Research Society Conference, San Francisco CA, 2003, (Q2.1) Session Q2. URL: http://72.22.18.215/s_mrs/sec_subscribe.asp?CID=2606&DID=179601&action=detail.
- [17] A. Javier and G.F. Strouse. "Brightening and Blinking in Dilute Thin Films of CdSe Quantum Dots". In *Southern California Inorganic Photochemistry Conference*, 2002.

- [18] A. Javier and G.F. Strouse. "Energy transfer in Assemblies of CdSe-oligo-(p-phenylethynylene-dibenzylthiol) Composites". In *Southern California Inorganic Photochemistry Conference*, 2001.

Other Publications

- [19] A. Javier E. E. Foos and L. J. Buckley. "Development of Inorganic Photovoltaic Paints for Covert Power Sources". Technical report, Naval Research Laboratory, 5 March 2008. NRL/MR/6120-08-9113.
- [20] Artjay Javier. "*Electronic spectroscopy and energy transfer in cadmium selenide quantum dots and conjugated oligomers*". PhD thesis, University of California, Santa Barbara, 2006. URL: <http://books.google.com/books?hl=en&lr=&id=572WgmPVTW0C&oi=fnd&pg=PR14&ots=YKMMUxNU5b&sig=dtu32-WZEU1bNz67tAfzVdqIn0Y>.