

# Daniel Soto

Department of Environmental Science and Planning  
Rachel Carson Hall 12  
Sonoma State University  
1801 E. Cotati Avenue  
Rohnert Park, CA 94928

17 Webster St.  
Petaluma, CA 94952

Tel: 415 235 9548  
<http://www.danielrsoto.com>

Email: [sotod@sonoma.edu](mailto:sotod@sonoma.edu)

## Education

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2010	Stanford University	Ph.D. Applied Physics
2004	San Francisco State University	M.S. Physics
1994	Stanford University	B.S. Electrical Engineering

## Professional Appointments

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2013 – Assistant Professor, Department of Environmental Science and Planning, Sonoma State University

2010 – 2012 Earth Institute Postdoctoral Fellow, Columbia University  
Designed, debugged, and deployed autonomous systems to deliver pre-paid solar energy to customers in remote African areas. Systems used GSM networks and internet servers to relay and store information on power consumption and purchases. Performed data analysis and visualization using Python and PostgreSQL to characterize consumer behavior patterns. Modeled cost impacts of time of day load profiles on generation and storage needs.

2009 MAP Sustainable Energy Fellow, FEDETA (Ecuadorian Foundation for Appropriate Technology)  
Determined suitability of rural communities for grid or hydro electricity services. Used surveys and GPS to gather information on communities. Wrote project and funding proposals to Ecuadorian and international funding sources.

2005 – 2010 Research Assistant, Stanford University  
Built test apparatus for biological force measurement with piezoresistive cantilevers. Fabricated dual-axis piezoresistive cantilevers for microNewton force measurements. Fabricated and tested micron-scale fibrillar adhesive structures. Created Python GUI application for automated and manual data analysis.

2000 – 2002 Senior Optical Engineer, Glimmerglass Networks  
Performed interferometric measurements of fiber array assemblies. Aligned micro-optics and MEMS mirrors in prototype devices. Performed modeling and characterization of fiber arrays and micro-lens arrays. Directed project to automate alignment of lens and fiber arrays.

1994 – 2000 Optical Engineer, Silicon Light Machines  
Performed process development, design, layout and fabrication of deformable diffraction gratings. Fabricated these devices at the Stanford Nanofabrication Facility. Integrated, characterized, and

demonstrated laser projection display systems. Characterized optical elements for use in the projection systems. Developed tests on non-linear crystals for high power visible light generation.

## Publications

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**D. Soto**, V. Modi, “Simulations of Efficiency Improvements Using Measured Microgrid Data” *IEEE Global Humanitarian Technology Conference*, (GHTC2012)

J. Rosa, A. Madduri, **D. Soto**, “Efficient Microgrid Management System for Electricity Distribution in Emerging Regions” *IEEE Global Humanitarian Technology Conference*, (GHTC2012)

**D. Soto**, M. Basinger, S. Rodriguez, E. Adkins, R. Menon, I. Willig, N. Owczarek, V. Modi, “A Prepaid Architecture for Solar Electricity Delivery In Rural Areas” *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*, (ICTD2012) (doi:10.1145/2160673.2160691)

M. Basinger, **D. Soto**, E. Adkins, R. Menon, I. Willig, V. Modi, “SharedSolar: a Last-Mile Technology for Pre-paid Electrification via Mobile Telephony” *17th Annual International Sustainable Development Research Conference*, (ISDR Society, New York, New York, 2011)

G. Hill, **D. Soto**, A. Peattie, R.J. Full, T. Kenny, “Orientation angle and the adhesion of single gecko setae”, *Journal of the Royal Society Interface*, (doi:10.1098/rsif.2010.0720)

**D. Soto**, G. Hill, A. Parness, N. Esparza, M. Cutkosky, T. Kenny, “Effect of fibril shape on adhesive properties” *Applied Physics Letters*, 97, 053701 (2010) (doi:10.1063/1.3464553)

A. Parness, **D. Soto**, N. Esparza, M. Wilkinson, N. Gravish, K. Autumn, M. Cutkosky, “A micro-fabricated wedge-shaped adhesive array displaying gecko-like dynamic adhesion, directionality and long lifetime”, *Journal of the Royal Society Interface*, 6(41):1223-1232 (doi:10.1098/rsif.20090048)

A. Asbeck, S. Dastoor, A. Parness, L. Fullerton, N. Esparza, **D. Soto**, B. Heyneman, M. Cutkosky, “Climbing rough vertical surfaces with hierarchical directional adhesion”, *International Conference on Robotics and Automation*, (IEEE, Kobe, Japan, 2009)

G. Hill, **D. Soto**, J.E. Oliver, T.W. Kenny, “Characterization of dual-axis piezoresistive MEMS force sensors”, *Solid-State Sensors, Actuators, and Microsystems Workshop*, (Transducers Federation, Hilton Head Island, South Carolina, 2008)

G. Hill, **D. Soto**, S. Lu, A. Peattie, R. Full, and T.W. Kenny, “Investigating the role of orientation angle on gecko setae adhesion using a dual-axis MEMS force sensor”, *International Conference on Solid-State Sensors, Actuators and Microsystems*, (Transducers Federation, Lyon, France, 2007) pp. 2263-2266.

N. Gravish, M. Wilkinson, S. Sponberg, A. Parness, N. Esparza, **D. Soto**, T. Yamaguchi, M. Broide, M. Cutkosky, C. Creton, and K. Autumn, “Rate dependent frictional adhesion in natural and synthetic gecko setae”, *Journal of the Royal Society Interface*, (doi:10.1098/rsif.2009.0133)

**D. Soto**, A. Parness, N. Esparza, T. Kenny, K. Autumn, M. Cutkosky, “Microfabricated Dry Adhesive Displaying Frictional Adhesion” *Solid-State Sensors, Actuators, and Microsystems Workshop*,

(Transducers Federation, Hilton Head Island, South Carolina, 2006)

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## Honors

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2010	Earth Institute Postdoctoral Fellow, Columbia University
2009	MAP Sustainable Energy Fellow, Stanford University
2008	DARE Fellowship, Stanford University
2007	Outstanding Graduate Student Mentor, Stanford University
2005	Humanities and Sciences Fellowship, Stanford University
2004	Outstanding Graduate Student, San Francisco State University
2003	MBRS - RISE Fellowship, San Francisco State University
2003	Distinguished Achievement Award for Academic Excellence, San Francisco State University
2003	University Foundation Scholarship, San Francisco State University

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## Invited Talks

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2011	“Investigación y Desarrollo de Dataloggers Remoto (Remote Data Collection)” Simposio Internacional de Energía Eólica de Pequeña Escala, Lima, Peru
2009	“Synthetic Biomimetic Gecko Adhesives”, Santa Clara University
2006	“Gecko Adhesion”, Latino Preparatory College Academy

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## Teaching Experience

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2012	Guest Lecturer, Environmental Science for Sustainable Development, SDEV 6240, Columbia University
2012	Project Mentor, Electrical Engineering Capstone Project Class, Columbia University
2011	Guest Lecturer, Energy Infrastructure Planning, MECH E4210, Columbia University
2002 – 2009	Private Tutor, Stanford and SFSU
2002 – 2004	Laboratory Instructor, Physics Mechanics Lab, San Francisco State University
1990 – 1992	Undergraduate Tutor, Stanford University Center for Teaching and Learning

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## University Service

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2005 – 2010	Graduate Student Council Diversity Advocacy Committee, Stanford University
2005 – 2006	Undergraduate Mentor, Partners for Academic Excellence, Stanford University
2004	Dispute Arbitration Committee, San Francisco State University Outreach and Community Service

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## Outreach and Community Service

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2011 – 2012 Independent Research Mentor, Spence High School  
2011 – 2012 Abstract Reviewer, Society for the Advancement of Chicanos and Native Americans  
in Science  
2005 – 2010 Mentor, Stanford Society of Chicano Latino Engineers at Stanford  
2007 – 2008 Adult Literacy Tutor, Project Read  
2006 – 2007 Science Fair Judge, Latino College Preparatory Academy  
2006 Science Fair Judge, Gunn High School  
2005 Instructor, Science Bus, East Palo Alto Charter School