# ANTONIA V. HERZOG

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## INTERESTS

National and international energy policy to promote sustainable development; environmental, economic, and social impacts of global energy use; appropriate clean energy technology development and deployment worldwide; climate change policy including U.S. greenhouse gas reductions and the effective use of the clean development mechanism to foster sustainable development, geographic interest Sub-Saharan Africa.

## EDUCATION

**Ph.D., Physics** December 1996
*University of California, San Diego, La Jolla, CA*
Advisor: Professor Robert C. Dynes; Dissertation: "Transport Properties of Disordered Metallic and Superconducting One Dimensional Wires."
**M.S., Applied Physics** October 1989
*Columbia University, School of Engineering and Applied Science, New York, NY*
**B.Eng., Engineering** June 1988
*Dartmouth College, Thayer School of Engineering, Hanover, NH*
**B.A., Physics** May 1987
*Vassar College, Poughkeepsie, NY*. General and Departmental Honors

## POLICY EXPERIENCE

**University of California President's Postdoctoral Fellow** January 2000 - Present
*Renewable and Appropriate Energy Laboratory, Energy and Resources Group, University of California, Berkeley, Berkeley, CA.* Director: Professor Daniel M. Kammen

- Climate change policy and its impacts including: strategies to effectively address long-term climate change mitigation through the development and deployment of clean energy technologies; analysis of the environmental and economic impacts of climate change policies in the U.S. and internationally; the worldwide equitable allocation on a per capita

basis of greenhouse gas emissions; the potential for the clean development mechanism to foster sustainable development; and the necessity for appropriate public participation in the successful implementation of clean energy projects.

- The dissemination of renewable and appropriate energy systems around the world and the potential socio-economic and environmental impacts of clean energy technologies and resource management systems both locally and globally.
- Directing a research project with graduate students to design a comprehensive legislative package to reduce U.S. greenhouse gas emissions.
- *Sawmill wood waste power generation project based in the Eastern Highlands of Zimbabwe, Africa*. Collaborating with local industry, NGOs, and government agencies to evaluate and analyze systems to promote sustainable biomass energy management and positive economic development in Zimbabwe. Assessing the feasibility of various methods for generating sustainable, clean power for local industry and communities from wood waste produced by sawmills in the region. (Project was recently moved to Kenya due to political instability in Zimbabwe)

**Congressional Legislative Science Fellow** September 1998 – September 1999
*Office of Senator John D. Rockefeller IV (D-WV), Washington, DC*

- Competitively selected and sponsored by the American Physical Society (APS); administered by the American Association for the Advancement of Science (AAAS).
- Legislative science and technology advisor to Senator John D. Rockefeller IV. Legislatives issues covered included: alternative fuel vehicles, 1992 Energy Policy Act, CAFE standards, global climate change, ozone transport, R&D budget, technology transfer, R&E tax credit, economic "high-tech" development, and public access to data subject to the Freedom of Information Act.
- Responsibilities: draft, introduce, and build support for legislation; write memos, speeches and letters, staff the Senator for meetings, speeches, and Senate Commerce, Science and Transportation Committee and Finance Committee hearings; organize S&T Caucus events; invite and prepare witnesses for hearings; speak on behalf of the Senator for his alternative fuel vehicle, technology transfer, and R&D funding legislation; meet with constituents and special interest groups.

**Science Policy Consultant** June 1998 - August 1998
*Directorate for Science and Policy Programs -- Scientific Freedom, Responsibility and Law Program, American Association for the Advancement of Science, Washington, DC*

- Wrote a final report for the National Science Foundation on the AAAS symposium and workshop on the ethical, legal and social implications of the *Human Genome Diversity Project*.

**Energy Newsletter Editor** March 1998 - May 1998
*Federation of American Scientists, Washington, DC.* Advisor: Arthur Rosenfeld

- Developed a newsletter covering global issues for the use of energy efficiency technologies.

**Science Policy Intern** December 1997 - February 1998
*Directorate for Science and Policy Programs -- Scientific Freedom, Responsibility and Law Program, American Association for the Advancement of Science, Washington, DC.* Director: Mark S. Frankel

- Explored issues related to the ethical, legal, and policy implications of science and technology.
- Researched and designed a project proposal, "Secrecy in Science," on how industry – academic partnerships affect scientific openness.
- Participated in projects concerned with the policy and ethical ramifications of the *Human Genome Diversity Project* and human cell germ-line interventions.
- Contributing editor to the quarterly newsletter *Professional Ethics Report*.

## SCIENTIFIC RESEARCH

**Salk-Sloan Postdoctoral Fellow in Neurobiology** 1997
*Systems Neurobiology Laboratory, The Salk Institute for Biological Studies, La Jolla, CA*

- Designed and executed experiments to measure how the brain organizes and processes visual information.

**Graduate Research Assistant in Physics** 1991 - 1996
*Physics Department, University of California, San Diego, La Jolla, CA*

- Used state-of-the-art technologies and techniques to create ultra-small electronic wires.
- Designed and executed experiments and analyzed data exploring the unusual quantum mechanical properties of superconducting, metallic, and insulating nano-wires.
- Presented and communicated research data to large and small audiences through seminars, invited talks, poster presentations, and published journal articles.
- Teaching Assistant for undergraduate introductory and upper-level physics courses.

**Graduate Research Assistant in Applied Physics** 1988 - 1989
*Applied Physics Department, Columbia University, New York, NY*

- Studied the stresses and strains in silicon membranes using laser spectroscopy.

**XEROX Engineering Intern** Summer 1988
*Business Products & Supplies/Material Technology and Control Group, XEROX Corp, Webster, NY*

- Analyzed and measured the mechanical and material properties of toner used in photocopying machines.

## HONORS AND AWARDS

- University of California President's Postdoctoral Fellowship, 2000 - 2002
- American Physical Society Congressional Science Fellowship, 1998 - 1999
- Salk-Sloan Postdoctoral Fellowship in Neurobiology, Salk Institute, 1997
- Department of Education Fellowship, U.C. San Diego, 1991 - 1992
- GE Foundation Graduate Fellowship, U.C. San Diego, 1990 - 1991
- George I. Alden Memorial Scholarship for Scientific Leadership, Dartmouth College-Thayer School, 1987 - 1988

## COMMUNITY SERVICE

Christmas in April

- Energy Team 2000: implemented energy and water conservation measures in homes rehabilitated for low-income, disabled or senior citizens in the Berkeley/Oakland area.

DC Cares

- Participated in a variety of volunteer activities: prepared and served meals at local churches and for people with AIDS; helped Community Service Organizations with Y2K preparedness; project leader for the '99 Servathon."

Sierra Club

- San Diego Chapter: Wetlands Coastal Committee – worked to preserve coastal wetlands through local lobbying and educational efforts.

Habitat for Humanity, San Diego

- Family Selection Committee -- selected qualified families to become Habitat homeowners.

Physics Department, U.C. San Diego

- Graduate student coordinator for the external review of the UCSD physics graduate program.
- Created and ran the seminar series "Grad-to-Grad" -- an arena for graduate students to present their research to other graduate students in an informal atmosphere.
- Graduate student representative on the Committee on Educational Policy -- initiated a reassessment of the physics graduate program academic requirements.

## PUBLICATIONS

1) **A.V. Herzog** and D.M. Kammen, "The Energy R&D Investment and Innovation Challenge," *Materials Today*, May 2002 (in press).

2) D.M. Kammen, R. Bailis, and **A.V. Herzog**, "Clean Energy for Development and Economic Growth: Biomass and Other Renewable Energy Options to Meet Energy and Development Needs in Poor Nations," UNDP report for the 7th Conference of the Parties to the UN Framework Convention on Climate Change (COP7-UNFCCC): Marrakech, Morocco, October 29 – November 9, 2001 (in press).

3) **A.V. Herzog**, T.E. Lipman, J.L. Edwards, and D.M. Kammen, "Renewable Energy: A Viable Choice," *Environment* **43**(10), p. 8, (2001).

4) **A.V. Herzog**, T.E. Lipman, and D.M. Kammen, "Renewable Energy Sources," in, *OUR FRAGILE WORLD: Challenges and Opportunities for Sustainable Developmen*t, forerunner to the Encyclopedia of Life Support Systems (EOLSS), Volume 1, Section 1 (UNESCO-EOLSS Secretariat, EOLSS Publishers Co. Ltd.), May 2001.

5) P. Baer, J. Harte, B. Haya, **A.V. Herzog**, J. Holdren, N.E. Hultman, D.M. Kammen, R.B. Norgaard, and L. Raymond, "Equity and Greenhouse Gas Responsibility," *Science* **289**, p. 2287 (2000).

6) **A.V. Herzog** and M.S. Frankel, "A Model Ethical Protocol as a Guidance Document for Human Genome Diversity Research," *Law and the Human Genome Review* **10**, p. 21 (1999).

7) **A.V. Herzog**, P. Xiong, and R.C. Dynes, "Magnetoresistance Oscillations in Granular Sn Wires near the Superconductor-Insulator Transition," *Phys. Rev. B* **58**, p. 14199 (1998).

8) P. Xiong, **A.V. Herzog**, and R.C. Dynes, "Negative Magnetoresistance in Homogeneous Amorphous Superconducting Pb Wires," *Phys. Rev. Lett.* **78**, p. 927 (1997).

9) **A.V. Herzog**, P. Xiong, F. Sharifi, and R.C. Dynes, "Observation of a Discontinuous Transition from Strong to Weak Localization in Granular Metal Wires," *Phys. Rev. Lett.* **76**, p. 668 (1996).

10) P. Xiong, **A.V. Herzog**, and R.C. Dynes, "Superconductivity in Ultrathin Quench-Condensed Pb/Sb and Pb/Ge Multilayers," *Phys. Rev. B* **52**, p. 3795 (1995).

11) F. Sharifi, **A.V. Herzog**, and R.C. Dynes, "Crossover from Two to One Dimension in *In Situ* Grown Wires of Pb," *Phys. Rev. Lett.* **71**, p. 428 (1993).

12) P.A. Beckman, L. Happersett, **A.V. Herzog**, and W.M. Tong, "Solid State Proton Spin Relaxation in Ethylbenzenes: Methyl reorientation Barriers and Molecular Structure," *J. Chem. Phys.* **95**, p. 828 (1991).

## PRESENTATIONS

1) "Energy R&D Funding, Trends, and Implications," Invited Speaker, *Symposium on Energy in the 21st Century*, 222nd American Chemical Society National Meeting, Chicago, Illinois, August 26-30, 2001.

2) "Federal Funding of Energy R&D and its Implications," Invited Speaker, *Symposium on Energy in the 21st Century*, American Chemical Society Northwest/Rocky Mountain Regional Meeting, Idaho Falls, ID, June 15, 2000.

3) "Potential Government Incentives - Can They Create a 'Market Win,'" Invited Speaker, *Electric Vehicle Association of America General Membership Meeting*, Washington, DC, June 17, 1999.

4) "Alternative Fuels Legislation," Invited Speaker, *Natural Gas Fleet Vehicles Workshop*, Flatwoods, WV, May 13, 1999.

5) "Shaping Public Policy to Encourage the Introduction of Fuel Cell Vehicles: A Panel Discussion," Invited Speaker, *The Road to Fuel Cell Vehicles: A National Forum*, Washington, DC, February 4, 1999.

6) "Discontinuous Localization Transition in Normal Conductor Granular Wires," Contributed Talk, *NATO Advanced Study Institute on Mesoscopic Electron Transport*, Curacao, The Nederlands Antilles, June 25-July 5, 1996.

7) "Localization Transitions in Granular Normal Metal Wires," Invited Talk, *Condensed Matter Physics Seminar*, University of California, Riverside, CA, May 7, 1996.

8) "Magnetoresistance in Granular Wires near the Insulator-Superconductor Transition," Contributed Talk, *APS 1996 March Meeting*, St. Louis, MO, March 18-22, 1996: *Bull. Am. Phys. Soc.* **41**, 781 (1996).

9) "Discontinuous Metal-Insulator Transition in *In-Situ* Grown Granular Wires," Poster Presentation, *1995 Gordon Research Conference on Condensed Matter Physics*, Brewster Academy, NH, July 10-14, 1995.

10) "Insulator-Metal/Superconductor Transition in 1D Granular Wires," Invited Talk, *Brown Bag Condensed Matter Physics Seminar*, U.C. San Diego, April 1995.

11) "Insulator-Superconductor Transition in Granular Wires," Contributed Talk, *APS 1995 March Meeting*, San Jose, CA, March 20-24, 1995: *Bull. Am. Phys. Soc.* 40, 137 (1995).