

Nina Abramzon

Physics Department California State Polytechnic University
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Education

Ph.D., Physics, City University of New York, **1999**

Thesis title: "Electron Impact Ionization and Dissociation Probed by Laser Induced Fluorescence" Thesis advisor: Prof. Kurt H. Becker.

M.A., Physics, City College of New York, **1995**

B.A., Physics, Bar-Ilan University Israel, **1994**

Appointments:

Academic Appointments:

- Professor of Physics, California Polytechnic University Pomona, Pomona CA, 2014-present.
- Acting Department Chair, Physics and Astronomy Department, California Polytechnic University Pomona, Pomona CA 2021-2022
- Interim Faculty Director for the Learn Through Discovery initiative, California Polytechnic University Pomona (Fall 2022)
- Associate Department Chair, Physics and Astronomy Department, California Polytechnic University Pomona, Pomona CA 2014-present.
- Faculty Chair for FYE (First Year Experience) courses, California Polytechnic University Pomona, Pomona CA, 2019-present.
- Associate Professor of Physics, California Polytechnic University Pomona, Pomona CA, 2009-2014
- Assistant Professor of Physics, California Polytechnic University Pomona, Pomona CA, 2003-2009.
- Postdoctoral Associate, Experimental Studies of Electron Impact Dissociation Probed by Laser Induced Fluorescence, Stevens Institute of Technology, Hoboken, NJ, 2001-2003
- Postdoctoral Associate, Experimental work in the Chemistry and Physics of Hot Wire Deposition of Amorphous Silicon, JILA, University of Colorado, Boulder, CO, 2000-2001
- Visiting Faculty, Sara Lawrence College, Bronxville, NY, 2002-2003
- Lecturer, Cooper Union, NY, NY, 1999 – 2001

Other Employment

Research Scientist, Plasmasol Cooperation, Hoboken, NJ, 2002-2003

Leadership Training:

- University of Southern California Equity-Minded Teaching Institute (2023)
- CSU Certificate Program in Student Success Analytics (2020-2021)
- Faculty Learning Community on Leadership 2017-2018 academic year. California State Polytechnic University, Pomona.
- American Council on Education (ACE) Leadership Academy for Department Chairs (LADC). October 20-23, 2015. Itasca, IL
- Project Kaleidoscope (PKAL), Association of American Colleges and Universities (AAC&U) Summer Leadership Institute. July 25–August 30 at the Baca, CO
- Dr. Debra Brum Insights Into Leadership Inaugural Colloquium. University Leadership in Action: Building Your Team and Working with Your Colleagues. November 4, 2016. California State Polytechnic University, Pomona.

Membership in professional organizations

- American Physical Society (since 1995)
- American Association of Physics Teachers (since 2005)

Awards, Grants, and recognitions

Current and previous external funding (partial list)

- CSU-wide STEM Faculty Learning Community **\$6,500** (2023)
- National Science Foundation (NSF) for Hispanic- Serving Institutions HSI Institutional Transformation Project: Cal Poly Pomona Intentional Venture Engaging STEM Students (CPP INVESTS), Co-PI **\$3M** (2021-2026)
- National Science Foundation (NSF) for Hispanic- Serving Institutions to increase retention and graduation for students in STEM. Polytechnic for All: STEM Success via an Inclusive Institution.(PASSION), Senior Personal, **\$ 1.5M** (2019-2024)
- Department of Education Title II CPP Building Institutional Capacity to Retain Graduate and Propel Students in STEM. **\$2.2 million**, senior personal. (2015-2020)
- NSF S-STEM College of Science Scholars Program Co-PI, **\$600,000** (2013-2015)
- Networking partnership Give Students a Compass Association of American Colleges and Universities (AAC&U) Co-PI, **\$16,000** (2013).
- ADVANCE Institutional Transformation Award: The Path to Leadership: Collaborative Institutional Change (NSF), **\$3.3 million**, senior personal- physics lead faculty. Physics Department Associate (2008-2012)
- Cost Sharing Grant Award Ocean Optics for the purchase of five optical spectrometers ,**\$10,000**PI (2006)
- KECK Foundation. Initiative creation of the, Center for Macromolecular Modeling and Material Design (CM3D) **\$500,000** , senior personal (2005)
- California State University Program for Education and Research in Biotechnology, CSUPERB **\$10,000** , PI (2004-2007)

Current and previous internal funding (partial list)

- Teacher-Scholar Support, California Polytechnic University Pomona. ~ **4K per year** (2016- 2017,2017-2018, 2018-2019, 2019-2020, 2020-2021, 2022-2023).
- SPICE Modernize Classroom Equipment grant PI “Integrating research-grade instrumentation into the physics curriculum” ~**\$22,000** (2015-2016).
- SPICE, Transformation of Introduction to Quantum Mechanics Course by Infusing Multiple Technologies into the Class“ **\$4824** (2015-2016)
- College of Science Quality Learning Fund “*Developing a Novel Integrative Lecture/Laboratory Course*” **\$11,000** PI (2007-2008)
- Research, Scholarship, and Creative Activity (RSCA), ~ **\$4,000** (2004-2005, 2006-2007)

Fund raising:

- Jet Propulsion Laboratory (JPL) 15K grant to host the 2018 Conference for Undergraduate Women in Physics
- Lowrance Livermore Lab 5K grant to host the 2018 Conference for Undergraduate Women in Physics
- General Atomics 5K grant to host the 2018 Conference for Undergraduate Women in Physics
- Office of Undergraduate Research Cal Poly Pomona 2K grant to host the 2018 Conference for Undergraduate Women in Physics.

Service (partial list):

Professional Service

- Member of the 2021 Conference for Undergraduate Women in Physics (CUWiP) program committee
- Organizer for the 2018 Conference for Undergraduate Women in Physics (CUWiP).
- Member of the External Advisory Board for the Dept. of Physics NM State University, 2016-present
- At large member of the Far West Section of the American Physical Society (2018-2021)
- Board member of The Advanced Laboratory Physics Association (ALPhA) (2018- present)
- American Physical Society/CSWP "Climate for Women" Site Visit Program 2014 - present
- Member of the American Physical Society Committee on the Status of Women in Physics, 2012-2015
- Non traveling member of the US delegation to the 5th International Conference on Women in Physics 2014.
- Reviewer for textbook publishers: Wiley, Freeman, McGraw-Hill (2004-2012)
- Member of the CPAPC (California Professoriate for Access to Physics Careers), 2009-present
- Referee for journals: American Journal of Physics, Annual AAC&U/PKAL STEM conference

Department, College, and University Service

- Organizer of CPP FYE summer institutes (2020-present)
- University Reappointment, Tenure, and Promotion Committee (2020-present)
- Department Search Committee (Chair 2011-2012, member 2016-2017, 2018-2019)
- Department Reappointment, Tenure, and Promotion Committee (2009-2020, chair 2012-2013)
- University Search Committee, Associate Provost, Member (2018)
- University Curriculum Committee , college of Science representative (2014-present)
- Lecturer evaluation Committee (2016- present, chair 2017-present)
- College of Science Student Success committee, physics and astronomy department representative (2017- present)
- Founder (2008) and organizer (2008-present) of department Annual Women in Physics lunches.
- Department Seminar Committee (2004- 2010 chair 2004-2005)
- Faculty Development Advisory Council (2012-present)
- Member of department SPIN UP group (ad hoc committee working to recruit and retain more physics majors and minors) (2009-2013)

Courses Taught:

- At California Polytechnic University Pomona:
 - Upper division physics: Plasma Physics, Biophysics, Nuclear Physics/Advance Laboratory.
 - Introductory physics: Calculus-based freshman Physics lecture and lab, Introduction to Quantum Mechanics – lecture and lab.
 - Freshman Seminar: College survival skills and science career planning, early research training course.
 - Senior Seminar: Public speaking skills.
 - Physics concepts and activities for K-8 pre-service teachers
- At Sara Lawrence College:
 - Introductory Physics: Algebra based physics, lectures and laboratories
- At Cooper Union:
 - Upper division physics: Electricity and Magnetism
 - Introductory Physics: Optics and Modern Physics

Mentoring accomplishments (partial list):

- 2018 Louis Stokes Alliances for Minority Participation (LSAMP) NSF scholar: Rebekah Agular
- 2018-2019 President's Kellogg Discovery Fellows award: Panik Moradian, Anthony Oceguela and Bianca Cruz won the award
- 2018-2019 RSCA top presentation award - 10 presentations out of 400 were selected represent Cal Poly Pomona at the CSU System-wide Student Research Competition - Sara Margala
- 2015 Louis Stokes Alliances for Minority Participation (LSAMP) NSF scholar :Lindsey Kabot

Technical Skills:

Experience with Lasers and Spectroscopy, Electron Beam Technology, Vacuum Technology, Computerized Data Acquisition, Mass Spectrometer Design and Operation, and Gas Chromatography.

Computer Skills:

Knowledge of FORTRAN, SIMION, C, Lab View, and MATHEMATICA.

List of Publications:

- Aguilar R., Powers P, Abramzon N., and Siegel P.B , Soil analysis using a 2-inch NaI gamma detector", Am. J. Phys. 89, 647-654 (June, 2021)
- Seyranian V, Duong N, Madva A, Abramzon N, Tibbetts Y, and Harackiewicz J, The Longitudinal Effects of STEM Identity and Gender on Flourishing and Achievement in College Physics," International journal of STEM education 5, no. 1 (2018): 40
- Abramzon N., Saccoman S., Hoeling B., Improving the Attitude of Pre-service Elementary School Teachers Towards Teaching Physics, *International Journal of Elementary Education*. Vol. 6, No. 3, 2017, pp. 16-23. doi: 10.11648/j.ijeeedu.20170603.11
- Kabot, L. R., Worden, T. M., Matsushita, A. K., Hernandez, R. X., & Abramzon, N. (2016). Inquiry Base Experiment: The Effect of Plasma on Glass Surface Properties. *International Journal of Engineering Pedagogy*, 6(2).
- Tseng S, Abramzon N , Jackson J.O, Lin W 2011. "Gas discharge plasmas are effective in inactivating Bacillus and Clostridium spores" *Appl Microbiol Biotechnol*, DOI 10.1007/s00253-011-3661-0
- Abramzon N. and Siegel P.B. 2009. "Introductory Helium Atomic Spectrum Analysis" *American Journal of Physics* Am. J. Phys. 77, 920-922.
- Jonathan C. Joaquin, Calvin Kwan, Nina Abramzon, Kurt Vandervoort, and Graciela Brelles-Marino, 2009 "Is Gas-Discharge Plasma a New Solution to the Old Problem of Biofilm Inactivation?," *Microbiology* 155: 724-732
- Vandervoort, K., Abramzon, N., and Brelles-Mariño, G. 2008. "Plasma Interactions with Bacterial Biofilms as Visualized through Atomic Force Microscopy." *IEEE Trans. on Plasma Science* 36:1296-1297.
- Abramzon, N., Joaquin, J.C., Bray, J.D. and Brelles-Mariño, G. 2006. *Biofilm Destruction by RF High-Pressure Cold Plasma Jet*. 2006, *IEEE Trans. on Plasma Science*, 34, 1304-1308.
- Becker, K., Koutsospyros, A., Yin, S.M., Christodoulatos, C., Abramzon, N., Joaquin, J.C. and Brelles-Mariño, G. 2005. *Environmental and Biological Applications of Microplasmas*. *Plasma Phys. Control. Fusion*. 47: B513-B5
- Kurunczi, P., Abramzon, N., Figus, M., Becker, K. 2004. "Rotational Temperature Measurements in High-Pressure Microhollow Cathode (MHC) and Capillary Plasma Electrode (CDE) Discharge". *Acta Physica Slovaca* 54: 115-124.

- Abramzon N., Martus K.E., and Becker K. 2000 , "Absolute Cross Section for the Formation of Si(¹S) Atoms Following Electron Impact Dissociation of SiH₄", J. Chem. Phys. 113, 2250- 4
- Abramzon N., Siegel R.B. and Becker K. 1999 "Cross Section for the Production of N^{+(X)} Ions by Electron Impact on N₂", Int. J. Mass Spectrom. 188, 147-153
- Abramzon N., Siegel R.B. and Becker K., 1999. "Absolute Cross Section for the Formation of N^{+(X)} Ions Produced by Electron Impact on N₂", J. Phys. B 32, L247-54
- Grill V., Poll H.U. , Matt S., Abramzon N., Scheier P., Becker K. and Märk T.D. 1998. "Kinetic Energies of Ions Produced by Electron-Impact Ionization and Dissociative Ionization of Propane", Int. J. Mass Spectrom. Ion Proc. 177, 143-54

Conference presentations (partial list) Proceedings

- "Forschungsbasiertes (inquiry based) und aktives Lernen im Physik-Anfängerpraktikum", Höling B., Siegel P. and Abramzon N., Tagungsband zum 2. HD-MINT Symposium 2015, 193-197
- Abramzon N. et al (19 authors) Women in physics in the United States: Recruitment and retention AIP Conference Proceedings 1697, 060045 (2015); doi: 10.1063/1.4937692
- Brelles-Mariño, G., J.C. Joaquin, J.C., Bray, J. and Abramzon, N. 2005. Gas discharge plasma as a novel tool for biofilm destruction. In: Proceedings of the 2nd International Workshop on Cold Atmospheric Pressure Plasmas. pp. 69-72. ISBN:908086692X.
- Kurunczi P., Abramzon N., Figus M., and Becker K. 2003. "Measurement of Rotational Temperatures in High-Pressure MHC and CPE Discharges", Proc. XXIV. ICPIG, Greifswald, Germany.
- L. Moskwinski, P.J. Ricatto, S. Babko-Malyi, R. Crowe, N. Abramzon, C. Christodoulatos, K. Becker, and G. Korfiatis, "Investigation of a Novel Capillary Non-Thermal Ambient- Pressure Plasma for Al Cleaning", XVI. SAPP, Liptovsky Mikulas, Slovakia (2003), Proc. XIV. SAPP, Comenius University Press, Bratislava, editors: P. Sutta, J. Mullerova, and R. Bruner, p. 17-18
- G. Korfiatis, L. Moskwinski, N. Abramzon, C. Christodoulatos, E. Kunhardt, R. Crowe, L. Wieserman, and K. Becker, "Investigation of Al Surface Cleaning Using a Novel Capillary Non-Thermal Ambient Pressure Plasma", 8th Symposium on Atomic, Cluster, and Surface Physics (SASP), Going, Austria (2002), Proceedings of the 8th SASP, P. Scheier and T.D. Märk (editors)
- T. Raynor, N. Abramzon, K.E. Martus, and K. Becker, "Electron-Driven Neutral Dissociation of Si-Containing Molecules", 8th Symposium on Atomic, Cluster, and Surface Physics (SASP), Going, Austria (2002), Proceedings of the 8th SASP, P. Scheier and T.D. Märk (editors), p. 192-5
- N. Abramzon, V. Tarnovsky, H. Deutsch, R. Basner, M. Schmidt, S. Matt, T.D. Märk, and K. Becker, "Electron Impact Induced Formation of Neutral and Ionic Radicals", Proc. BANPIS- 2000, Nagasaki, Japan (2000), edited by K. Tachibana, p. 14
- K. Becker, N. Abramzon, N.S. Panikov, R. Crowe, P.J. Ricatto, and C. Christodoulatos, "Destruction of Bacteria Using an Atmospheric-Pressure Dielectric Capillary Electrode Discharge Plasma", 29th ICPOS, Banff, Canada (2002), p. 253
- P. Kurunczi, J.P. Michel, N. Abramzon, K.E. Martus, and K. Becker, "Analysis of Optical Emissions Produced by Controlled Electron Impact on Si-Organic Molecules", Proc. XXII. ICPIG, Hoboken, NJ, USA (1995), p. 2-183

Invited talks (partial list):

- Workshop on Advance Physics Laboratories American Association of Physics Teachers, AAPT, Provo UT , July 2019
- “ Panel on Report from International Conference on Women in Physics” American Association of Physics Teachers, AAPT, San Diego, CA , January 2015
- “Panel on the pedagogy in the instructional physics lab” American Association of Physics Teachers, AAPT, New Orleans, LA , January 2013.
- Session Presider, Online Physics Courses (American Association of Physics teachers), New Orleans 2013
- “*Providing Research Experience in the Physics Undergraduate Curriculum.*” Physics department, California State University Fresno. September 2012.
- "Online/technology assisted teaching at the department of Physics and Astronomy at Cal Poly Pomona". Improving Student Engagement with Physics Summer Workshop, California State University Long Beach. June 2012.
- “*Hot Applications of Cold Plasma.*” Physics department, California State University Los Angeles. April 2007.
- “*Hot Applications of Cold Plasma.*” Dept. of Physics and Astronomy, Whittier College. November 2006.
- Brelles-Mariño, G., Joaquin, J.C., Bray, J. and Abramzon, N. 2006. *Biofilm Removal by Atmospheric Pressure Plasma Jet*. Invited speaker. International Workshop on Microplasmas (IWS Meeting), Greifswald, Germany May 2006.

Abstracts (partial list)

- Robles K., Margala S., Abramzon N., Vilvpanur R., Electrochemical Characterization of Titanium Alloys Subjected to an Atmospheric Pressure Plasma Treatment, Annual APS FWS, Fullerton CA, October 2018.
- S. Margala, N. Abramzon, Surface Modification of Stainless Steel using a radio-frequency generated atmospheric pressure plasma, Annual APS FWS, Fullerton CA, October 2018.
- Margala, S., Moradian, P., Monterrosa, J., Wong, L. Oceguera, A and Abramzon N. Stainless steel surface modification using cold plasma treatment. SCUUR, Pomona, 2017
- Ramonas A , Y. Rousan, J. Nosal, E.Hettiaratchy, N.Abramzon , Surface treatment using atmospheric pressure plasma, 84th Annual ASEE PSW conference, Pomona, CA April2016.
- L. Keyes, A. Knaub, Nina Abramzon, A guide for WIP groups, 84th Annual ASEE PSW, Pomona, CA April2016.
- N. Abramzon, B. Hoeling, P. Siegel, Inquiry-based and Active Learning in the Physics Freshman Lab AAPT, San Diego, CA , January, 2015
- Reyes S.; Alvarado, A. ; Kabot L. ; Abramzon N.; Alas S.; Staphylococcus epidermidis and Pseudomonas aeruginosa Biofilm Formation on Plasma Treated Prosthetic Alloys, [CSU Annual Biotechnology Symposium](#) 27th Symposium, January 8-10, 2015, Santa Clara CA
- T.Worden, Y. Rousan, A. Ramones, N.Abramzon Plasma Surface Modification Using Atmospheric Pressure Plasma, The 2014 Southern California Conference for Undergraduate Research (SCCUR) Fullerton CA.
- N. Abramzon, ,B. Hoeling, P. Tran, P. Siegel, C.L. Pinter-Lucke Redesign of Introductory Labs to Increase Retention of STEM Students AAPT Summer Meeting, Portland, CA, July 413-17, 2013.

- N. Abramzon, B. Hoeling Providing research experience in the physics undergraduate curriculum, Council on Undergraduate Research (CUR) Windows of Opportunity Conference , Orange, CA, June 21-23, 2013.(N)
- L. Kabot, T. Worden, A. Matsushita, R. Hernandez, E. Salik, Nina Abramzon, The Effect Of Glass Surface Treatment On Contact Angle Using Radio Frequency Atmospheric Pressure Plasma. the 2013 Southern California Conference for Undergraduate Research (SCCUR) Wittier CA, November 2013.
- N. Abramzon, “Researching and Presenting a Scientific Article in Sophomore and Junior Level Classes”, AAPT, New Orleans, LA , January, 2013.
- L. Kabot, T. Worden, A. Matsushita, R. Hernandez, E. Salik, N. Abramzon The Effect of Glass Surface Treatment on Contact angle Using Radio Frequency Atmospheric Pressure Plasma. College of Science: 2013 Undergraduate Research Symposium
- B.M. Hoeling, N. Abramzon “Providing a Research and Scientific Writing Experience in the Student Laboratory”, Laboratory Instruction Beyond the First Year (BFY), Philadelphia, PA, July 25 -27, 2012.
- Measurement of the Spectrum of the Down Converted Photons created in Type I SPDC C. Lemon , G. Labriola , C. Hawkins , E. Sosa , M. Pearson , N. Abramzon , B. Hoeling, 43rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (DAMOP); Orange County, CA, June 4–8, 2012
- N. Abramzon, B.M. Hoeling “Scientific Writing and Research Experience in the Undergraduate Student Lab”, AAPT Winter Meeting, Ontario, CA, February 4-8, 2012.
- N. Abramzon, B.M. Hoeling, H Sadaghiani, S. Saccoman,H. Hammon,P.S Partida “ Hate is a Strong Word But Don’t Like Physics”, AAPT Winter Meeting, Jacksonville, FL, 2011.
- B.M. Hoeling and N. Abramzon, 2010 "Providing “a research experience in the student lab: State-of-the-art equipment, scientific writing, and peer review for undergraduate physics majors" Gordon Research Conference on Physics Research and Education, South Hadley, MA, June 6-11
- N. Abramzon , H. Sadaghiani, 2009. “To Click or Not to Click”. March Meeting of the American Physical Society, Pittsburgh, Pennsylvania , March 16–20
- K. G. Vandervoort, A Renshaw, N. Abramzon, and G. Brelles-Mariño, 2009. “Atomic Force Microscope Investigations of Biofilm-Forming Bacterial Cells Treated with Gas Discharge Plasmas”. March Meeting of the American Physical Society, Pittsburgh, Pennsylvania , March 16–20, 2009.
- G. Brelles-Mariño, K. G. Vandervoort, N. Abramzon, 2009 “Plasma-Assisted Biofilm Inactivation: A New Solution To An Old Problem?” International Workshop on Microplasmas (IWS Meeting), San-Diego, March 2009.
- Rudolph, A., Abramzon, N. and Salik, E. 2008. “*In the Classroom: Beyond Think-Pair Share*”. The Inaugural Conference on Classroom Response Systems: Innovations and Best Practices. Louisville KY.

- Joaquin, J.C., Kwan, C., Vandervoort, K., Abramzon, N., and Brelles-Mariño, G. 2007. *"Plasma-mediated biofilm inactivation: a new solution to an old problem?"* Argentinean Society for General Microbiology (SAMIGE). Buenos Aires, Argentina.
- Joaquin, J.C., Kwan, C., Vandervoort, K., Abramzon, N., and Brelles-Mariño, G. 2007. *"Gas discharge plasma as a new tool for bacterial biofilms inactivation."* Argentinean Society for Biochemistry and Molecular Biology (SAIB). Mar del Plata, Argentina.
- Brelles-Mariño, G., Joaquin, J.C., Bray, J.D., Kwan, C., Vandervoort, K. and Abramzon, N. 2007. *"Is plasma assisted-biofilm inactivation a new solution to an old problem?"* Cold and Atmospheric Plasma (CAPPSA) International Workshop. Ghent, Belgium.
- Bray, J.D.; Joaquin, J.C.; Brelles-Mariño, G.; and Abramzon, N. 2007 *"Optical investigations of RF-high pressure cold plasma as a way to understand biofilm inactivation."* International Conference on Plasma Science, Albuquerque, NM.
- Bray, J.D., Brelles-Mariño, G. and Abramzon, N. 2007. *"Reactive oxygen species in RF- high pressure cold plasma jet used for biofilm inactivation."* 15th International Conference on Atomic Processes in Plasmas, Gaithersburg, MD.
- Kwan, C.; Joaquin, J.C.; Abramzon, N.; Vandervoort, K.; and Brelles-Mariño, G. 2007. *"Biofilm Inactivation by Gas Discharge Plasma: a New Solution to an Old Problem?"* 2007. ASM General Meeting, Toronto, CA .
- Vandervoort, K.G.; Joaquin, J.C.; Kwan, C.; Bray, J.D.; Torrico, R.; Abramzon, N.; and Brelles-Mariño, G. 2007. *"Investigations of Biofilm-Forming Bacterial Cells by Atomic Force Microscopy Prior to and Following Treatment from Gas Discharge Plasmas."* American Physical Society March, Denver, CO, March 2007.
- Bray, J., Brelles-Mariño, G., and Abramzon, N. 2007. *"Reactive Oxygen Species in Gas Discharge Plasmas and Their Role in Biofilm Inactivation."* CSuperb Meeting, San Jose, CA.

Foreign Languages: Fluent in Hebrew and knowledge of Russian

