

CURRICULUM VITAE

DECEMBER 2024

Arthur J. Nozik

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Summary of Qualifications:

Dr. Nozik has established a leading position in the interdisciplinary fields of photoelectrochemistry, semiconductor-molecule interfaces, quantum size effects and electron relaxation dynamics in semiconductor quantum wells, quantum dots, quantum wires, and nanostructures, and applications of this science to solar photon conversion technologies. He has published over 270 peer reviewed papers, proceedings, and book chapters in these fields and in the related fields of photocatalysis, heterogeneous catalysis, the optical, magnetic and electrical properties of solids, and Mössbauer spectroscopy, and has presented > 390 invited talks. He has led a large group of scientists engaged in basic and applied research on the direct photoconversion of light into chemicals, fuels and electricity, and on the optical and electronic properties and applications of nanostructures. Dr. Nozik has been awarded 11 U.S. patents and has received many honors and awards.

POSITIONS HELD

1978–present

National Renewable Energy Laboratory (NREL), formerly the Solar Energy Research Institute (SERI), Golden, CO 80401

Senior Research Fellow (1984-2012, (Emeritus as of 2/1/12); Scientific Director, Center for Revolutionary Solar Photoconversion (CRSP)(2007-2010); Associate Director (2008–2012), U.S. DOE Los Alamos National Lab/NREL Energy Frontier Research Center on Advanced Solar Photophysics (CASP).

Perform research and represent NREL in highest level scientific position at the Laboratory. Research interests: quantization effects and electron dynamics in semiconductor quantum dots and nanocrystals; photoelectrochemistry and semiconductor-molecule interfaces; quantum dot solar cells; photogenerated carrier dynamics in semiconductors and across semiconductor-liquid junctions; hot- electron effects in semiconductor nanostructures and in photoelectrochemical energy conversion including PV and solar fuels, and multiple exciton generation in semiconductor nanocrystals.

2005 –
present

University of Colorado, Joint CU-NREL, Renewable and Sustainable Energy Institute (RASEI)

Founding Fellow (2005-09); Fellow (2009-23), Fellow Emeritus (2023-present)

1998- present	University of Colorado, Boulder, Department of Chemistry <i>Research Professor (2012 –22, Emeritus (2022-pres); Professor Adjoint (1998-2012)</i>
1996-2012	National Renewable Energy Laboratory (formerly SERI), Golden, CO 80401 <i>Team Leader, Chemical Sciences Team</i>
1993-2006	The Journal of Physical Chemistry <i>Senior Editor</i>
1985–1988	University of Colorado, Boulder, CO <i>Visiting Fellow</i>
1980–1984	Solar Energy Research Institute, Golden, CO 80401 <i>1980-1984 Branch Chief – Photoconversion Research Branch, Solar Fuels and Chemicals Division, 1984-2012 Senior Research Fellow</i> Responsible for 25 scientists working in Photobiology, Photochemistry, Photoelectrochemistry, and Synthesis and Catalysis.
1978–1980	Solar Energy Research Institute, Golden, CO 80401 <i>Senior Scientist and Program Coordinator, Advanced Solar Energy Research Program.</i> Responsible for coordinating SERI's basic R&D program (39 people, \$4 million budget) in Photoconversion, Materials Research, Energy Resource Assessment, and Thermoelectrics, and establishing SERI's research program in photoelectrochemistry.
1974–1978	Allied Chemical Corporation (now the Honeywell Corporation and formerly Allied Signal Corporation), Morristown, NJ 07960 <i>Group Leader, Solid State Chemistry Department, Materials Research Center.</i> Originated new research program at Allied Chemical in solar energy conversion via photoelectrochemical systems.
1967–1974	American Cyanamid Company, Stamford, CT 06904 <i>Research Scientist, Physical Research Department, Chemical Research Division.</i>
1961–1964 (pre-doctoral)	American Cyanamid Company, Stamford, CT 06904 <i>Research Engineer, Engineering Research Section, Central Research Division.</i>
1959 – 1960	Douglas Aircraft Company, Santa Monica, CA <i>Research Rocket Fuel Engineer</i>

MAJOR TECHNICAL CONTRIBUTIONS AND ACTIVITIES

1978–present, *National Renewable Energy Laboratory (NREL) (formerly the Solar Energy Research Institute), Golden, CO 80401*

- Published more than 360 basic and applied research papers in photoelectrochemistry, solid-state physics, semiconductor nanoscience/nanocrystals, and related interdisciplinary science.
- Proposed and confirmed several new important concepts in photoelectrochemistry and solar photon conversion (hot-carrier effects, size-quantization effects including multiple-exciton generation in quantum dots, superlattice electrodes, quantum dot solar cells).

1974–1978, *Materials Research Center, Allied Chemical Corporation, Morristown, NJ*

- Group leader, Photoelectrochemical Energy Conversion
- Established one of the first groups in the country in photoelectrochemical energy conversion.
- Published 15 papers in photoelectrochemical energy conversion; received five U.S. patents in the field.
- Invented photochemical diodes, a major new innovation in photoelectrochemical energy conversion (U.S. Patent 4,094,751).

1967–1974, *Central Research Division, American Cyanamid Company, Stamford, CT 06904*

- Conducted research on optical and electrical properties of semiconductors.
- Discovered new transparent conductor (Cd_2SnO_4); received five U.S. patents on material; NSF and Air Force funding; developed applications in solar energy devices, and infrared absorbers.
- Conducted research in heterogeneous catalysis.
- Introduced Mössbauer spectroscopy at Cyanamid; developed applications for hydrodesulfurization of petroleum.

1961–1964, *Central Research Division, American Cyanamid Company, Stamford, CT 06904*

- Conducted research on plasma jet chemistry and heterogeneous catalysis.

ACADEMIC EXPERIENCE

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| 1998–present | Research Professor (2012 – 2022); Professor Adjoint (1998-2012), Professor Emeritus (2022 - present); University of Colorado, Boulder, Dept of Chemistry; directed 14 Ph.D. students. Taught graduate courses in the Basic Science of Renewable Energy. Advised 32 post-doctoral associates conducting research at NREL. |
| 2013–2016 | Thrust Leader (2013-14) and Sr. P.I (2013 -16), University of North Carolina, U.S. Department of Energy (DOE) Energy Frontier Research Center (EFRC) on Solar Fuels |
| 1995 | Guest Lectureship, Gordon Lecture Series on Energy, Tel Aviv University, Tel Aviv, Israel |
| 1982–1985 | Co-directed two M.S. theses and one Ph.D. thesis at Colorado School of Mines |
| 1977–1989 | Outside Member of Examination Committee for Ph.D. theses at University of Colorado, Brown University, and universities in Australia, India, Europe, and Canada |
| 1968–1974 | Lecturer, Graduate courses in Advanced Physical Chemistry and Spectroscopy, Southern Connecticut State College, New Haven, CT |
| 1962–1964 | Instructor, physics and math courses, Southern Connecticut State College, Evening Division, New Haven, CT |

EDUCATION

1964–1967	Yale University, Ph.D. (1967), Physical Chemistry Dissertation: Mössbauer Resonance Studies of Ions in Ice
1960–1961	Yale University, M.S. (1962), Physical Chemistry
1956–1959 1953–1956	Cornell University, B.Ch.E. (1959), Chemical Engineering

EDITORSHIPS and EDITORIAL BOARD SERVICE

- Senior Editor of The Journal of Physical Chemistry (1993–2005)
- Editorial Board, Applied Sciences: Nanotechnology and Applied Nanosciences (2018 – present)
- Editorial Board, Journal of Renewable and Sustainable Energy (AIP, 2016 - 2019)
- Guest Editor, Thematic Issue of Chemical Reviews on “Solar Photon Conversion,” Nov. 2010
- Editorial Board of Dataset Papers in Nanotechnology (online) (2012)
- Editorial Advisory Board, Journal of Energy and Environmental Science (2014-present)
- Editorial Advisory Board, CRC Press Sustainable and Energy Development Book Series (2016-)
- Editorial Board, Journal of Energy and Environmental Science (2008–2014)
- Editorial Advisory Board, Nano Energy (Elsevier journal, 2012 - present)
- Advisory Board, Wiley Series on New Materials for Sustainable Energy and Development (2008–present)
- Editorial Board, Journal of Solar Energy Materials and Solar Cells (1985–2013)

PROFESSIONAL ACTIVITIES

- Consultant, SunHydrogen, Inc, Santa Barbara, CA (2022 - 2023)
- Advisory Council, Cornell University Energy Systems Institute (CESI) (2016 - present)
- Bower Prize (\$250K) Selection Committee (awarded to subsequent Nobel Laureate Frances Arnold), Franklin Institute, Philadelphia, Sept, 2018
- International Advisory Committee, Institute for Basic Science, Center for Integrated Nanostructure Physics, Sungkyunkwan University, Suwon, Korea (2014 – 2016)
- Founding Fellow, NREL–University of Colorado Renewable and Sustainable Energy Institute (RASEI) (2009– present); member of original 2005 CU Steering Committee that led to RASEI; member of Executive Board (2009-2017)
- Editorial Board, Journal of Energy and Environmental Science (2008–14); Advisory Board (2014 – 2020)
- Editorial Board, Journal of Solar Energy Materials (1985–2013)
- Advisory Board, Nano Energy (2012– present)
- Scientific Advisory Committee, DOE EFRC at Columbia University (2009-2014)
- Scientific Advisory Committee, DOE EFRC at the University of North Carolina (2009 – 2013)
- Scientific Advisory Board, NSF IGERT Program at the University of California, Santa Barbara
- Advisory Board, Wiley Series on New Materials for Sustainable Energy and Development (2008–2016)
- Member, U.S. DOE Basic Energy Sciences Advisory SubCommittee on “Facing Our Energy Challenges in a

New Era of Science,” 2008

- Member Advisory Board, National Science Foundation Integrative Graduate Education and Research Traineeship program, University of California, Santa Barbara (2008–present) and Rice University (2010–present)
- Scientific Director, Colorado Center for Revolutionary Solar Photoconversion (2007–2011)
- Chairman, Solar Electric Panel, U.S. DOE Office of Science Workshop on Basic Research Needs for Solar Energy Utilization, Washington, DC (April 2005)
- Chemical Sciences Board, U.S. DOE Office of Science, Office of Basic Energy Sciences
- Steering Committee, University of Colorado Initiative on Sustainable and Renewable Energy (2(005)
- Panel Member, U.S. DOE Office of Science Workshop on Basic Research Needs for the Hydrogen Economy, Washington, DC (May 2003)
- Panel Member, U.S. DOE Office of Science Workshop on Basic Research Needs to Assure a Secure Energy Future (Oct. 2002)
- Panel Member, EPRI Workshop on Advancement of Photovoltaic Technology (Nov. 2002).
- Organizing Panel, National Research Council/National Academy of Sciences Workshop on Challenges for the Chemical Sciences in the 21st Century: Energy and Transportation (Jan. 2002)
- Panel Member, Planning Workshop, Joint Los Alamos/Sandia National Lab Center for Integrated Nanotechnologies (Sept. 2001)
- Member, International Review Committee, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan (Aug. 2002)
- Executive Committee, Physical Chemistry Division, American Chemical Society (2000–2003)
- Chairman, 13th International Conference on Photochemical Conversion and Storage of Solar Energy, Snowmass, CO (July 2000)
- Member, International Review Committee for Program on Photoreaction Control and Photofunctional Materials, National Institute of Materials and Chemical Research of Japan (1997–2001)
- Co-chairman, Workshop on Dye Sensitization and Fast Electron Transfer Dynamics, 12th International Conference on Photochemical Conversion and Storage of Solar Energy, Berlin (August 1998)
- Organizer, 21st DOE Solar Photochemistry Research Conference, Copper Mountain, CO (June 1997)
- Co-organizer, 3rd International Conference on Recent Trends in Photoelectrochemistry, Estes Park, CO (May 1997)
- Co-organizer, DOE/NREL Workshop on Dye Sensitization of Semiconductors, Golden, CO (March 1997)
- Organizer, Symposium on Photoeffects at Semiconductor–Liquid Interfaces, ACS Meeting, New Orleans, LA (March 1996)
- Chairman, DOE Workshop on Research Opportunities in Photochemical Sciences, Estes Park, CO (Feb. 1996)
- Senior Editor of The Journal of Physical Chemistry (1993–2006)
- Member, DOE Scientific Review Committee, Chemical Sciences Program, Argonne National Laboratory (Oct. 1993)
- Member, International Organizing Committee, International Conferences on the Photochemical Conversion and Storage of Solar Energy (1992–1998)
- Member, International Organizing Committee on First International Conference on TiO₂ Photocatalysis, London, Ontario (1992)
- Co-organizer, Symposium on Non-Linear Optics, Electrochemical Society Meeting, Toronto (1992)

- Operating Agent, International Energy Agency Program on Hydrogen Production (1989–1990)
- Co-organizer, U.S.–Israel Workshop on Photoconversion (1990)
- Member, Scientific Advisory Committee, NSF Center for Photoinduced Charge Transfer, University of Rochester (Feb. 1989)
- Member, NSF Scientific Review Panel, NSF Materials Research Group Program, University of Texas at Austin (Feb. 1988)
- Delegate, U.S. DOE Group for International Energy Agency Conference on Long Range Research Opportunities in Renewable Energy Technology; Organizer, U.S. National Pre-Meeting (1988)
- Delegate, U.S. DOE Visiting Team for U.S.–Israel Scientific Cooperation Agreement (1988)
- Member, Scientific Review Committees, DOE/OER Program in Chemical Sciences, Lawrence Berkeley Laboratory, Berkeley, CA (1986); Ames Laboratory, Iowa State University, Ames, IA (1986)
- Member, Scientific Review Panel for Chemical Biodynamics Laboratory, Lawrence Berkeley Laboratory, Berkeley, CA (1986)
- Editorial Board, Journal of Solar Energy Materials and Solar Cells
- Chairman, Energy Technology Group, Electrochemical Society (1984)
- Member, International Organizing Committee, International Conferences on Photochemical Conversion and Storage of Solar Energy (1982–1988)
- Member, ACS Subcommittee on Energy, Committee on Chemistry and Public Affairs (1983–1988)
- Chairman and Organizer, nine Photoelectrochemical Energy Symposia, American Chemical Society and Electrochemical Society
- Member, American Chemical Society, American Physical Society, Electrochemical Society, AAAS, ISES, Materials Research Society
- U.S./DOE Representative, International Energy Agency, Photoelectrolysis Programme (1980–1986)
- Organizer, U.S.–Japan Seminar on Cooperative Research on Photoelectrochemical Energy Conversion (NSF-funded) (1983)
- U.S. Investigator, U.S.–Yugoslavia Joint Research Program in Photoconversion (1980–1992)
- U.S. Co-investigator, U.S.–Israel Binational Science Foundation (1986–1991)
- Reviewer for 17 journals (J. Appl. Phys., Appl. Phys. Lett., J. Electrochem. Soc., Sol. Energy, J. Am. Chem. Soc., J. Phys. Chem., J. Solid State Chem., Surf. Sci., Nature, Phys. Rev., Phys. Rev. Lett., Chem. Phys. Lett., Science, Langmuir, Chem. Mater., J. Chem. Phys., Proc. Natl. Acad. Sci.); proposal reviewer for DOE, NSF, ONR, ARO, National Research Council, ACS, Canadian Research Council, and University Grants Offices.

PROFESSIONAL RECOGNITION AND HONORS

- Fellow, American Academy of Arts and Sciences, elected April, 2024
- Named & Endowed Annual Nozik Lecture established in August, 2022 at the Renewable and Sustainable Energy Institute (RASEI), University of Colorado, Boulder;
- Nomination for Global Energy Prize (Russian Federation) (2019)
- Albert Nelson Marquis Lifetime Achievement Award by Marquis Who's Who (2021)
- 2018 Clarivate Analytica (formerly Thomson Reuters) Highly Cited Researcher in Physics
- 2016 Wilbur Lucius Cross Medal of the Yale Graduate School
- Honorary Symposium: “Status and Prognosis of Future Generation Photoconversion to Photovoltaics and Solar Fuels” celebrating lifetime contributions, University of Colorado, Boulder, March, 2016.
- Honorary Nozik Director’s Fellowship Established at NREL (2014)

- 2014 Thomson Reuters Highly Cited Researcher
- Heinz Gerischer Award, European Section of the Electrochemical Society, 2013
- Fellow, Royal Society of Chemistry (2013)
- Gustavus Esselen Award for Chemistry in the Public Interest, American Chemical Society, Northeastern Section (Harvard), 2011
- Fellow, NREL-University Colorado Renewable and Sustainable Energy Institute, 2009–present
- Research Award, U.N. Intergovernmental Renewable Energy Organization, 2009
- Eni Award for Science and Technology (Italy), 2008 (hosted by the President of Italy)
- Sackler Lecturer 2009, Mortimer and Raymond Sackler Institute of Advanced Studies, Tel Aviv University
- Honorary Festschrift Issue of The Journal of Physical Chemistry celebrating 70th birthday, Dec. 21, 2006
- Fellow of the American Association for the Advancement of Science (2003)
- Research Award, Energy Technology Division, Electrochemical Society (2002)
- Distinguished Lecturer, Frontiers in Chemistry Lecture Series, Case Western Reserve University (2002)
- Fellow of the American Physical Society, Chemical Physics Division (1999)
- Midwest Research Institute (MRI)/Battelle Chairman's Award for Exceptional Performance (2007)
- NREL Director's Award (1993)
- MRI Hubbard Award (NREL, 1992)
- American Western Universities – U.S. DOE Laboratory Distinguished Lectureship (1989–1990)
- MRI Van Morris Award (1985)
- SERI Outstanding Achievement Award (1984)
- NREL Senior Research Fellow
- Sigma Xi
- 2000 and 2018 Who's Who in America
- 2015; 2018, 2021 Who's Who in the World
- 382 invited talks 1976–2022
- 115 Plenary/Keynote lectures

PUBLICATIONS AND INVITED LECTURES (PEER-REVIEWED JOURNALS, BOOKS, BOOK CHAPTERS, INVITED TALKS, CONFERENCE PROCEEDINGS, PATENTS)

Author of 219 peer-reviewed journal publications and (Google h index = 100; citations: 52,250 (information from Google Scholar Aug 2024) in the fields of nanoscience, size quantization effects in semiconductor quantum wells and dots, electron transfer and relaxation dynamics across semiconductor-molecule interfaces and in quantum dots, photo- electrochemical energy conversion; optical, magnetic, and electrical properties of semiconductors; heterogeneous catalysis, and Mössbauer spectroscopy; 25 book chapters; 11 U.S. patents received; 7 books edited or co-authored or in preparation.

Summary Statistics from Google Scholar (all years) – August, 2024

Peer-reviewed journal publications:	230
Sum of times cited:	53,700
h index:	101



PEER-REVIEWED JOURNAL PUBLICATIONS

1. Nozik, A.J. and D.W. Behnken, "Kinetics and Mechanism of the Decomposition of Ammonia on Nonferrous Surfaces," J. Catal. **4**, 469–479 (1965).
2. Nozik, A.J. and M. Kaplan, "Simple and Sensitive Low Temperature Control Apparatus for Mössbauer Spectroscopy," Anal. Chem. **39**, 854–856 (1967).
3. Nozik, A.J. and M. Kaplan, "Significance of the Lattice Contribution to Mössbauer Quadrupole Splitting: Re-Evaluation of the $\text{Fe}^{57\text{m}}$ Nuclear Quadrupole Moment," Phys. Rev. **159**, 273–276 (1967).
4. Nozik, A.J. and M. Kaplan, "Kinetics of the Cubic-to-Hexagonal Phase Transformation in Ice Doped with Mössbauer Ions," Chem. Phys. Lett. **1**, 391–395 (1967).
5. Nozik, A.J. and M. Kaplan, "Mössbauer Resonance Studies of Ferrous Ions on Ice," J. Chem. Phys. **47**, 2960–2977 (1967).
6. Nozik, A.J. and M. Kaplan, "Paramagnetic and Electric Quadrupole Hyperfine Interactions of Ferric Ions in Ice and $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$," J. Chem. Phys. **49**, 4141–4149 (1968).
7. Haacke, G. and A.J. Nozik "Mössbauer Effect in $\text{Fe}_{1-x}\text{Cu}_x\text{Cr}_2\text{S}_4$," Solid State Commun. **6**, 363–365 (1968).
8. Nozik, A.J., M. Kaplan and A.I. Weiss, "Mössbauer Resonance Determination of the Nuclear Quadrupole Moment of the 21.7-keV State of Eu^{151} ," Am. Phys. Soc. **13**, 894–895 (1969).
9. Nozik, A.J., J.C. Wood, G. Haacke, "High Resolution Mössbauer Spectrum of Fe_4N ," Solid State Commun. **7**, 1677–1679 (1969).
10. Wood, J.C. and A.J. Nozik, "Direction of the Magnetic Easy Axis in $\gamma\text{'-Fe}_4\text{N}$," Phys. Rev. B **4**, 2224–2228 (1971).
11. Nozik, A.J., "Mössbauer Evidence for Hole Trapping by Ferric Acceptor States on Rutile Surfaces," J. Phys. C: Solid State Physics **5**, 3147–3152 (1972).
12. Nozik, A.J., "Optical and Electrical Properties of Cd_2SnO_4 : A Defect Semiconductor," Phys. Rev. B **6**, 453–459 (1972).
13. Nozik, A.J., "Photoelectrolysis of Water Using Semiconducting TiO_2 Crystals," Nature **257**, 383–386 (1975).
14. Nozik, A.J., "p-n Photoelectrolysis Cells," Appl. Phys. Lett. **29**, 150–153 (1976).
15. Nozik, A.J., "Photochemical Diodes," Appl. Phys. Lett. **30**, 567–569 (1977).
16. Nozik, A.J., "Electrode Materials for Photoelectrochemical Devices," J. Cryst. Growth **39**, 299–304 (1977).
17. Williams, F. and A.J. Nozik, "Irreversibilities in the Mechanism of Photoelectrolysis," Nature **271**, 137–139 (1978).

18. Nozik, A.J., "Photoelectrochemistry: Applications to Solar Energy Conversion," *Ann. Rev. Phys. Chem.* **29**, 189–222 (1978).
19. Dickson C.R. and A.J. Nozik, "Nitrogen Fixation via Photoenhanced Reduction on p-GaP Electrodes," *J. Amer. Chem. Soc.* **100**, 8007–8009 (1978).
20. Nozik, A.J., "Photoelectrochemical Cells," *Philos. Trans. R. Soc. London* **A295**, 453–470 (1980).
21. Boudreaux, D.S., F. Williams and A.J. Nozik, "Hot Carrier Injection at Semiconductor-Electrolyte Junctions," *J. Appl. Phys.* **51**, 2158–2163 (1980).
22. Nozik, A.J., "Photoelectrochemistry," Introductory Lecture, Faraday Discussions of The Royal Society of Chemistry, No. 70 (1980), pp 7–17.
23. Turner J.A., J. Manassen and A.J. Nozik, "Photoelectrochemistry with p-Si Electrodes: Effects of Inversion," *Appl. Phys. Lett.* **37**, 488–491 (1980).
24. Noufi R.N., A.J. Frank and A.J. Nozik, "Stabilization of n-Type Silicon Photoelectrodes to Surface Oxidation in Aqueous Electrolyte Solution and Mediation of Oxidation Reaction by Surface-Attached Organic Conducting Polymer," *J. Am. Chem. Soc.* **103**, 1849–1850 (1981).
25. Cooper, G., R.N. Noufi, A.J. Frank and A.J. Nozik, "Oxygen Evolution on Tantalum-Polypyrrole-Platinum Anodes," *Nature* **295**, 578–580 (1982).
26. Ross R.T. and A.J. Nozik, "Efficiency of Hot-Carrier Solar Energy Converters," *J. Appl. Phys.* **53**, 3813–3818 (1982).
27. Cooper, G., J.A. Turner and A.J. Nozik, "Mott-Schottky Plots and Flatband Potentials for Single Crystal Rutile Electrodes," *J. Electrochem. Soc.* **129**, 1973–1977 (1982).
28. Turner, J.A. and A.J. Nozik, "Evidence for Hot-Electron Injection Across p-GaP/Electrolyte Junctions," *Appl. Phys. Lett.* **41**, 101–103 (1982).
29. Gale, R.J., A.J. Nozik, G. Cooper and R.A. Osteryoung, "Acid Base Phenomena at the n-TiO₂/Room Temperature Molten Salt Interphase," *Collect. Czech. Chem. Comm.* **47**, 1794–1801 (1982).
30. Noufi, R.N., A.J. Nozik, J. White and L.F. Warren, "Enhanced Stability of Photoelectrodes with Electrogenerated Polyaniline Films," *J. Electrochem. Soc.* **129**, 2261–2265 (1982).
31. Chum, H.L., M.A. Ratcliff, F.L. Posey, J.A. Turner and A.J. Nozik, "Photoelectrochemistry of Levulinic Acid on Undoped Platinized n-TiO₂ Powders," *J. Phys. Chem.* **87**, 3089–3093 (1983).
32. Cooper, G., J.A. Turner, B.A. Parkinson and A.J. Nozik, "Hot Carrier Injection of Photogenerated Electrons at Indium Phosphide-Electrolyte Interfaces," *J. Appl. Phys.* **54**, 6463–6473 (1983).
33. Nenadović, M.T., T. Rajh, O.I. Mičić and A.J. Nozik, "Electron Transfer Reactions and Flat-Band Potentials of WO₃ Colloids," *J. Phys. Chem.* **88**, 5827–5830 (1984).
34. Williams, F. and A.J. Nozik, "Solid State Perspectives of the Photoelectrochemistry of Semiconductor-Electrolyte Junctions," *Nature* **312**, 21–27 (1984).
35. Dimitrijević, N.M., D. Savić, O.I. Mičić and A.J. Nozik, "Interfacial Electron Transfer Equilibria and Flat-Band Potentials of □-Fe₂O₃ and TiO₂ Colloids Studied by Pulse Radiolysis," *J. Phys. Chem.* **88**, 4278–4283 (1984).
36. Fornarini, L., A.J. Nozik and B.A. Parkinson "The Energetics of p/n Photoelectrolysis Cells," *J. Phys. Chem.* **88**, 3238–3243 (1984).
37. Nozik, A.J., "Survey and Prognosis for Present and Future Approaches to Hydrogen Production," *J. Less-*

Common Met. **103**, 1–4 (1984).

38. Brown, J.D., D.L. Williamson and A.J. Nozik, "Mössbauer Study of the Kinetics of Fe^{3+} Photoreduction on TiO_2 Semiconductor Powders," J. Phys. Chem. **89**, 3076–3080 (1985).
39. Nozik, A.J., B.R. Thacker and J.M. Olson, "Quantization Effects in the Photoelectrochemistry of Superlattice Photoelectrodes," Nature **316**, 51–53 (1985).
40. Nozik, A.J., B.R. Thacker, J.A. Turner and J.M. Olson "Quantization Effects in the Photocurrent Spectroscopy of Superlattice Electrodes," J. Amer. Chem. Soc. **107**, 7805–7810 (1985).
41. Benito, R. and A.J. Nozik, "Theoretical Analysis of the Effects of Light Intensity on the Photocorrosion of Semiconductor Electrodes," J. Phys. Chem. **89**, 3429–3434 (1985).
42. Nozik, A.J., F. Williams, M.T. Nenadović, T. Rajh and O.I. Mičić, "Size Quantization in Small Semiconductor Particles," J. Phys. Chem. **89**, 397–399 (1985).
43. Rajh T., O.I. Mičić and A.J. Nozik, "Formation and Properties of Cu_2O Semiconductor Colloids," Langmuir **2**, 477–480 (1986).
44. Nedeljković, J.M., M.T. Nenadović, O. Mičić and A.J. Nozik, "Enhanced Photoredox Chemistry in Quantized Semiconductor Colloids," J. Phys. Chem. **90**, 12–13 (1986).
45. Nozik, A.J., "Photoelectrochemistry; Report of Panel Discussion for IPS-6," Nouv. J. Chim. **11**, 205–207 (1987).
46. Rajh, T., M.W. Peterson, J.A. Turner and A.J. Nozik, "Size Quantization in Small Colloidal CdS Particles Studied with Stopped Flow Spectrometry," J. Electroanal. Chem. (Special Gerischer Issue) **228**, 55–68 (1987).
47. Mičić, O.I., M.T. Nenadović, M.W. Peterson and A.J. Nozik, "Size Quantization in Layered Semiconductor Colloids with Tetrahedral Bonding: HgI_2 ," J. Phys. Chem. **91**, 1295–1297 (1987).
48. Edelstein, D.C., C.L. Tang and A.J. Nozik, "Picosecond Relaxation of Hot Carrier Distributions in GaAs/GaAsP Strained-Layer Superlattices," J. Opt. Soc. Am. B **3**, 32 (1986); Appl. Phys. Lett. **51**, 48–50 (1987).
49. Nozik, A.J., B.R. Thacker, J.A. Turner, J. Klem and H. Morkoc "Photocurrent Spectroscopy of Lattice-Matched Superlattice Electrodes in Photoelectrochemical Cells," Appl. Phys. Lett. **50**, 34–36 (1987).
50. Peterson, M.W., M.T. Nenadović, T. Rajh, R. Herak, O.I. Mičić, J. Goral and A.J. Nozik, "Quantized Colloids Produced by Dissolution of Layered Semiconductors in Acetonitrile," J. Phys. Chem. **92**, 1400–1402 (1988).
51. Rajh, T., M.I. Vucemilovic, N.M. Dimitrijević, O.I. Mičić and A.J. Nozik, "Size Quantization of Colloidal Semiconductor Particles in Silicate Glasses," Chem. Phys. Letts. **143**, 305–308 (1988).
52. Nozik, A.J., J.A. Turner and M.W. Peterson, "Kinetics of Electron Transfer from Photoexcited Superlattice Electrodes," J. Phys. Chem. **92**, 2493–2501 (1988).
53. Nozik, A.J., B.R. Thacker, J.A. Turner and M.W. Peterson "Photoelectrochemistry of Strained-Layer and Lattice-Matched Superlattice Electrodes: Effects Due to Buffer Layers," J. Amer. Chem. Soc. **110**, 7630–7637 (1988).
54. Peterson M.W., O.I. Mičić and A.J. Nozik, "Size Quantization in Layered HgI_2 Colloids," J. Phys. Chem. **92**, 4160–4165 (1988).
55. Peterson, M.W., J.A. Turner, C.A. Parsons, A.J. Nozik, D.J. Arent, C. Van Hoof, G. Borghs, R. Houdre and

- H. Morkoc, "Miniband Dispersion in GaAs/Al_xGa_{1-x}As Superlattices with Wide Wells and Very Thin Barriers," Appl. Phys. Lett. **53**, 2666–2668 (1988).
56. Kamat, P.V., N.M. Dimitrijević and A.J. Nozik, "Dynamic Burstein-Moss Shift in Semiconductor Colloids," J. Phys. Chem. **93**, 2873–2875 (1989).
 57. Kamat, P.V., T.W. Ebbesen, N.M. Dimitrijević and A.J. Nozik, "Primary Photochem. Events in CDs Semi. Colloids as Probed by Picosecond Laser Flash Photolysis," Chem. Phys. Letts **157**, 384–389 (1989).
 58. Gessert T.A., D.L. Williamson and A.J. Nozik, "Mössbauer Spectroscopy Study of the Kinetics of Photoreduction of Fe³⁺ on CdS Semiconductor Powders," J. Phys. Chem. **94**, 1958–1962 (1990).
 59. Nozik, A.J., C.A. Parsons, D.J. Dunlavy, B.M. Keyes and R.K. Ahrenkiel, "Dependence of Hot Electron Luminescence on Barrier Thickness in GaAs/AlGaAs Superlattices and Multiple Quantum Wells," Solid State Comm. **75**, 297–301 (1990).
 60. Parsons, C.A., M.W. Peterson, B.R. Thacker, J.A. Turner and A.J. Nozik) "Single Quantum Well Electrodes for Photoelectrochemistry," J. Phys. Chem. **94**, 3381–3384 (1990).
 61. Parsons, C.A., B.R. Thacker, D.M. Szmyd, M.W. Peterson, W.E. McMahan and A.J. Nozik, "Characterization and Photocurrent Spectroscopy of Single Quantum Wells," J. Chem. Phys. **93**, 7706–7715 (1990).
 62. Uchida H., C.J. Curtis and A.J. Nozik, "Gallium Arsenide Nanocrystals Prepared in Quinoline," J. Phys. Chem. **95**, 5382–5384 (1991).
 63. Wang, W.B., K. Shum, R.R. Alfano, D. Szmyd and A.J. Nozik, "L₆-X₆ Intervalley Scattering Time and Deformation Potential for Al_{0.6}Ga_{0.4}As Determined by Femtosecond Time-Resolved Infrared Absorption Spectroscopy," Phys. Rev. Letts. **68**, 662–665 (1992).
 64. Uchida, H., C.J. Curtis, P.V. Kamat, K. Jones and A.J. Nozik, "Optical Properties of GaAs Nanocrystals," J. Phys. Chem. **96**, 1156–1160 (1992).
 65. Pelouch, W.S., R.J. Ellingson, P.E. Powers, C.L. Tang, D.M. Szmyd and A.J. Nozik, "Comparison of Hot-Carrier Relaxation in Quantum Wells and Bulk GaAs at High Carrier Densities," Phys. Rev. B **45**, 1450–1453 (1992).
 66. Wang, W.B., K. Shum, R.R. Alfano, D. Szmyd and A.J. Nozik, "Investigation of the L₆-X₆ Intervalley Scattering in Al_xGa_{1-x}As by Measuring Hot Carrier Dynamics in a k = 0 Satellite Valley," Semicond. Sci. and Technol. **7**, B173–B175 (1992).
 67. Pelouch, W.S., R.J. Ellingson, P.E. Powers, C.L. Tang, D.M. Szmyd and A.J. Nozik, "Investigation of Hot Carrier Relaxation in Quantum Well and Bulk GaAs at High Carrier Densities," Semicond. Sci. and Technol. **7**, B337–B339 (1992).
 68. Pelouch, W.S., R.J. Ellingson, P.E. Powers, C.L. Tang, D.H. Levi and A.J. Nozik "Hot Carrier Relaxation in Quantum Well and Bulk GaAs at High Carrier Densities: Femtoseconds to Nanoseconds," SPIE **1677**, 260–271 (1992).
 69. Wang, W.B., R.R. Alfano, D. Szmyd and A.J. Nozik, "Effect of Al Mole Fraction on Decay Profile of Photoinduced IR Absorption and the Determination of the Critical Value of x_c for Al_xGa_{1-x}As," SPIE Series **1677**, 85–90 (1992).
 70. Wang, W.B., R.R. Alfano, D. Szmyd and A.J. Nozik, "Determination of the Critical Value of X_c for the Direct-to-Indirect Transition in Al_xGa_{1-x}As by Measuring Hot-Carrier Dynamics in the X Valley," Phys. Rev. B **46**, 15828–15832 (1992).
 71. Rosenwaks, Y., B.R. Thacker, R.K. Ahrenkiel and A.J. Nozik, "Electron Transfer Dynamics at p-

- GaAs/Liquid Interfaces,” *J. Phys. Chem.* **96**, 10096–10098 (1992).
72. Nozik, A.J., H. Uchida, P.V. Kamat and C.F. Curtis “GaAs Quantum Dots,” *Israel J. Chem.*, Special Issue, **33**, 15–20 (1993).
 73. Arent, D.J., D. Szmyd, M.C. Hanna, K.M. Jones, A.J. Nozik, A.J. SpringThorpe and A. Majeed, “Hot Electron Cooling in Parabolic and Modulation Doped Quantum Wells and Doped Superlattices,” *Superlattices Microstruct.* **13**, 459–468 (1993).
 74. Rosenwaks, Y., M.C. Hanna, D.H. Levi, D.M. Szmyd, R.K. Ahrenkiel and A.J. Nozik, “Hot Carrier Cooling in GaAs: Quantum Wells Versus Bulk,” *Phys. Rev. B* **48**, 14675–14678 (1993).
 75. Rajh, T. and O.I. Mićić “Synthesis and Characterization of Surface-Modified Colloidal CdTe Quantum Dots,” *J. Phys. Chem.* **97**, 11999–12003 (1993).
 76. Rosenwaks, Y., B.R. Thacker, A.J. Nozik, Y. Shapira and D. Huppert, “Recombination Dynamics at InP/Liquid Interfaces,” *J. Phys. Chem.* **97**, 10421–10429 (1993).
 77. Gregg, B.A. and A.J. Nozik, “Existence of Light-Intensity Threshold for Photoconversion Processes,” *J. Phys. Chem.* **97**, 13441–13443 (1993).
 78. Rosenwaks, Y., A.J. Nozik and I. Yavneh, “The Effect of Electric Fields on Time-Resolved Photoluminescence Spectra in Semiconductors,” *J. Appl. Phys.* **75**, 4255–4257 (1994).
 79. Mićić, O.I., C.J. Curtis, K.M. Jones, J.R. Sprague and A.J. Nozik “Synthesis and Characterization of InP Quantum Dots,” *J. Phys. Chem.* **98**, 4966–4969 (1994).
 80. Rosenwaks, Y., B.R. Thacker, A.J. Nozik, R.J. Ellingson, K.C. Burr and C.L. Tang, “Ultrafast Photoinduced Electron Transfer Across Semiconductor-Liquid Interfaces in the Presence of Electric Fields,” *J. Phys. Chem.* **98**, 2739–2741 (1994).
 81. Rosenwaks, R., B.R. Thacker, R.K. Ahrenkiel, A.J. Nozik and I. Yavneh, “Photogenerated Carrier Dynamics Under the Influence of Electric Fields,” *Phys. Rev. B* **50**, 1746–1754 (1994).
 82. Kocha, S.S., J.A. Turner and A.J. Nozik, “Study of the Schottky Barrier and Determination of the Energetic Positions of Band Edges at the N- and P-Type Gallium Indium Phosphide Electrode/Electrolyte Interface,” *J. Electroanal. Chem.* **367**, 27–30 (1994).
 83. Rosenwaks, Y., A.J. Nozik and I. Yavneh, “The Effect of Electric Fields on Time-Resolved Photoluminescence Spectra in Semiconductors,” *J. Appl. Phys.* **75**, 4255–4257 (1994).
 84. Mićić, O.I., J.R. Sprague, C.J. Curtis, K.M. Jones, J.L. Machol, A.J. Nozik, H. Giessen, B. Fluegel, G. Mohs and N. Peyghambarian, “Synthesis and Characterization of InP, GaP, and GaInP₂ Quantum Dots,” *J. Phys. Chem.* **99**, 7754–7759 (1995).
 85. Rosenwaks, Y., B.R. Thacker, K. Bertness and A.J. Nozik, “Ideal Behavior at Illuminated Semiconductor-Liquid Junctions,” *J. Phys. Chem.* **99**, 7871–7874 (1995).
 86. Nozik, A.J., “Comment on Thermodynamic Aspects of Photochemical Solar Energy Conversion,” *Sol. Energy Mater. Sol. Cells* **38**, 73–74 (1995).
 87. Nozik, A.J., “Electron Transfer Dynamics,” *Sol. Energy Mater. Sol. Cells* **38**, 327–329 (1995).
 88. Giessen, H., B. Fluegel, G. Mohs, N. Peyghambarian, J.R. Sprague, O.I. Mićić and A.J. Nozik, “Observation of the Quantum Confined Ground State in InP Quantum Dots at 300K,” *Appl. Phys. Lett.* **68**, 304–306 (1996).
 89. Rosenwaks, Y., B.R. Thacker and A.J. Nozik, “The GaAs/GaInP₂ Heterojunction for Studying Photoinduced

- Charge Transfer Processes,” *Appl. Surf. Sci.* **106**, 396–401 (1996).
90. Mičić, O.I. and A.J. Nozik, “Synthesis and Characterization of Binary and Ternary III-V Quantum Dots,” *J. Lumin.* **70**, Special Issue on Quantum Dots, 95–107 (1996).
 91. Mičić, O.I., J. Sprague, Z. Lu and A.J. Nozik, “Highly Efficient Band-Edge Emission from InP Quantum Dots,” *Appl. Phys. Lett.* **68**, 3150–3152 (1996).
 92. Smith, B.B., J.W. Halley and A.J. Nozik, “On the Marcus Model of Electron Transfer at Immiscible Liquid Interfaces and its Application to the Semiconductor-Liquid Interface,” *J. Chem. Phys.* **205**, 245–267 (1996).
 93. Smith, B.B. and A.J. Nozik, “Study of Electron Transfer at Semiconductor-Liquid Interfaces Addressing the Full System Electronic Structure,” *Chem. Phys.*, Special Issue on Surface Reaction Dynamics, **205**, 47–72 (1996).
 94. Nozik, A.J. and R. Memming, “Physical Chemistry of Semiconductor-Liquid Interfaces,” *J. Phys. Chem.*, Special 100th Anniversary Issue, **100**, 13061–13078 (1996).
 95. Hanna, M.C., Z.H. Lu, A.F. Cahill, M.J. Heben and A.J. Nozik, “MOCVD Growth and Optical Characterization of Strain Induced GaAs Quantum Dots with InP Island Stressors,” *J. Cryst. Growth* **174**, 605–610 (1997).
 96. Smith, B.B. and A.J. Nozik, “Theoretical Studies of Electron Transfer and Electron Localization at the Semiconductor/Liquid Interface,” *J. Phys. Chem.* **101**, 2459–2475 (1997).
 97. Mičić, O.I., H.M. Cheong, H. Fu, A. Zunger, J.R. Sprague, A. Mascarenhas and A.J. Nozik, “Size-Dependent Spectroscopy of InP Quantum Dots,” *J. Phys. Chem. B* **101**, 4904–4912 (1997).
 98. Huang, S.Y., G. Schlichthörl, A.J. Nozik, M. Grätzel and A.J. Frank, “Charge Recombination in Dye-Sensitized Nanocrystalline TiO₂ Solar Cells,” *J. Phys. Chem. B* **101**, 2576–2582 (1997).
 99. Meier, A., S.S. Kocha, M.C. Hanna, A.J. Nozik, K. Siemoneit, R. Reineke-Koch and R. Memming, “Electron Transfer Rate Constants for Majority Electrons at GaAs and GaInP₂ Semiconductor-Liquid Interfaces,” *J. Phys. Chem. B* **101**, 7038–7042 (1997).
 100. Nozik, A.J. and O.I. Mičić, “Colloidal Quantum Dots of III-V Semiconductors,” *MRS Bull.* **23**, 24–30 (1998).
 101. Bertram, D., O.I. Mičić and A.J. Nozik, “Excited State Spectroscopy of InP Quantum Dots,” *Phys. Rev. B* **57**, R4265–R4268 (1998).
 102. Zaban, A., O.I. Mičić, B.A. Gregg and A.J. Nozik, “Photosensitization of Nanoporous TiO₂ Electrodes with InP Quantum Dots,” *Langmuir* **14**, 3153–3156 (1998).
 103. Mičić, O.I., K.M. Jones, A. Cahill and A.J. Nozik “Optical, Electronic, and Structural Properties of Uncoupled and Close-Packed Arrays of InP Quantum Dots,” *J. Phys. Chem. B* **102** (Allen Bard Festschrift), 9791–9796 (1998).
 104. Ellingson, R.J., J.B. Asbury, S. Ferrere, H.N. Ghosh, J. Sprague, T. Lian and A.J. Nozik, “Dynamics of Electron Injection in Nanocrystalline Titanium Dioxide Films Sensitized with [Ru(4,4'-dicarboxy-2,2'-bipyridine)₂(NCS)₂] by Infrared Transient Absorption,” *J. Phys. Chem. B* **102**, 6455–6458 (1998).
 105. Ellingson, R.J., J.B. Asbury, S. Ferrere, H.N. Ghosh, J.R. Sprague, T. Lian and A.J. Nozik, “Sub-picosecond Injection of Electrons from Excited [Ru(2,2'-bipy-4,4'-dicarboxy)₂(SCN)₂] into TiO₂ Using Transient Mid-infrared Spectroscopy,” *Z. Phys. Chem. (München)* **212**, 77–84 (1999).
 106. Meier, A., D. Selmarten, M. Hanna, A.J. Nozik, K. Siemoneit, R. Reineke-Koch and R. Memming “Ultrafast Electrochemical Charge-Transfer Reactions at III-V Semiconductor-Molecule Interfaces,” *Z.*

- Phys. Chem. **213**, 117–128 (1999).
107. Meier, A., D.C. Selmarten, K. Siemoneit, B.B. Smith and A.J. Nozik, “Fast Electron Transfer Across Semiconductor-Molecule Interfaces: GaAs/Co(Cp)₂⁺⁰,” J. Phys. Chem. B. **103**, 2122–2141 (1999).
 108. Asbury, J.B., R.J. Ellingson, H.N. Ghosh, S. Ferrere, A.J. Nozik and T. Lian, “Femtosecond IR Study of Excited-State Relaxation and Electron-Injection Dynamics of Ru(dcbpy)₂(NCS)₂ in Solution and on Nanocrystalline TiO₂ and Al₂O₃ Thin Films,” J. Phys. Chem. B. **103**, 3110–3119 (1999).
 109. Bertram, D., M.C. Hanna and A.J. Nozik, “Two Color Blinking of Single Strain-Induced GaAs Quantum Dots,” Appl. Phys. Lett. **74**, 2666–2668 (1999).
 110. Mičić, O.I., S.P. Ahrenkiel, D. Bertram and A.J. Nozik, “Synthesis, Structure, and Optical Properties of Colloidal GaN Quantum Dots,” Appl. Phys. Lett. **75**, 478–480 (1999).
 111. Poles, E., D.C. Selmarten, O.I. Mičić and A.J. Nozik, “Anti-Stokes Photoluminescence in Colloidal Semiconductor Quantum Dots,” Appl. Phys. Lett. **75**, 971–973 (1999).
 112. Smith, B.B. and A.J. Nozik, “A Wave Packet Model for Electron Transfer and Its Implications for the Semiconductor-Liquid Interface,” J. Phys. Chem. B **103**, 9915–9932 (1999).
 113. Menoni, C.S., L. Miao, D. Patel, O.I. Mičić and A.J. Nozik, “Three-Dimensional Confinement in the Conduction Band Structure of InP,” Phys. Rev. Lett. **84**, 4168–4171 (2000).
 114. Mičić, O.I., B.B. Smith and A.J. Nozik, “Core-Shell Quantum Dots of Lattice-Matched ZnCdSe₂ Shells on InP Cores: Experiment and Theory,” J. Phys. Chem. B **104**, 12149–12156 (2000).
 115. Smith, B.B. and A.J. Nozik, “Theoretical Studies of Electronic State Localization and Wormholes in Silicon Quantum Dot Arrays,” Nano Lett. **1**, 36–41 (2001).
 116. Nozik, A.J., “Spectroscopy and Hot Electron Relaxation Dynamics in Semiconductor Quantum Wells and Quantum Dots,” Ann. Rev. Phys. Chem. **52**, 193–231 (2001).
 117. Mičić, O.I., S.P. Ahrenkiel and A.J. Nozik, “Synthesis of Extremely Small InP Quantum Dots and Electronic Coupling in Their Disordered Solid Films,” Appl. Phys. Lett. **78**, 4022–4024 (2001).
 118. Rumbles, G., D.C. Selmarten, R.J. Ellingson, J.L. Blackburn, P. Yu, B.B. Smith, O.I. Mičić and A.J. Nozik, “Anomalies in the Linear Absorption, Transient Absorption, Photoluminescence and Photoluminescence Excitation Spectroscopies of Colloidal InP Quantum Dots,” J. Photochem. Photobiol. A **142**, 187–195 (2001).
 119. Kuno, M., D.P. Fromm, A. Gallagher, D.J. Nesbitt, O.I. Mičić and A.J. Nozik, “Fluorescence Intermittency in Single InP Quantum Dots,” Nano Lett. **1**, 557–564 (2001).
 120. Mičić, O.I., A.J. Nozik, E. Lifshitz, T. Rajh, O.G. Poluektov and M.C. Thurnauer, “Electron and Hole Adducts Formed in Illuminated InP Colloidal Quantum Dots Studied by Electron Paramagnetic Resonance,” J. Phys. Chem. **106**, 4390–4395 (2002).
 121. Langof, L., E. Ehrenfreund, E. Lifshitz, O.I. Mičić and A.J. Nozik, “Continuous-Wave and Time-Resolved Optically Detected Magnetic Resonance Studies of Non-Etched/Etched InP Nanocrystals,” J. Phys. Chem. B **106**, 1606–1612 (2002).
 122. Ellingson, R.J., J.L. Blackburn, P. Yu, G. Rumbles, O.I. Mičić and A.J. Nozik, “Excitation Energy Dependent Efficiency of Charge Carrier Relaxation and Photoluminescence in Colloidal InP Quantum Dots,” J. Phys. Chem. B **106**, 7758–7765 (2002).
 123. Nozik, A.J., “Quantum Dot Solar Cells,” Physica E **14**, 115–120 (2002).
 124. Ellingson, R.J., J.L. Blackburn, J. Nedeljković, G. Rumbles, M. Jones, H. Fu and A.J. Nozik, “Experimental and Theoretical Investigation of Electronic Structure in Colloidal Indium Phosphide

- Quantum Dots,” *Phys. Status Solidi C* **0**, 1229–1232 (2003).
125. Seong, M.J., O.I. Mičić, A.J. Nozik, A. Mascarenhas and H.M. Cheong, “Size-Dependent Raman Study of InP Quantum Dots,” *Appl. Phys. Lett.* **82**, 185–187 (2003).
 126. Blackburn, J.L., R.J. Ellingson, O.I. Mičić and A.J. Nozik, “Electron Relaxation in Colloidal InP Quantum Dots with Photogenerated Excitons or Chemically Injected Electrons,” *J. Phys. Chem. B* **107**, 102–109 (2003).
 127. Ellingson, R.J., J.L. Blackburn, J. Nedeljković, G. Rumbles, M. Jones, H. Fu and A.J. Nozik, “Theoretical and Experimental Investigation of Electronic Structure and Relaxation in Colloidal Nanocrystalline Indium Phosphide Quantum Dots,” *Phys. Rev. B.* **67**, 075308 (2003), 8 pages.
 128. Ahrenkiel, S.P., O.I. Mičić, A. Miedaner, C.J. Curtis, J.M. Nedeljković and A.J. Nozik, “Synthesis and Characterization of Colloidal InP Quantum Rods,” *Nano Lett.* **3**, 833–837 (2003).
 129. Jones, M., J. Nedeljković, R. Ellingson, A.J. Nozik and G. Rumbles, “Photoenhancement of Luminescence in Colloidal CdSe Quantum Dot Solutions,” *J. Phys. Chem., B* **107**, 11346–11352 (2003).
 130. Beard, M.C., G.M. Turner, J.E. Murphy, O.I. Mičić, M.C. Hanna, A.J. Nozik and C.A. Schmittenmaer, “Electronic Coupling in InP Nanoparticle Arrays,” *Nano Lett.* **3**, 1695–1699 (2003).
 131. Blackburn, J.L., D.C. Selmarten and A.J. Nozik, “Electron Transfer Dynamics in Quantum Dot/Titanium Dioxide Composites Formed by in Situ Chemical Bath Deposition,” *J. Phys. Chem. B* **107**, 14154–14157 (2003).
 132. Hanna, M.C., O.I. Mičić, M.J. Seong, S.P. Ahrenkiel, J.M. Nedeljković and A.J. Nozik, “GaInP₂ Overgrowth and Passivation of Colloidal InP Nanocrystals Using Metalorganic Chemical Vapor Deposition,” *Appl. Phys. Letts.* **84**, 780–782 (2004).
 133. Nedeljković, J.M., O.I. Mičić, S.P. Ahrenkiel, A. Miedaner and A.J. Nozik, “Growth of InP Nanostructures via Reaction of Indium Droplets with Phosphide Ions: Synthesis of InP Quantum Rods and InP-TiO₂ Composites,” *J. Am. Chem. Soc.* **126**, 2632–2639 (2004).
 134. Yu, P., J.M. Nedeljković, P.A. Ahrenkiel, R.J. Ellingson and A.J. Nozik, “Size Dependent Femtosecond Electron Cooling Dynamics in CdSe Quantum Rods,” *Nano Lett.* **4**, 1089–1092 (2004).
 135. Langof, L., L. Fradkin, E. Ehrenfreund, E. Lifshitz, O.I. Mičić and A.J. Nozik, “Colloidal InP/ZnS Core-Shell Nanocrystals Studied by Linearly and Circularly Polarized Photoluminescence,” *Chem. Phys.* **297**, 93–98 (2004).
 136. Jones, M., C. Engtrakul, W.K. Metzger, R.J. Ellingson, A.J. Nozik, M.J. Heben and G. Rumbles, “Analysis of Photoluminescence from Solubilized Single-Walled Carbon Nanotubes,” *Phys. Rev. B* **71**, 9 pages (2005).
 137. Ellingson, R.J., C. Engtrakul, M. Jones, M. Samec, G. Rumbles, A.J. Nozik and M.J. Heben, “Ultrafast Photoresponse of Metallic and Semiconducting Single Wall Carbon Nanotubes,” *Phys. Rev. B* **71**, 115444, 8 pages (2005).
 138. Dimitrijević, N.M., T. Tajh, S.P. Ahrenkiel, J.M. Nedeljković, O.I. Mičić and A.J. Nozik, “Charge Separation in Heterostructures of InP Nanocrystals with Metal Particles,” *J. Phys. Chem. B* **109**, 18243–18249 (2005).
 139. Blackburn, J.L., D.C. Selmarten, R.J. Ellingson, M. Jones, O.I. Mičić and A. J. Nozik, “Electron and Hole Transfer from Indium Phosphide Quantum Dots,” *J. Phys. Chem. B* **109**, 2625–2631 (2005).
 140. Yu, P., M.C. Beard, R.J. Ellingson, S. Ferrere, C. Curtis, J. Drexler, F. Luiszer and A. J. Nozik, “Absorption Cross Section and Related Optical Properties of Colloidal InAs Quantum Dots,” *J. Phys. Chem. B* **109**, 7084–7087 (2005).

141. Nozik, A. J., "Exciton Multiplication and Relaxation Dynamics in Quantum Dots: Applications to Ultrahigh-Efficiency Solar Photon Conversion," *Inorg. Chem. (Forum)* **44**, 6893–6899 (2005).
142. Ellingson, R.J., M.C. Beard, J. Johnson, P. Yu, O.I. Mićić, A.J. Nozik, A.J. Shabev and A.L. Efros, "Highly Efficient Multiple Exciton Generation in Colloidal PbSe and PbS Quantum Dots," *Nano Lett.* **5**, 865–871 (2005).
143. Murphy, J.E., M.C. Beard, A.G. Norman, S.P. Ahrenkiel, J.C. Johnson, P. Yu, O.I. Mićić, R.J. Ellingson and A.J. Nozik, "PbTe Colloidal Nanocrystals: Synthesis, Characterization, and Multiple Exciton Generation," *J. Am. Chem. Soc.* **128**, 3241–3247 (2006).
144. Hanna M.C. and A.J. Nozik, "Solar Conversion Efficiency of Photovoltaic and Photoelectrolysis Cells with Carrier Multiplication Absorbers," *J. Appl. Phys.* **100**, 074510, 8 pages (2006).
145. Paci, I., J.C. Johnson, X. Chen, G. Rana, D. Popovic, D.E. David, A.J. Nozik, M.A. Ratner and J. Michl, "Singlet Fission for Dye Sensitized Solar Cells: Can a Suitable Sensitizer be Found," *J. Amer. Chem. Soc.* **128**, 16546–16553 (2006).
146. Engtrakul, C., Y-H. Kim, J.M. Nedeljković, S.P. Ahrenkiel, K.E.H. Gilbert, J.L. Alleman, S.B. Zhang, O.I. Mićić, A.J. Nozik and M.J. Heben, "Self-Assembly of Linear Arrays of Semiconductor Nanoparticles on Carbon Single-Walled Nanotubes," *J. Phys. Chem B* **110**, 25153–25157 (2006).
147. Yu, P., K. Zhu, A.G. Norman, S. Ferrere, A.J. Frank and A.J. Nozik, "Nanocrystalline TiO₂ Solar Cells Sensitized with InAs Quantum Dots," *J. Phys. Chem. B* **110**, 25451–25454 (2006).
148. Murphy, J.E., M.C. Beard and A.J. Nozik, "Time-Resolved Photoconductivity of PbSe Nanocrystal Arrays," *J. Phys. Chem. B* **110**, 25455–25461 (2006).
149. Shabaev, A.L. Efros and A.J. Nozik, "Multi-Exciton Generation by a Single Photon in Nanocrystals," *NanoLett.* **6**, 2856–2863 (2006).
150. Ellingson, R., M. Beard, J. Johnson, J. Murphy, K. Knutsen, K. Gerth, J. Luther, M. Hanna, O. Mićić, A. Shabaev, A.L. Efros and A.J. Nozik, "Nanocrystals Generating >1 Electron per Photon May Lead to Increased Solar Cell Efficiency," Article No. 10.1117/2.1200606.0229, SPIE Newsroom, 4 pages (2006).
151. Luque, A., A. Martí and A.J. Nozik, "Solar Cells Based on Quantum Dots: Multiple Exciton Generation and Intermediate Bands," *MRS Bull.* **32**, Special Issue on Photovoltaics, 236–241 (2007).
152. Luther, J.M., M.C. Beard, Q. Song, M. Law, R.J. Ellingson, and A.J. Nozik, "Multiple Exciton Generation in Films of Electronically Coupled PbSe Quantum Dots," *Nano Lett.* **7**, 1779–1784 (2007).
153. Beard, M.C., K.K. Knutsen, P. Yu, J. Luther, Q. Song, R.J. Ellingson, and A.J. Nozik, "Multiple Exciton Generation in Colloidal Silicon Nanocrystals," *Nano Lett.* **7**, 2506–2512 (2007).
154. Johnson, J.C., Gerth, K.A., Song, Q., Murphy, J.E., Nozik, A.J., "Ultrafast Exciton Fine Structure Relaxation Dynamics in Lead Chalcogenide Nanocrystals" *NanoLetters* **8** 1374-1381 (2008).
155. Luther, J.M., Law, M., Song, Q., Perkins, C.L., Beard, M.C., Nozik, A.J. "Structural, Optical, and Electrical Properties of Self-Assembled Films of PbSe Nanocrystals Treated with 1,2-ethanedithiol, *ACS Nano* **2**, 271 (2008)
156. Nozik, A.J., "Multiple Exciton Generation in Semiconductor Quantum Dots", *Chem. Phys. Letters, Frontiers in Chemistry*, **457**, 3 – 11 (2008)
157. Law, M., . Luther, J.M. Song, Q., Perkins, C.L., Nozik, A.J. "The Structural, Optical and Electrical Properties of PbSe Nanocrystal Solids Treated Thermally and with Simple Amines" *JACS*, **130**, 5974-5985 (2008).
158. Luther, J.M., Law, M., Beard, M.C., Song, Q., Reese, M.O., Ellingson, R.J., Nozik, A.J., "Schottky Solar

- Cells Based on Colloidal Nanocrystal Films”, *NanoLetters* **8**, 3488 (2008)
159. Law, M., Beard, M.C.; Choi, S.; Luther J.M., Hanna, M., Nozik, A.J., “Determining the Internal Quantum Efficiency of PbSe Nanocrystal Solar Cells with the Aid of an Optical Model”, *Nano Lett* **8**, 3904 (2008).
 160. Johnson, J.C., A.J. Nozik, X. Chen, G. Rana, I.Paci, M.A. Ratner and J. Michl, “Photophysical Properties of Covalently Linked Molecular Dimers Based on Biradicaloids: Evidence for Singlet Fission,” (2008)
 161. Beard, M.C., Midgett, A., Law, M., Semonin, O., Ellingson, R., Nozik, A.J., “Variations in the Quantum Efficiency of Multiple Exciton Generation for a Series of Chemically-treated PbSe Nanocrystal Films” *Nano Lett* **9**, 836 (2009)
 162. Nozik, A.J. “Making the Most of Photons”, *Nature Nanotechnology*, **4**, 548 (2009)
 163. Nozik, A.J., Perspective Article “Nanoscience and Nanostructures for Photovoltaics and Solar Fuels”, *Nano Lett* **10**, 2735-2741 (2010)
 164. Beard, M.C., Midgett, A.G., Hanna, M.C., Luther, J.M., Hughes, B.K., Nozik, A.J. “Comparing Multiple Exciton Generation in Quantum Dots to Impact Ionization in Bulk Semiconductors: Implications for Enhancement of Solar Energy Conversion” *Nano Lett*, **10**, 3019-3027 (2010)
 165. Midgett, A.G.; Hillhouse, H.W., Hughes, B.S., Nozik, A.J., Beard, M.C., “Flowing and Static Conditions for Measuring Multiple Exciton Generation in PbSe Quantum Dots”, *J. Phys. Chem. C*, **114**, 6873 (2010)
 166. Semonin, O.E., Johnson, J.C., Luther, J.M., Midgett, A.G., Nozik, A.J., Beard, M.C., “Absolute Photoluminescence Quantum Yields of IR-26 Dye, PbS, and PbSe Quantum Dots, *J. Phys. Chem* (2010)
 167. Johnson, J.C., Nozik, A.J., Michl, J. “High Triplet Yield from Singlet Fission in a Thin Film of 1,3-Diphenylisobenzofuran, *J. Amer. Chem. Soc.* **132**, 16302 (2010)
 168. Nozik, A.J., Beard, M.C., Luther, J.M., Law, M., Ellingson, R.J., Johnson, J.C., “Semiconductor Quantum Dots and Quantum Dot Arrays and Applications of MEG to 3rd Generation PV Solar Cells”, *Chemical Reviews*, Thematic Issue, **110**, 6873 (2010)
 169. Schwerin, A.F., Johnson, J.C., Smith, M.B., Sreerunothai, P., Popovic, D., Cerny, J., Havlas, Z., Paci, I., Akdag, A., MacLeod, M. K., Chen, X. D., David, D. E., Ratner, M.A., Miler J. R., Nozik, A. J., Michl, J. “Toward Designed Singlet Fission: Electronic States and Photophysics of 1, 3-Diphenylisobenzofuran.” *J. Phys. Chem A*, **114**, pp. 1457-1473 (2010)
 170. Greyson, E.C., Stepp, B.R., Chen, X., Schwerin, A. F., Paci, I., Smith M.B., Akdag, A., Johnson, J.C., Nozik, A.J., Michl, J., Ratner, M., “Singlet Fission for Solar Cell Applications: Energy Aspects of Interchromophore Coupling,” *J. Phys. Chem. B*, **114** (45) pp. 14223-14232 (2010)
 171. Nozik A.J., Miller, J., “Introduction to Solar Photon Conversion,” *Chemical Reviews*, Thematic Issue, **110**, 6443, (2010)
 172. Luther, J.M.; Gao, J.; Lloyd, M.T.; Semonin, O.E.; Beard, M.C.; Nozik, A.J., “Stability Assessment on a 3% bilayer PbS/ZnO quantum dot heterojunction solar cell”, *Adv. Mat.*, **33**, 3704, (2010)
 173. Smith, D.K.; Luther, J.M.; Semonin, O.E.; Nozik, A.J.; Beard, M.C. “Tuning the synthesis of ternary lead chalcogenide quantum dots by balancing precursor reactivity”, *ACS Nano*, **5** (1), 183, (2011)
 174. Gao, J.; Luther, J.M.; Semonin, O.E.; Ellingson, R.J.; Nozik, A.J.; Beard, M.C., “Quantum dot size dependent JV characteristics in heterojunction ZnO/PbS quantum dot solar cells”, *Nano Letters*, **11** (3), 1002, (2011)
 175. Blackburn, J.L.; Chappell, H.; Luther, J.M.; Nozik, A.J.; Johnson, J.C., “Correlation between Photooxidation and the Appearance of Raman Scattering Bands in Lead Chalcogenide Quantum Dots”,

- JPC Lett*, 2(6), 599, (2011)
176. Chappell, H.E.; Hughes, B.K.; Beard, M.C.; Nozik, A.J.; Johnson, J.C., "Emission Quenching in PbSe Quantum Dot Arrays by Short-Term Air Exposure", *JPCL*, 2, 889, (2011)
 177. Blankenship, W. Tiede, Moore, Nozik, et al.. "Comparing Photosynthetic and Photovoltaic Efficiencies and Recognizing the Potential for Improvement" , *Science* 332, 805, (2011)
 178. Stewart, John Tom; Padilha, Lazaro A.; Qazilbash, Mumtaz; Pietryga, Jeffrey M.; Midgett, Aaron G.; Luther, Joseph; Beard, Matthew C.; Nozik, Arthur, Klimov, V.I. , "Comparison of carrier multiplication yields in PbS and PbSe nanocrystals: The role of competing energy-loss processes ", *Nano Letters* 12, 1741 (2012)
 179. Gao, Jianbo; Perkins, Craig L.; Luther, Joseph M.; Hanna, Mark C.; Chen, Hsiang-Yu; Semonin, Octavi E.; Nozik, Arthur J.; Ellingson, Randy J.; Beard, Matthew C. "n-Type Transition Metal Oxide as a Hole Extraction Layer in PbS Quantum Dot Solar Cells", *Nano Letters* 11, 3263 (2011),
 180. Ma, Jie; Wei, Su-Huai; Neale, Nathan R.; Nozik, Arthur, . "Effect of surface passivation on dopant distribution in Si quantum dots. The case of B and P doping", *J. Applied Physics Letters* (2011), 98(17), 173103
 181. Chappell, Helen E.; Hughes, Barbara K.; Beard, Matthew C.; Nozik, Arthur J.; Johnson, Justin C. "Emission Quenching in PbSe Quantum Dot Arrays by Short-Term Air Exposure ", *Journal of Physical Chemistry Letters* (2011), 2(8), 889-893.
 182. Blackburn, Jeffrey L.; Chappell, Helen; Luther, Joseph M.; Nozik, Arthur J.; Johnson, Justin C., "Correlation between Photooxidation and the Appearance of Raman Scattering Bands in Lead Chalcogenide Quantum Dots", *Journal of Physical Chemistry Letters* (2011), 2, 599-603.
 183. Trinh, M. Tuan; Polak, Leo; Schins, Juleon M.; Houtepen, Arjan J.; Vaxenburg, Roman; Maikov, Georgy I.; Grinbom, Gal; Midgett, Aaron G.; Luther, Joseph M.; Beard, Matthew C; Nozik, A.J. " Anomalous Independence of Multiple Exciton Generation on Different Group IV-VI Quantum Dot Architectures " *Nano Letters* (2011), 11(4), 1623-1629.
 184. Gao, Jianbo; Luther, Joseph M.; Semonin, Octavi E.; Ellingson, Randy J.; Nozik, Arthur J.; Beard, Matthew C., " Quantum Dot Size Dependent J-V Characteristics in Heterojunction ZnO/PbS Quantum Dot Solar Cells", *Nano Letters* (2011), 11(3), 1002-1008.
 185. Semonin, O.E.; Luther, J.M.; Choi, S.; Chem, Hsiang-Yu; Gao, J.; Nozik, A.J., Beard, M. "Peak External Photocurrent Quantum Efficiency Exceeding 100% via MEG in a Quantum Dot Solar Cell", *Science*, 334, 1530, (2011).
 186. J.T. Stewart, L. Padilha, L.A. Qazilbash, M. Mumtaz, J.M. Pietryga, A.G. Midgett, L.M. Luther, M.C. Beard, A.J. Nozik, V.I. Klimov, Comparison of Carrier Multiplication Yields in PbS and PbSe Nanocrystals: The Role of Competing Energy Loss Processes" *Nano Letters* 12, 622 (2012).
 187. Nozik, A.J. "Separating Multiple Excitons", *Nature Photonics* 6, 271, (2012).
 188. M.C. Hanna, M. Beard, and A.J. Nozik , "Effect of Solar Concentration on the Thermodynamic Power Conversion Efficiency of Quantum Dot Solar Cells Exhibiting Multiple Exciton Generation", *J. Phys. Chem. Lett*, 3, 2857 (2012).
 189. B.K. Hughes, D.A. Ruddy, J.L. Blackburn, D.K. Smith, M.R. Bergren, A.J. Nozik, J.C. Johnson, M.C.
 190. Beard, "Control of PbSe Quantum Dot Surface Chemistry and Photophysics Using an Alkylselenide Ligand", *ACS Nano* 6, 5498 (2012).

191. F. Toor, T.G. Deutsch, J.W. Pankow, W. Nemeth, A.J. Nozik, and H. Branz, “Novel Micropixelation Strategy to Stabilize Semiconductor Photoelectrodes for Solar Water Splitting”, *J. Phys. Chem B* 117, 19262 (2012).
192. G. Midgett, J.M. Luther, J.T. Stewart, D.K. Smith, L.A. Padilha, V.I. Klimov, A.J. Nozik, and M.C. Beard, “Size and Composition Multiple Exciton Generation in PbS, PbSe, and PbS_xSe_{1-x} Alloyed Quantum Dots: Nano Letters 13, 3078 (2013).
193. Johnson, Justin C.; Akdag, Akin; Zamadar, Matibur, Nozik, A.J., Michl, J. “Toward Designed Singlet Fission: Solution Photophysics of Two Indirectly Coupled Covalent Dimers of 1,3-Diphenylisobenzofuran” *J. Phys. Chem. B* 117, 4680-4695 (2013).
194. M.C. Beard, J.M. Luther, O. Semonin, A.J. Nozik, “Third Generation Photovoltaics based on Multiple Exciton Generation in Quantum Confined Semiconductors”, *Accts. Chem. Res.* 46, 1252 (2013).
195. J.C. Johnson, A.J. Nozik, J. Michl, “The Role of Chromophore Coupling in Singlet Fission” *Accts. Chem. Res.* 46, 1290 (2013).
196. B. K. Hughes, J.L. Blackburn, D. Kroupa, A. Shabaev, S.C. Erwin, Al. Efros, A.J. Nozik, J.M. Luther, M.C. Beard, “Synthesis and Spectroscopy of PbSe Fused Quantum-Dot Dimers”, *JACS* 136, 4670 (2014).
197. C.C. Mercado, A. Zakutayev, C.J. Flynn, J.F. Cahoon, A.J. Nozik, “Sensitized Zinc-Cobalt-Oxide Spinel p-Type Photocathode”, *J. Phys. Chem. C* 118, 25340 (2014).
198. Jing Zhang, Jason Tolentino, E. Ryan Smith, Jianbing Zhang, Matthew C. Beard, Arthur J. Nozik, Matt Law, and Justin C. Johnson, “Carrier Transport in PbS and PbSe QD Films Measured by Photoluminescence Quenching” *J. Phys. Chem. C*, 11, 16228–16235 (2014).
199. Joseph L. Ryerson, Joel N. Schrauben, Andrew J. Ferguson, Subash Chandra Sahoo, Panče Naumov, Zdeněk Havlas, Josef Michl, Arthur J. Nozik, and Justin C. Johnson, “Two Thin Film Polymorphs of the Singlet Fission Compound 1,3-Diphenylisobenzofuran”, *The Journal of Physical Chemistry C*, 118, 19608-19617 (2014).
200. J. Ryerson, J.N. Schrauben, A.J. Nozik, J. Michl, and J.C. Johnson, “Singlet Fission in organic thin films of 1,3 diphenylisobenzofuran and Cibalackrot”, *SPIE Nanoscience and Engineering*, 916504 (2014).
201. J. Ryerson, J.N. Schrauben, A.J. Ferguson, S.C. Erwin, Z. Havlas, J. Michl, A.J. Nozik, J.C. Johnson, “Two Thin Film Polymorphs of the Singlet Fission Compound 1,3 Diphenylisobenofuran” *J. Phys. Chem. C*. 118, 12121 (2014).
202. M.C. Beard, J.M. Luther, and A.J. Nozik, , “The promise and challenge of nanostructured solar cells”, *Nature Nanotech* 9, 951 (2014).
203. D. M. Sagar, J. M. Atkin, P. K. B. Palomaki, N.R. Neale, J. L. Blackburn, J. C. Johnson, A.J. Nozik, M. B. Raschke, and M. C. Beard. “Quantum Confined-Electron Phonon Interaction in Silicon Nanocrystals”, *Nano Letts*, 15, 1511-1516 (2015).
204. S.M. McCullough, CJ Flynn, CC Mercado, AJ Nozik, and JF Cahoon, “Compositional-tunable mechanochemical synthesis Zn_xCo_{3-x}O₄ nanoparticles for Mesoporous p-type Photocathodes”, *J. Materials Chem. A3*, 21990 (2015).
205. M.C. Beard, J.C. Johnson, J.M. Luther, and A.J. Nozik, “Multiple Exciton Generation in Quantum Dots vs Singlet Fission in Molecular Chromophores for Solar Photon Conversion”, *Phil. Trans. Royal Soc. A*, 373, 20140412 (2015).
206. A. R. Marshall, M.R. Young, A.J. Nozik, M.C. Beard, and J.M. Luther, “Exploration of Metal Chloride Uptake for Improved Performance Characteristics of PbSe Quantum Dot Solar Cells”. *J. Phys. Chem* 6,

2892 (2015).

207. Flynn, Cory J.; McCullough, Shannon M.; Oh, EunBi; Li, Lesheng; Mercado, Candy C.; Farnum, Byron H.; Li, Wentao; Donley, Carrie L.; You, Wei; Nozik, Arthur J.; et al “Site-Selective Passivation of Defects in NiO Solar Photocathodes by Targeted Atomic Deposition”, *ACS Applied Materials & Interfaces* (2016), 8(7), 4754-4761.
208. Kroupa, D. M.; Anderson, N. C.; Castaneda, C. V.; Nozik, A. J.; Beard, M. C., “ In situ spectroscopic characterization of a solution-phase X-type ligand exchange at colloidal lead sulphide quantum dot surfaces”, *Chem. Comm.* 52, 13893-13896 (2016).
209. Kroupa, Daniel M.; Hughes, Barbara K.; Miller, Elisa M.; Moore, David T.; Anderson, Nicholas C.; Chernomordik, Boris D.; Nozik, Arthur J.; Beard, Matthew C. , “Synthesis and Spectroscopy of Silver-Doped PbSe Quantum Dots”, *J. Amer. Chem. Soc.* 139, 10382 (2017).
210. Kroupa, Daniel M.; Voros, Marton; Brawand, Nicholas P.; McNichols, Brett W.; Miller, Elisa M.; Gu, Jing; Nozik, Arthur J.; Sellinger, Alan; Galli, Giulia; Beard, Matthew C., “Tuning colloidal quantum dot band edge positions through solution-phase surface chemistry modification”, *Nature Comm.*, 8, 15257 (2017).
211. M.C. Beard and A.J. Nozik “Solar Photon Conversion to Electricity and Solar Fuels”, *Optical Nanostructures and Advanced Materials*, PM2A 1, 2017
212. A.J. Nozik, “Utilizing Hot Electrons”, *Nature Energy* 3, 170 (2018)
213. D. Kroupa, M. Vörös, N.P. Brawand, N. D. Bronstein, B.W.McNichols, C.V. Castaneda, A.J. Nozik, A. Sellinger, G. Galli, and M.C. Beard, “Optical Absorbance Enhancement in PbS QD/Cinnamate Ligand Complexes, *J. Phys. Chem. Lett* 9, 3425-3433 (2018).
214. D.M. Kroupa, G.F. Pach, M. Vörös, F. Giberti, B.D. Chernomordik, R.W. Crisp, A.J. Nozik, J.C. Johnson, R. Singh, V.I. Klimov, G. Galli, and M.C. Beard, Enhanced multiple exciton generation in PbS|CdS janus-like heterostructured nanocrystals, *ACS Nano* 12, 10084-10094 (2018).
215. Noah D. Bronstein, Marissa S. Martinez, Daniel M. Kroupa, Marton Voros, Haipeng Lu, Nicholas P. Brawand, Arthur J. Nozik, Alan Sellinger, Giulia Galli, Matthew C. Beard, “ Designing Janus Ligand Shells on PbS Quantum Dots using Ligand-Ligand Cooperativity”, *ACS Nano* 13, 3839 (2019)
216. MS Martinez, AJ Nozik, MC Beard, “Theoretical limits of multiple exciton generation and singlet fission tandem devices for solar water splitting” editors-pick & cover, *J. Chem. Phys.* 151, 114111 (2019)
217. Invited Plenary Presentation, “Advanced Concepts for Ultra- Highly Efficient Conversion of Solar Photons into Photovoltaics and Solar Fuels Based on Nanostructures”, in the Webinar on Nanomedicine, Nanomaterials and Nanotechnology held during 17 - 20 August 2020.
218. A.J. Nozik and M.C. Beard, “Multiple Exciton Generation (MEG) from Hot Carriers for Solar Energy Conversion”, in *Nanotechnology, Roadmap for Nanotechnology for Catalysis and Solar Energy Conversion*, *Nanotechnology* 32, 042003
219. A.J. Nozik, “Quantization Effects in Semiconductor Nanostructures and Singlet Fission in Molecular Chromophores for Solar Photon Conversion to Photovoltaics and Solar Fuels”, Invited Review, *Chemical Physics Reviews*, Featured Article, Editors Pick, *SciLight* <http://doi.org/10.1063/5.0028982>, DOI:10.1063/5.0028982, June, 2021
220. M. Martinez, A.J. Nozik, M.C. Beard, “Size and Ligand Surface Density Dependence of Janus Shell Formation and Optical Properties of PbS Quantum Dots”, *J. Phys. Chem. C*, 125, 39, 21729 (2021).

BOOKS (written or edited)

1. *Nanoscience and Optoelectronic Devices for Solar Photon Conversion*, Cambridge University Press, ((in preparation))
2. *Advanced Concepts in Photovoltaics*, (edited with Matt Beard and Gavin Conibeer), Royal Society of Chemistry, Cambridge UK, 595 pages, August 2014
3. *Nanostructured and Photoelectrochemical Systems for Solar Photon Conversion* (edited with M.D. Archer), Vol. 3 of *Series on Photoconversion of Solar Energy*, Imperial College Press, 2008, 700 pages.
4. *Surface Electron Transfer Processes* (edited with R.J.D. Miller, G. McLendon, W. Schmickler and F. Willig), VCH Publishers, 1995, 370 pages.
5. *Photoelectrochemistry and Electrosynthesis on Semiconducting Materials*, Electrochemical Society Symposium Series (edited with D.S. Ginley, N. Armstrong, K. Honda, A. Fujishima, T. Sakata, T. Kawai, 1987, 516 pages.
6. *Photoeffects at Semiconductor-Electrolyte Interfaces*, ACS Symposium Series Vol. 146 (American Chemical Society, Washington, DC, 1981), 416 pages.
7. *Photoelectrochemistry: Fundamental Processes and Measurement Technique* (edited with W.W. Wallace, S. K. Deb, and R. Wilson), Electrochemical Society Symposium Series, 1982, 723 pages.

BOOK CHAPTERS

1. Nozik, A.J., "Photoelectrochemistry: Applications to Solar Energy Conversion," ed. by B.S. Rabinovitch, J.M. Schurr and H.L. Strauss, *Ann. Rev. Phys. Chem.* **29**, 189–222 (1978).
2. Nozik, A.J., D.S. Boudreaux, R.R. Chance and F. Williams, "Charge Transfer at Illuminated Semiconductor-Electrolyte Interfaces," in *Interfacial Photoprocesses: Energy Conversion and Synthesis*, ed. by M.S. Wrighton, *Advances in Chemistry Series 184* (ACS, N.Y., 1980), pp 155–171.
3. Turner, J.A., J. Manassen and A.J. Nozik, "Supra-Band-Edge Reactions at Semiconductor-Electrolyte Interfaces: Band-Edge Unpinning Produced by the Effects of Inversion," in *Photoeffects at Semiconductor-Electrolyte Interfaces*, ed. by A. J. Nozik (ACS Symposium Series 146, Washington, D.C., 1981) pp 253–2
4. Nozik, A.J., "Photoelectrochemical Devices for Solar Energy Conversion," in *Photovoltaic and Photoelectrochemical Solar Energy Conversion*, ed. by F. Cardon, S.P. Gomes and W. Dekeyser (Plenum Press, N.Y., 1981), pp 263–312.
5. Nozik, A.J., "Photoelectrosynthesis at Semiconductor Electrodes," in *Photochemical Conversion and Storage of Solar Energy*, ed. by J.S. Connolly (Academic Press, N.Y., 1981), pp 271–295.
6. Frank, A.J., G. Cooper, R.N. Noufi, J.A. Turner and A.J. Nozik, "Solar Energy Conversion: Photoelectrochemical Studies of Organic Conducting Polymer-Coated Electrodes in Aqueous Electrolyte," in *Photoelectrochemistry: Fundamental Processes and Experimental Techniques*, ed. by W.L. Wallace, A. J. Nozik, S.K. Deb and R.H. Wilson, *Electrochemical Society Proceedings Vol. 82-3* (The Electrochemical Society, Pennington, NJ, 1982) pp 248–253.
7. Peterson, M.W. and A.J. Nozik, "Quantum Size Effects in Layered Semiconductor Colloids," in *Photoelectrochemistry and Photovoltaics of Layered Semiconductors*, ed. by A. Aruchamy (Kluwer Academic Publishers, Dordrecht, The Netherlands, 1992), pp 297–317.
8. Nozik, A.J., "Size Quantization Effects in Photocatalysis," in *Photocatalytic Purification and Treatment of Water and Air*, ed. by D. Ollis and H. Al-Ekabi (Elsevier, 1993), pp 39–48.
9. Rosenwaks, Y., B.R. Thacker, A.J. Nozik, R.J. Ellingson, K.C. Burr and C.L. Tang, "Femtosecond Dynamics at InP/Liquid Interfaces in the Presence of Electric Fields," *Springer Ser. Chem. Phys.* **60** (Springer-Verlag, New York, 1994), pp 409–411.

10. Mičić, O.I., J.R. Sprague, C.J. Curtis, K.M. Jones and A.J. Nozik, "Synthesis and Characterization of GaP, InP, and GaInP₂ Quantum Dots," in *Fine Particles Science and Technology: From Micro to Nanoparticles*, ed. by E. Pelizzetti (Kluwer Academic Publishers, The Netherlands, 1996), p. 317–330.
11. Nozik, "Photoelectrochemical Production of Hydrogen," in *Alternative Fuels and the Environment*, ed. by F.S. Sterrett (CRC Press, 1994) pp 193–209.
12. Nozik, A.J., "Quantum Well and Superlattice Electrodes," in *Semiconductor Nanoclusters. Studies in Surface Science and Catalysis*, Vol. 103., ed. by P.V. Kamat and D. Meisel (Elsevier, Amsterdam, 1997), pp 135–160.
13. Hanna, M.C., Z. Lu and A.J. Nozik, "Hot Carrier Solar Cells," ed. by R.D. McConnell, in *Proc. of the AIP Conference*, No. 404 (American Institute of Physics, Woodbury, NY, 1997) pp 309–316.
14. Raymond, M.K., T.F. Magnera, I. Zharov, R. West, B. Drezewski, A.J. Nozik, J.R. Sprague, R.J. Ellingson and J. Michl, "Low-Temperature Photophysics of Permethylated n-Heptasilane: The Borderline between Excitation Localization and Delocalization in a Conjugated Chain," in *Applied Fluorescence in Chemistry, Biology, and Medicine*, ed. by W. Rettig and B. Strehmel (Springer-Verlag, Heidelberg, Germany, 1998) pp 79–99.
15. Frank, A.J., B.A. Gregg, M. Grätzel, A.J. Nozik, A. Zaban, S. Ferrere, G. Schlichthörl and S.Y. Huang,, "Photochemical Solar Cells Based on Dye-Sensitization of Nanocrystalline TiO₂," ed. by R.D. McConnell, in *Proc. of the AIP Conference*, No. 404 (American Institute of Physics Woodbury, NY, 1997) pp 145–153
16. Cooper, G., J.A. Turner and A.J. Nozik, "Mott-Schottky Plots and Flat-Band Potentials for Single Crystal Rutile Electrodes," ed. by W.L. Wallace et al., in *Electrochemical Society Proceedings*, Vol. 82-3 (The Electrochemical Society, Inc., Pennington, NJ, 1982) pp 456–469.
17. Mičić, O.I. and A.J. Nozik, "Colloidal Quantum Dots of III-V Semiconductors," in *Handbook of Nanostructured Materials and Nanotechnology*, Vol. 3, ed. by H.S. Nalwa (Academic Press, 2000) pp 427–449.
18. Nozik, A.J., "Quantum Dot Solar Cells," ed. by R.D. McConnell and V.K. Kapur, in *Proc. of the Electrochemical Society*, Vol. 2001-10R (The Electrochemical Society, Pennington, NJ, 2001) pp. 61–68.
19. Nozik, A.J., "Quantum Dot Solar Cells," in *Next Generation Photovoltaics: High Efficiency through Full Spectrum Utilization*, ed. by A. Marti and A. Luque (Institute of Physics Publishing, 2004), pp 196–222.
20. Nozik, A.J. and O.I. Mičić, "III-V Quantum Dots and Quantum Dot Arrays: Synthesis, Optical Properties, Photogenerated Carrier Dynamics, and Applications to Photon Conversion," in *Semiconductor and Metal Nanocrystals*, ed. by V. Klimov (Marcel Dekker, Inc., 2003) pp 327–385.
21. Nozik, A.J. and O.I. Mičić, Chapter 9: "III-V Quantum Dots and Quantum Dot Arrays: Synthesis, Optical Properties, Photogenerated Carrier Dynamics, and Applications to Photon Conversion," in *Semiconductor and Metal Nanocrystals Synthesis and Electronic and Optical Properties*, Optical Engineering Series, Vol 87 (Marcel Dekker, Inc., New York, 2004) pp 327–385.
22. Nozik, A.J. ., "Quantum Structured Solar Cells", Chapter 15, in *Nanostructured Materials for Solar Energy Conversion*, ed. by T. Soga (Elsevier, Boston, 2006), pp 485–516.
23. Nozik, A.J. and Micic, O.I. "Quantum Dots and Quantum Dot Arrays: Symthesis, Optical Properties, Photogenerated Carrier Dynamics, Multiple Exciton Generation, and Applications to Solar Photon Conversion", Chapter 9 in "Nanocrystal Quantum Dots", V.I. Klimov, Ed, Taylor Francis (2010).
24. Nozik, A.J., "Next Generation Photovoltaics Based on Multiple Exciton Generation in Quantum Dot Solar Cells" in "Next Generation of Photovoltaics, New Concepts." A.B.C. Lopez, A. Marti and A. Luque, Eds., Springer Verlag (2012).
25. Beard, M.C., Luther, J.M., and Nozik, A.J., "Multiple Exciton Generation in Semiconductor Quantum Dots and Electronically Coupled QD Arrays for Application to Third Generation Photovoltaic Solar Cells," in *Colloidal Quantum Dot Optoelectronics and Photovoltaics*, ed. by G. Konstantatos and E. Sargent (Cambridge University Press, 2011)

26. Nozik, A.J. “Novel Approaches to Water Splitting by Solar Photons” in “ Photoelectrochemical Water Splitting: issues and Perspectives”, Eds. H.J. Lewerenz and L.M. Peter, Chapter 15, Royal Soc Chem, Cambridge (2013)

INVITED, KEYNOTE, and PLENARY LECTURES (387)

1. Keynote Talk, Hydrogen Symposium, Saoradh Enterprise Retreat, Boulder, CO, October, 2024
2. Keynote Opening Talk, Heinz Gerischer Electrochemistry Today Symposium, Colorado State University, August 6-8, 2024
3. Opening Plenary Lecture, World Summit and Expo on Energy and Power Engineering (WSEEP24), Edinburg, Scotland, August 2024.
4. Plenary Lecture, 17th International Conference Catalysis, Chemical Engineering, and Technology, Catalysis 2024, Boston, MA February, 2024
5. Plenary Talk, International Conference on Energy Efficiency and Related Materials, Oludeniz, Turkey, October, 2023
6. Plenary Talk, 9th Nanotech & Nanomaterials Research Conf., Nano-Rome 2023 Rome, Italy, June, 2023
7. Plenary Talk, 4th International Conference on Materials Science and Engineering, Materials 2023, Houston, TX, April 2023
8. Plenary Talk Nanomedicine, Nanomaterials and Nanotechnology, August 18, 2020.
9. Panelist, Webinar on Hot Carrier Solar Cells, Photovoltaic Specialist Conference, Virtual PVSC 47, June, 2020
10. International Conference on Applied Science, Engineering, and Technology (Plenary Lecture), Montreal, Canada, June 2020
11. Singlet Fission Workshop, Peaceful Valley, CO, June, 2019
12. Distinguished Lecturer, Cornell University Energy Systems Institute Lecture Series, Ithaca, NY, November (2018)
13. Symposium Celebrating 10th Anniversary of the RSC Journal of Energy and Environmental Science, Cal Tech, CA November, 2018
14. National Academy of Sciences Sackler Symposium on Decarbonization of the Planet, U. Calif., Irvine October, 2018
15. ACS Symposium Honoring John Turner, Boston, MA August, 2018
16. Heinz Gerischer Symposium, “Gerischer 2018”, University of Colorado, Boulder, August, 2018
17. Singlet Fission Workshop (Opening Lecture) Peaceful Valley, CO, June 2018
18. Quantsol 2018, European Quantum Solar Conversion Conference, Rauris, Austria, March 2018
19. Optical Society of America, Conference on Light, Energy, and the Environment, November 2017
20. EFRC Center for Advanced Solar Photophysics, Annual Meeting, Los Alamos, July 2017
21. Singlet Fission Workshop, Peaceful Valley, CO, June 2017
22. Yale University, Wilbur Cross Medal Public Lecture, September, 2016
23. Brookhaven National Laboratory, (Plenary Speaker) National Synchrotron Light Source/Center for Functional Nanomaterials Users Meeting, May 2016
24. Materials Research Society, National Meeting, Student Symp. on Solar Utilization, March 2016
25. Materials Research Society, National Meeting, Symposium on Functional Nanostructures and Metamaterials for Solar Energy and Novel Optical Phenomena, March 2016
26. American Physical Society, National Meeting, Focus Session on “Physics of Emerging Materials for Solar

Energy Applications” Baltimore, MD, March 2016

27. Quantum Dot Forum, Newport Beach, CA, March 2016
28. Sungkyunkwan University Winter School on Integrated Nanostructured Physics (Keynote), Muju, Korea, January 2016
29. University of North Carolina Conference on Solar Fuels, Chapel Hill, NC, October 2015
30. European Union Photovoltaics Solar Energy Conference EU PVSEC 2015, (Plenary Keynote) Hamburg, Germany September 2015
31. Solar Solutions Workshop, Telluride Science Research Center, Telluride, CO August 2015
32. Singlet Fission Workshop, Opening Lecture, Peaceful Valley, CO June 2015
33. Los Alamos Symp: 20 Years of Quantum Dot Research (Keynote), Santa Fe, NM, April 2015
34. European Society for Quantum Solar Energy Conversion, (QUANTSOL 2015 Workshop), Rauris, Austria, March 2015
35. Sungkyunkwan University, Department of Physics, Winter School on Nanoscience (Keynote), Muju, Korea, January 2015
36. Electrochemical Society International Meeting (Keynote), Symposium on Solar Fuels and Energy Materials, Cancun, Mexico, October 2014
37. International Conference on Solution Processed Semiconductor Solar Cells, Oxford University, UK, September 2014
38. International Conference on Fundamental Processes in Semiconductor Nanocrystals, Oxford University, UK, (Keynote) September 2014
39. Gordon Research Conference on Donor- Acceptor Interactions, Discussion Leader. Newport, RI, August 2014
40. Fifth Singlet Fission Workshop (Opening Lecture) , Peaceful Valley, CO June 2014
41. Zing Conference on Nanocrystals (Plenary), Punta Cana, Dominican Republic, July 2014
42. International Conference on 30 Years of Colloidal Quantum Dots (Keynote), Paris, May 2014
43. Materials Research Society Meeting, Symposium on Light-Semiconductor Interactions for Energy Application, San Francisco, April 2014.
44. European Quantsol Conference of the European Society for Quantum Solar Energy Conversion, Rauris, Austria, March 2014.
45. Cornell University, Lecture for NSF/IGERT program for Materials for a Sustainable Future, Ithaca, NY, March 2014
46. Sungkyunkwan University, Department of Physics Winterschool (Keynote), Muju, South Korea, Feb., 2014
47. University of Toledo, Department of Physics Colloquium, Toledo, OH, January 2014
48. Heinz Gerischer Award Address, European Section, Electrochemical Society, National Meeting, San Francisco, October 2013
49. Vanderbilt University, Department of Chemistry Colloquium, Nashville, TN, September, 2013
50. Telluride Conference on Solar Solutions to Energy and Environmental Problems, (Opening Lecture), Telluride, CO, August 2013.
51. Center for Advanced Solar Photophysics, Annual Research Meeting (Opening Lecture), Los Alamos National Laboratory, July 2013
52. MRS International Conference on Materials for Advanced Technologies (Keynote), Singapore, June 2013
53. Singlet Fission Workshop, (Opening lecture), Peaceful Valley, CA, June 2013
54. Next Generation Solar PV Canada (Keynote), McMaster Univ. Hamilton, Ontario, May 2013

55. Symposium on Organic Photovoltaics (Keynote), Kent State University, Kent, OH, April 2013
56. Gordon Research Conference on Nanomaterials for Energy Technology, Ventura, CA, February 2013
57. University of California, Davis, Department of Physics, Colloquium, February 2013
58. SPIE Photonics West 2013 Conference on Emerging Device Concepts (Keynote), San Francisco, CA, February 2013
59. International Conference on Photocatalysis and Solar Energy Conversion,(Keynote), Jacksonville, FL, November 2012
60. Middle Eastern Technical University, Colloquium, Ankara, Turkey, November 2012
61. International Conference on Solar Electricity, TR-2, Antalya, Turkey (Keynote), November 2012
62. University of Washington, ORCAS Conference (Keynote), San Juan Island, WA, September 2012
63. Center for Revolutionary Solar Photoconversion, Annual Meeting, Boulder, CO, August 2012
64. American Chemical Society Meeting, Symposium (Keynote), Philadelphia, PA, August 2012
65. Nobel Symposium on Nanoscience for Energy, Lund University, Sweden, July 2012
66. International Workshop on Solar-Chemical Energy Storage, Sendai, Japan, July 2012
67. University of Tokyo, Department of Physics Symposium, July 2012
68. ICAMP-12 Summer School, University of Colorado, Boulder, CO, July 2012
69. U.S. DOE 1\$/Watt SunShot Summit Panel, Denver, CO, June 2012
70. Singlet Fission Workshop, University of Colorado, Lyons, CO, June 2012
71. ICAM-12 (Institute for Complex Adaptive Matter), National Meeting, New York University, May 2012
72. Quantum Dot 2012 Conference (Keynote), Santa Fe, NM, May 2012
73. National Workshop on Potential Threat of Future Power and Energy Technology Breakthroughs, MITRE Corp, McLean, VA, March 2012
74. American Chemical Society Meeting, Symposium on Solar Fuels, San Diego, CA, March, 2012
75. NSF Nanoscale Science and Engineering Conference, Arlington, VA, December 2011 (Plenary)
76. International Conference on Next Generation Solar, Erlangen, Germany, December 2011 (Plenary)
77. MRS Meeting, Symposium on Optical, Electronic, and Magnetic Functionalities Using Novel Semiconductor Nanocrystal Synthesis, Boston, MA, November 2011
78. International Conference on Nanostructures and Clusters, Virginia University, Richmond, VA, November 2011
79. Conference on Photoeffects at Semiconductors for Energy and Environment, University of Torino, Torino, Italy, November 2011 (Keynote)
80. University of Southern California, Physics and EFRC Colloquium, Los Angeles, CA, October 2011.
81. International Solar Energy Forum, Chinese Academy of Sciences, Hangzhou, China, October 2011 (Keynote)
82. American Chemical Society Meeting, Symposium on Materials Chemistry for Solar Energy, Denver, CO, August 2011
83. Gordon Conference on Time Dependent Density Functional Theory, Univ. New England, Biddeford, ME, August 2011
84. International Workshop on Solar Solutions for Energy Problems, Telluride Research Conferences, Telluride, CO, August, 2011
85. 17th International Conference on Electron Dynamics in Nanostructures (Edison 17), U. Calif. Santa Barbara, August, 2011 (Plenary)
86. Los Alamos/NREL EFRC Center for Advanced Solar Photophysics Workshop, University of California,

Irvine, July 2011

87. Fifth Heinz Gerischer Symposium: Photoelectrochemistry, Berlin, Germany, June, 2011
88. DOE Energy Frontier Research Center Summit Meeting, Washington, DC, May 2011
89. Naval Research Laboratory, Physics Seminar, Washington, DC, May, 2011
90. DOE BES/EERE Hydrogen Program Meeting, Arlington, VA, May, 2011
91. University of Colorado/NREL Workshop on Singlet Fission, Golden, CO May, 2011 (Keynote)
92. Columbia University, Energy Frontier Research Center Annual Meeting, New York, NY, April, 2011
93. Materials Research Society, Symposium on Third Generation and Emerging Solar Cell Technologies, San Francisco, CA, April, 2011
94. Esselen Award Address, ACS Northeastern Section, Harvard University, April, 2011
95. Quantsol Workshop of the European Society for Quantum Solar Energy Conversion, Bad Hofgastein, Austria, March, 2011
96. Quantum Dot Solar Cell Workshop, NREL, February, 2011
97. University of Colorado, Nanofabrication Laboratory, Symposium on Nanofabrication and Energy: Photovoltaics, October, 2010, Boulder, CO (Keynote)
98. American Chemical Society Meeting, Future of Nanoscience Symposium in Honor of 10th Anniversary of NanoLetters, August, 2010 (Keynote), Boston, MA
99. American Chemical Society Meeting, Symposium on Inorganic-Organic Solar Cells, Div of Colloid Chem, August 2010 Boston, MA
100. American Chemical Society Meeting, Symposium on Molecular Systems for Efficient Solar Energy Conversion and Storage, Div. of Physical Chem., August 2010 Boston, MA
101. International Conference on Superlattices, Nanostructures, and Nanodevices, Beijing, China, July, 2010 (Plenary)
102. Solar Photochemistry Conference, U.S. DOE Basic Energy Sciences, Annapolis, MD, June, 2010
103. IEEE Photovoltaic Specialists Conference 35, Honolulu, HI, June, 2010
104. International Conference on Hybrid Organic PV, Assisi, Italy, May 2010 (Keynote)
105. IntertechPira Organic Photovoltaic Conference, Philadelphia, PA, April 2010 (Plenary)
106. American Philosophical Society Bi-annual Meeting, Session on Future Energy, Philadelphia, PA April, 2010 (Keynote)
107. University of California, San Diego, Seminar, Dept of NanoEngineering, San Diego, CA April, 2010
108. Columbia University, Energy Frontier Research Center Seminar, March, 2010
109. International Conference on Advanced Materials, Ras Al Khaima, United Arab Emirates, February, 2010
110. American Association for Advancement of Science Meeting, Special Symposium on Energy, San Diego, CA February, 2010
111. MRS Fall Meeting, 2 Symposia on Quantum Dots and MEG and Nanostructures in PV, Boston, MA December, 2009
112. Federation of Analytical Chemistry and Spectroscopic Societies, Nanotechnology Symposium, Invited Lecture, Louisville, KY, October 2009 (Keynote)
113. Argonne National Lab, Annual Nanoscience Center Conference, Invited Speaker, Argonne, IL, October 2009
114. University of California, Berkeley, Seminar Speaker Dept of Physical Chemistry, Berkeley, AC September 2009
115. Stanford University, SLAC/Stanford Workshop on Energy, Invited Talk, Stanford, CA, Aug. 2009

116. Gordon Research Conference on Nanocrystals and Clusters, Session Chair Overview, Mt Holyoke College, South Hadley, MA July 2009
117. Intergovernmental Renewable Energy Organization Conference, United Nations, Keynote Address, New York, NY, June 2009
118. U.S. DOE/Office of Science/BES Conference on “Efficiency of Photosynthesis,” Invited Lecture, Albuquerque, NM, May 2009
119. Conference, Center for Non-Linear Science, Santa Fe, NM May 2009
120. American Physical Society Meeting, Symposium on Nanoscience, Pittsburgh, PA, March 2009
121. University of Texas, Austin, Energy Institute, January 2009
122. University of New Mexico, Albuquerque, Kahn Endowed Lecture, Department of Physics and Materials Science, January 2009
123. University of North Carolina, Solar Energy Research Center, January 2009
124. Arizona State University, Center for Sustainable Energy, Phoenix, AZ, December 2008
125. NSF Workshop on Nanoscience and Energy, University of Minnesota, Minneapolis November 2008
126. Fraunhofer Institute, Seminar, Freiburg, Germany, October 2008
127. Second International Workshop on Next Generation Photovoltaics, Cercedilla, Spain, October 2008
128. DOE/Basic Energy Sciences Workshop on Solar Photoconversion, August 2008
129. ASME.ENIC International Conference, Plenary Lecture, Jacksonville, Florida August 2008
130. IPS 17, Plenary Lecture, Sydney, Australia, July 2008
131. ICOOPMA International Conference, Edmonton, Alberta, Canada, July 2008
132. InterSolar International Conference, Plenary Lecture, San Francisco, July 2008
133. European Science Foundation Meeting, Invited Lecture, Obergurgel, Austria, June 2008
134. Hydrogen Fuel Initiative Contractor’s Meeting, lecture, Washington, DC, June 2008
135. DOE/Basic Energy Sciences Annual Meeting, lecture, Wintergreen, VA, June 2008
136. EIPBN International Conference, Plenary Lecture, Portland, OR, May 2008
137. University of Rome, Eni Award Address, Rome, Italy May 2008
138. University of Torini, Eni Award Address, Torini, Italy May 2008
139. Eni Research Laboratories, Eni Award Address, Milan, Italy 2008
140. American Chemical Society, Symposium on Nanophotonics, New Orleans, LA, April 2008
141. MRS Meeting, Symposium on Nanostructures in Energy, San Francisco, CA, March 2008
142. American Physical Society, Energy Research Workshop, New Orleans, LA, March 2008
143. Technion, RBNI Winter School on Nanoscience, Dead Sea, Israel, February 2008
144. Weizmann Institute of Science, Department of Materials Science, Rehovot, Israel, February 2008
145. Tel Aviv University, Dept of Electrical Engineering, Tel Aviv, Israel, February 2008
146. Ohio State University, Department of Physics, February 2008
147. Sanibel Symposium on Theory and Computation, St. Simons Island, GA, February 2008
148. Gordon Research Conference on Electrochemistry, Ventura, CA, January 2008
149. Materials Research Society, Symposium on Nanostructures in Solar Energy Conversion, November 2007
150. Plenary Speaker, Banff, Canada November 2007
151. Seminar, Nitel Corporation, Moscow, Russia, October 2007
152. University of Colorado, Dept of Mechanical Engineering, Boulder, CO, October 2007

153. Seminar, The European House, Ambrosetti of Milan, Italy, Boston, MA, October 2007
154. Cornell University, Colloquium, Applied Physics and Engineering Dept., Ithaca, NY, September 2007.
155. NSF Workshop on Molecular and Quantum-Dot Solar Energy, Estes Park, CO, September 2007.
156. 11th International Conference on the Formation of Semiconductor Interfaces, Manaus, Brazil, August 2007.
157. 15th International Conference on Crystal Growth, Salt Lake City, UT, August 2007.
158. 13th International School on Crystal Growth, Park City, UT, August 2007.
159. Northwestern University, Evanston, IL, August 2007.
160. Fundamental Optical Processes in Semiconductors (FOPS-2007), Big Sky, MT, July 2007.
161. European Materials Research Society, Symposium on Advanced Materials and Concepts for Photovoltaics, Strasbourg, France, May 2007.
162. University of Massachusetts, NSF Symposium on Nanoscience for Photovoltaics, Amherst, MA, May 2007.
163. Naval Research Laboratory, Nanoscience Center Colloquium, Washington, DC, April 2007.
164. U.S.-Korea Workshop on Advanced Concepts for Solar Cells, Honolulu, HI, April 2007.
165. American Chemical Society, Symposia on Basic Chemistry Research for Solar Energy and Dynamics in Nanoscale Systems, Chicago, IL, March 2007.
166. American Physical Society, Symposium on Solar Energy, Denver, CO, March 2007.
167. Purdue University, Colloquium, Department of Chemical Engineering, W. Lafayette, IN, January 2007.
168. University of Arizona, Colloquium, Department of Chemistry, Phoenix, AZ, December 2006.
169. University of Chicago, Colloquium, Department of Chemistry, Chicago, IL, December 2006.
170. U.S. Department of Energy LERDWG Seminar on Quantum Dots, Washington DC, Nov. 2006.
171. University of Pittsburgh, Keynote Lecture, Dedication of Center for Nanoscience, Pittsburgh, PA, September 2006.
172. International Symposium on Compound Semiconductors, Vancouver, Canada, August 2006.
173. International Solar Energy Society, Fellows Forum, Denver, July 2006.
174. Aspen Institute of Physics, Forum on Energy, Aspen, CO, July 2006.
175. DOE/BES Solar Photochemistry Conference, Airlie, VA, June 2006.
176. MIT, Energy Nanotechnology International Conference, Cambridge, MA, June 2006.
177. MIT Center for Integrated Photonic Systems, Cambridge, MA, May 2006.
178. World Congress on Photovoltaic Energy Coinversion-4, Kona, HI, May 2006.
179. Materials Research Society, Symposium on Solar Energy Utilization, San Francisco, CA, April 2006.
180. Stanford University, Colloquium, Materials Science Department and Nanoscience Center, Stanford, CA, April 2006.
181. National Science Foundation, Workshop on Nanoscience for Energy, Northwestern University, Evanston, IL, May 2006.
182. University of Minnesota, Colloquium, Department of Chemical Engineering, Minneapolis, MN, April 2006.
183. National Renewable Energy Laboratory, Energy Power Lunch, Golden, CO, March 2006.
184. American Association Advancement of Science, Symposium on Energy, St Louis, MO, February 2006.
185. Colorado School of Mine, Colloquium, Department of Physics, January 2006.
186. Electric Power Research Institute, Nanotechnology Workshop, Charlotte, NC, December 2005.
187. MRS Meeting Special Session, DARPA Program for Ultra-High Efficiency Solar Cell, Boston, MA, December 2005.

188. National Science Foundation Workshop on Emerging Opportunities of Nanoscience to Energy Conversion and Storage, Washington, DC, November 2005.
189. NIST Symposium on Nanoscience, NIST Laboratories, Boulder, CO, October 2005.
190. University of Colorado, Boulder, Georgina Francis Michl Memorial Lecture, Boulder, CO, September 2005.
191. Plenary Lecture, International Solar Energy Soc. Meeting, Orlando, FL, August 2005.
192. Plenary Lecture, U.S. DOE/Office of Science/Office of Basic Energy Sciences, Washington, DC, April 2005.
193. University of California, Berkeley, Workshop on Solar Fuels, Berkeley, CA, March 2005.
194. American Physical Society, March Meeting, San Francisco, Focus Session on Quantum Dots, March 2005.
195. American Chemical Society, Physical Chemistry Division, Symposium on Nanostructures, San Diego, CA, March 2005.
196. University of Washington, Department of Chemistry, Physical Chemistry Colloquium, Seattle, WA, February 2005.
197. SPIE Symposium on Nanoscience, Denver, CO, August 2004.
198. International Photochemistry Society Meeting, Granada, Spain, July 2004.
199. U.S. DOE, Solar Photochemistry Meeting, June 2004.
200. Electrochemical Society Meeting, San Antonio, TX, May 2004.
201. International Workshop on Nanoparticles and Nanoporous Materials for Environment and Energy Applications, Sydney, Australia, January 2004.
202. 15th Winter Conference of the Inter-American Photochemical Society, Tempe, AZ, January 2004.
203. Materials Research Soc., Symposium on Novel Interfaces, Boston, MA, December 2003.
204. Naval Research Lab, Seminar on Carrier Dynamics, Washington, DC, November 2003.
205. International Symposium on Clusters and Nano-Assemblies, Richmond, VA, November 2003.
206. Excited State Processes in Electronic and Bio Nano-Materials Conference, LANL, Los Alamos, NM, August 2003.
207. NSF Workshop on Molecular Electronics and Nanoscience, Quilmes, Argentina, May 2003.
208. Electrochemical Society, Energy Technology Division Award Address, Paris, April 2003.
209. ACS Meeting, Symposium on Spectroscopy of Nanoparticles, New Orleans, March 2003.
210. 14th International Conference on the Photochemical Conversion and Storage of Solar Energy, Plenary Lecture, Sapporo, Japan, August 2002.
211. SPIE Meeting, Seattle, Washington, July 2002.
212. 25th DOE Solar Photochemistry Conference, Warrenton, VA, June 2002.
213. Case Western Reserve University, Frontiers in Chemistry Distinguished Lecture, April 2002.
214. Quantsol 2002, EU Quantum Solar Energy Conversion Conference, Rauris, Austria, March 2002.
215. International Workshop on Third Generation Photovoltaics, Cercedilla, Spain, March 2002.
216. University of Washington, Center for Nanotechnology, December 2001.
217. University of California, Davis, NSF Workshop on Solid State Chemistry, October 2001.
218. Yale University, Department of Chemistry Colloquium, October 2001.
219. International Workshop on Nanostructures in Photovoltaics, Keynote Speaker, Dresden, Germany, August 2001.
220. First International Conference on Semiconductor Photochemistry, Glasgow, Scotland, July 2001.
221. Los Alamos National Laboratory, May 2001.

222. Electrochemical Society Meeting, Symposium on Photovoltaics Over the Horizon, Washington, D.C., March 2001.
223. University of California, Santa Barbara, Chemistry Department Colloquium, November 2000.
224. First Georgia Tech Conference on Nanostructures, Georgia Tech, Atlanta, GA, October 2000.
225. 10th International Conference on Clusters and Nanoparticles, Atlanta, GA, October 2000.
226. Workshop on Third Generation Photovoltaics, University of New South Wales, Sydney, Australia, September 2000.
227. European Union Workshop on "Molecular Materials and Functional Polymers for Advanced Devices," Patras, Greece, June 2000.
228. Army Research Office, "Applied Physics of Nanostructured and Nanoscale Materials," Arlington, VA, December 1999.
229. E.I. DuPont, Central Research, Wilmington, DE, November 1999.
230. NSF U.S.-Japan Workshop on Electron Transfer at Interfaces, Okazaki, Japan, November 1999.
231. 218th ACS National Meeting, New Orleans, August 1999.
232. First IUPAC Workshop on Advanced Materials, Quantum Dots and Nanoparticles, Hong Kong, China, July 1999.
233. Fourth International Symposium on New Trends in Photoelectrochemistry, Nice, France, June 1999.
234. First Gerischer Symposium: Semiconductor Photoelectrochemistry, Berlin, Germany, June 1999.
235. Twenty-third Solar Photochemistry Research Conference, Lake Tahoe, CA, June 1999.
236. Electrochemical Society Meeting, Symposium on Quantum Dots, Seattle, WA, May 1999.
237. Workshop on Future Trends in Photovoltaics, Seattle, WA, May 1999.
238. Materials Research Society Meeting, Symposium on Quantum Dots, San Francisco, April 1999.
239. American Physical Society Meeting, Atlanta, GA, March 1999.
240. Naval Research Laboratory, Arlington, VA, December 1998.
241. 1st International Symposium on Atomic Scale Processing and Novel Properties in Nanoscopic Materials, Osaka University, Japan, November 1998.
242. International Symposium on Prospects for the Design of Environmentally Friendly Photocatalytic Systems Using Solar Beam and/or Visible Light, Osaka Prefecture University, Japan, November 1998.
243. Dept. of Chemical Processing, Faculty of Engineering, Osaka Univ., Osaka, Japan, November 1998.
244. Symposium on Photoelectrochemistry, Electrochemical Society Meeting, Boston, MA, October 1998.
245. La Jolla International School of Physics, The Institute for Advanced Physics Studies, La Jolla Advanced Topics Research School '98, September 1998.
246. University of Oregon, Department of Chemistry Colloquium, May 1998.
247. Emory University, Department of Chemistry Colloquium, April 1998.
248. Auburn University, Department of Chemistry Colloquium, April 1998.
249. University of Georgia, Department of Chemistry Colloquium, April 1998.
250. California Institute of Technology, Department of Chemistry Seminar, January 1998.
251. University of Toronto, Dept. of Chemistry Colloquium, October 1997.
252. Colorado State University, Dept. of Chemistry Colloquium, October 1997.
253. American Chemical Society, Symposium on Liquid Interfaces, Las Vegas, September 1997.
254. Gordon Conference on Nanocrystals, Nanostructures and Clusters, Plymouth, NH, July 1997.
255. Third International Conference on New Trends in Photoelectrochemistry, Estes Park, CO, May 1997.

256. First Conference on Future Generation Photovoltaic Technologies, Denver, CO, March 1997.
257. University of North Carolina, Dept. of Physics Colloquium, November 1996.
258. International Chemical Conference of Pacific Basin Societies, Hawaii, December 1995.
259. NATO Advanced Research Workshop on Fine Particle Science, Maratea, Italy, July 1995
260. Chemistry Dept. Seminar, University of California., Santa Cruz, April 1995.
261. National Meeting, Israel Chemical Society, Weizmann Institute, February 1995.
262. Guest Lectureship, Gordon Lectures on Energy, Tel Aviv University, Israel, February 1995.
263. Tenth International Conference on the Photochemical Conversion and Storage of Solar Energy, Interlaken, Switzerland, August 1994.
264. Electronic Materials Conference, Boulder, CO, June 1994.
265. University of Minnesota, Physics Dept., Seminar, March 1994.
266. SPIE Conference on Hot Electrons, San Diego, CA, January 1994.
267. Colorado School of Mines, Physics Dept., Colloquium, October 1993.
268. Seventeenth DOE Solar Photochemistry Conference, Wisconsin, June 1993
269. Electrochemical Society Meeting, Honolulu, Hawaii, May 1993.
270. University of Chicago, Graduate Seminar, Chemistry Department, April 1993.
271. Second International Conference on Solar Energy Storage and Photochemistry, Cairo, Egypt, January 1993.
272. Tel Aviv University, Dept. of Chemistry, Seminar, December 1992.
273. Weizmann Institute of Science, Seminar, December 1992.
274. First International Conference on TiO₂ Photocatalysis, London, Ontario, November 1992.
275. University of Colorado, Dept. of Electrical Engineering, Graduate Seminar, October 1992.
276. Ninth International Conference on Conversion and Storage of Solar Energy, Plenary Lecture, Beijing, China, August 1992.
277. American Chemical Society, Symp. on Electron Transfer at Surfaces, San Francisco, April 1992.
278. SPIE-International Society for Optical Engineering, Symposium on Quantum Wells and Fast Transient Spectroscopy, Sommerset, NJ, March 1992.
279. Tokyo Public Lecture Celebrating 10th Anniversary of U.S.-Japan Cooperative Research Program in Photoconversion and Photosynthesis, Chem. Soc. of Japan, Tokyo, Japan, December 1991.
280. 10th Anniversary Symposium of U.S.-Japan Cooperative Research Program, Institute of Molecular Science, Okazaki, Japan, December 1991.
281. University of Arizona, Optical Sciences Center, Colloquium, November 1991.
282. 7th International Conference on Hot Carrier in Semiconductors, Nara, Japan, June 1991.
283. Fifteenth DOE Solar Photochemistry Conference, Snowmass, Colorado, June 1991.
284. Electrochemical Society Meeting, Washington, D.C., May 1991.
285. American Society of Mechanical Engineers Meeting, Plenary Lecture, Symposium on Renewable Energy, March 1991.
286. Louisiana State University, Department of Chemistry Colloquium, March 1991.
287. American Association of Science Meeting, Symposium on Scientific Advances in Emerging Solar Energy Technologies, Washington, D.C., February 1991.
288. Gordon Research Conference on Electrochemistry, January 1991.
289. University of Colorado, Boulder, Condensed Matter Seminar, October 1990.
290. University of North Carolina, Chapel Hill, Department of Physics, September 1990.

291. Gordon Research Conference on Electron-Donor-Acceptor Interactions, August 1990.
292. Gordon Research Conference on Physical Electrochemistry, July 1990.
293. California Polytechnic Institute, AWU Distinguished Lectureship, July 1990.
294. University of Oklahoma, AWU Distinguished Lectureship, February 1990.
295. University of Wyoming, AWU Distinguished Lectureship, February 1990.
296. University of New Mexico, AWU Distinguished Lectureship, January 1990.
297. International Society of Electrochemistry, Keynote Lecture, Kyoto, Japan, September 1989.
298. Osaka University, Osaka, Japan, September 1989.
299. Tokyo Institute of Technology, Tokyo, Japan, September 1989.
300. Thirteenth DOE Solar Photochemistry Conference, Silver Creek, Colorado, June 1989.
301. Electrochemical Society Meeting, Los Angeles, May 1989.
302. University of Colorado, Department of Physics, March 1989.
303. Gordon Research Conference on Electrochemistry, January 1989.
304. IBM Laboratories, San Jose, California, January 1989.
305. Electrochemical Society, San Francisco Local Section, Stanford, California, January 1989.
306. IEA International Conference on Renewable Energy, Charmay, Switzerland, September 1988.
307. U.S.-Japan Seminar on Photosynthetic Processes on Semiconductor Surfaces, Glenenden Beach, Oregon, June 1988.
308. Iowa State University, Ames Laboratory, Ames, Iowa, March 1988.
309. Hawaiian Natural Energy Institute, Hawaii, February 1988.
310. University of Rochester, Chemistry Department Colloquium, January 1988.
311. Workshop on Hydrogen Photoproduction, Hawaiian Natural Energy Institute, Hawaii, January 1988.
312. Fritz-Haber-Institute, Max-Planck Society, Berlin, Germany, September 1987.
313. Plenary Lecture on Chemical Conversion, International Solar Energy Society Meeting, Hamburg, Germany, September 1987.
314. Eleventh DOE Solar Photochemistry Conference, Lake Tahoe, CA, June 1987.
315. American Chemical Society Mtg, Symposium on Photoelectrochem., Denver, CO, April 1987.
316. Weizmann Institute of Science, Physics Colloquium, Rehovot, Israel, April 1987.
317. SPIE-The International Society for Optical Engineering, Symposium on Superlattices, Bay Point, Florida, March 1987.
318. Colorado State University, Chemistry Department, November 1986.
319. Electrochemical Society Meeting, San Diego, California, October 1986.
320. Argonne National Laboratory, October 1986.
321. Sixth International Conference on Photochemical Conversion and Storage of Solar Energy, Paris, France, July 1986.
322. Plenary Lecture, American Section/Solar Energy Society Meeting, Boulder, CO, June 1986.
323. Lawrence Berkeley Laboratory Seminar Series, Berkeley, California, March 1986.
324. Gordon Research Conference on Photoconductivity, Santa Barbara, California, February 1986.
325. Princeton University, Chemistry Department Seminar, December 1985.
326. AT&T Bell Labs, Seminar, Murray Hill, New Jersey, December 1985.
327. DuPont Company, Seminar, Wilmington, Delaware, December 1985.

328. Cornell University, Seminar, Ithaca, New York, October 1985.
329. Colorado State University/SERI Joint Photoconversion Conference, October 1985.
330. NATO Advanced Summer Institute on Photocatalysis, Maratea, Italy, September 1985.
331. University of Colorado, Department of Chemistry Seminar, September 1985.
332. Colorado School of Mines, Physics Department Seminar, September 1985.
333. Ninth DOE Solar Photochemistry Conference, New York, June 1985.
334. Electrochemical Society Meeting, Toronto, April 1985.
335. Ford Scientific Research Laboratory, Dearborn, Michigan, October 1984.
336. Symposium on Recent Advances in Photocatalysis, Osaka University, Osaka, Japan, September 1984.
337. Okazaki Conference on Electron Transfer, Institute of Molecular Science, Okazaki, Japan, August 1984.
338. Mitsubishi Research Laboratories, Osaka, Japan, August 1984.
339. University of Tokyo, Chemistry Department, Tokyo, Japan, August 1984.
340. International Electrochemical Society Meeting, San Francisco, California, August 1984.
341. Eighth DOE Solar Photochemistry Research Conference, Chicago, Illinois, June 1984.
342. Gordon Research Conference on Photoconductivity and Related Phenomena, June 1984.
343. International Symposium on Hydrogen Produced from Renewable Energy, Honolulu, Hawaii, May 1984.
344. Fourth International Conference on Metal Hydrides, Plenary Lecture, Eilat, Israel, April 1984.
345. Weizmann Institute of Science, Energy Institute Lecture, April 1984.
346. NATO Summer Institute on Energy Transfer, Erice, Sicily, June 1983.
347. Seventh DOE Solar Photochemistry Research Conference, San Francisco, CA, June 1983.
348. Electrochemistry Society Meeting, San Francisco, California, May 1983.
349. U.S.-Japan Workshop on Cooperation in Photoconversion Research, Honolulu, Hawaii, March, 1982 and March 1983.
350. Gordon Research Conference on Electrochemistry, January 1983.
351. Boris Kidric Institute of Nuclear Research, Belgrade, Yugoslavia, October 1982.
352. Sixth DOE Solar Photochemistry Research Conference, Boulder, Colorado, June 1982.
353. Colorado State University, Chemistry Department Colloquium, April 1982.
354. University of California, Santa Barbara, Chemistry Department Colloquium, January 1982.
355. American Cyanamid Company, Laboratory Lecture Series, Stamford, Connecticut, December 1981.
356. American Chemical Society, Northeast Regional Meeting, Rochester, New York, October 1981.
357. Solar World Forum, Plenary Lecture, Brighton, England, August 1981.
358. Pennsylvania State University, Summer School Program, State College, PA, August 1981.
359. Massachusetts Institute of Technology, Chemistry Department, June 1981.
360. Max-Planck-Institute, Fritz-Haber-Institute, May 1981.
361. Texas A&M University, Chemistry Department Colloquium, April 1981.
362. International Energy Agency Workshop on Photoelectrolysis, Leuven, Belgium, April 1981.
363. Canadian Electrochemical Society, Ottawa, Canada, October 1980.
364. University of Göteborg, Sweden, September 1980.
365. European Communities Commission, Research Laboratories, Ispra, Italy, September 1980.
366. Faraday Discussion on Photoelectrochemistry, Opening Address, Oxford, England, September 1980.

367. NATO Summer School Lecturer, Photovoltaic and Photoelectrochemical Energy Conversion, University of Gent, Belgium, August 1980.
368. Third International Conference on Conversion and Storage of Solar Energy, Plenary Lecture, University of Colorado, Boulder, CO, August 1980.
369. Gordon Conference on Photoeffects in Solids, June 1980.
370. International Solar Energy Society Meeting, Plenary Lecture, Phoenix, AZ, June 1980.
371. Fourth DOE Solar Photochemistry Conference, Notre Dame University, Notre Dame, IN, June 1980.
372. University of Colorado, Department of Physics, Boulder, CO, May 1980.
373. University of Colorado, Department of Chemistry, Boulder, CO, April 1980.
374. American Chemical Society Meeting, Symposium on Photoelectrochemistry, Houston, TX, March 1980.
375. SERI Contractors Review Meetings, Washington, D.C., January 1980.
376. University of California, Berkeley, Chemistry Department, October 1979.
377. Electrochemical Society Meeting, Symposium on Photoelectrochemical Energy Conversion, Los Angeles, CA, September 1979.
378. Electrochemical Society Meeting, Rocky Mountain Section, Denver, CO, May 1979.
379. University of Denver, Department of Chemistry, Denver, CO, April 1979.
380. Royal Society Meeting on Solar Energy, Royal Institution, London, England, November 1978.
381. American Chemical Society Meeting, Miami Beach, FL, September 1978.
382. International Solar Energy Society Meeting, Denver, CO, August 1978.
383. Hudson Valley Chapter, American Society of Metals, Armonk, NY, May 1978.
384. Solar Energy Research Institute, Golden, CO, March 1978.
385. American Chemistry Society Southeastern Regional Conference, Tampa, FL, November 1977.
386. City College of New York Seminar Series, October 1977.
387. Sandia Laboratories, Albuquerque, NM, February 1977.
388. Bell Laboratories, Holmdel, NJ, November 1976.
389. 11th Intersoc. Energy Conv. Engineering Conference, State Line, NV, September 1976.

PUBLISHED CONFERENCE PROCEEDINGS

1. Nozik, A.J., "Hydrogen Generation by Photoelectrolysis of Water," in Proc., 1st World Hydrogen Energy Conference, Miami, Florida, Vol. II, 5B-31 (March 1976).
2. Nozik, A.J., "Energy Conversion via Photoelectrolysis," in Proc., 11th Intersoc. Energy Conv. Engineering Conf., State Line, Nevada (September 1976).
3. Nozik, A.J., "Energetics of Photoelectrolysis," in Semiconductor Liquid-Junction Solar Cells, Proceedings of Conference on Electrochemistry and Physics of Semiconductor-Liquid Interfaces, Airlie, Virginia, May 1977, pp 272-289.
4. Nozik, A.J., "Hydrogen Generation via Photoelectrochemistry: Recent Advances," in Proceedings, The Second World Hydrogen Energy Conference, Zurich, Switzerland (August 1978).
5. Nozik, A.J., "Heterojunction Electrodes for Photoelectrolysis," in Proceedings, 2nd International Conference on Photochemical Conversion and Storage of Solar Energy (Cambridge, England, 1978).

6. Nozik, A.J., "Hydrogen Generation by Photoelectrolysis of Water," in Proc., 1st World Hydrogen Energy Conference, Miami, Florida, Vol. II, 5B-31 (March 1976).
7. Turner, J.A. and B.R. Thacker "Hot Carrier Effects at the Semiconductor Electrolyte Interface," in Proc. of Electrodynamics and Quantum Phenomena at Interfaces, Telavi, Georgia, USSR (1985).
8. Nozik, A.J., "Size Quantization Effects in Photoelectrochemistry," in Proc. of IPS-9, Beijing, China, August 23–28, 1992, ed. by Z.W. Tian and Y. Cao (International Academic Publishers, 1992), pp 11–31.
9. Meier, A., S.S. Kocha, M.C. Hanna and A.J. Nozik, "Majority Charge Carrier Transfer Studies at n-Type III-V Semiconductor-Liquid Interfaces by Impedance Spectroscopy," ed. by K. Rajeshwar, et al., in Electrochemical Society Proceedings, Vol. 97-20 (The Electrochemical Society, Inc., Pennington, NJ, 1997) pp 161–171.
10. Zaban, A., A. Meier, A.J. Nozik and B.A. Gregg, "Impedance Spectroscopy of High Surface Area TiO₂ Electrodes," ed. by J. McBreen, S. Mukerjee and S. Srinivasan, in Proc. of the Electrochemical Society Symposium on Electrode Materials and Processes for Energy Conversion and Storage IV, Vol. 97-13, (The Electrochemical Society, Inc., Pennington, NJ, 1997) pp 306–316.
11. Alivisatos, P., S. Carter, D. Ginley, G. Meyer, A. Nozik and S. Rosenthal "Novel Materials for Photovoltaic Technologies," ed. by V.K. Kapur et al., in Proc. of the Electrochem. Soc., Vol. 99-11 (Pennington, NJ: The Electrochem. Soc., Inc., 1999) pp 268–273.
12. Rumbles, G., D. Selmarten, R.E. Ellingson, J. Blackburn, P. Yu, B.B. Smith, O.I. Mićić and A.J. Nozik, "Excited State Relaxation Mechanisms in InP Colloidal Quantum Dots," ed. by P.C. Schmidt, in Proc. of the California Materials Research Society Symposium, Vol. 667 (Materials Research Society, Warrendale, PA, 2001) pp. G.6.3.1–G.6.3.7.
13. Cava, R.J., F.J. DiSalvo, A.J. Nozik, et al., "Future Directions in Solid State Chemistry: Report of the NSF-Sponsored Workshop," in Progress in Solid State Chemistry, Vol. 30 (2002) pp 1–101.
14. Fradkin, L., L. Langof, E. Lifshitz, N. Gaponik, A. Rogach, A. Eychmuller, H. Weller, O.I. Mićić and A.J. Nozik, "Direct Measurement of g-Factors in II-VI and III-V Core-Shell Nanocrystals," in Proc. of the International Conference on Quantum Dots (QD2004), Physica E, Vol. 26(1-4), pp 9-13 (2005).
15. Nedeljković, J.M., O.I. Mićić, S.P. Ahrenkiel and A.J. Nozik, "Synthesis and Characterization of III-V Rod Shape Semiconductor Nanocrystals," ed. by D.P. Uskokovic, S.K. Milonjic and D.I. Rakovic, in Current Research in Advanced Materials and Processes: YUCOMAT VI, Proc. of the 6th Conference of the Yugoslav Materials Research Society, Vol. 494 (Trans. Tech Publications, Switzerland, 2005) pp 121–128.
16. Ellingson, R.J., C. Engtrakul, M. Jones, G. Rumbles, M.J. Heben and A.J. **Nozik**, "Excitation Energy Dependence of the Ultrafast Transient Absorption Response of Single-Wall Carbon Nanotubes," ed. by G. Rumbles, T. Lian and K. Murakoshi, in Electron Transfer in Nanomaterials: Proc. of the International Symposium on Charge Transfer Processes in Semiconductor and Metal Nanoparticles, Vol. 2004-22 (The Electrochemical Society, Inc., Pennington, NJ, 2006) pp 415–17. 17
17. Ellingson, R.J., J. Blackburn, M. Beard, O.I. Micic, P. Yu., J. Murphy and A.J. **Nozik**, "Relaxation Dynamics, Impact Ionization, and Charge Transfer Dynamics of Excitons in Quantum Dots: Applications to Ultra-High Efficiency Solar Photon Conversion," ed. by G. Rumbles, T. Lian and K. Murakoshi, in Electron Transfer in Nanomaterials: Proc. of the International Symposium on Charge Transfer Processes in Semiconductor and Metal Nanoparticles, Vol. 2004-22 (The Electrochemical Society, Inc., Pennington, NJ, 2006) pp 263-272.
18. Nozik, A.J., "Exciton Multiplication and Relaxation Dynamics in Quantum Dots: Applications to

Ultra-High Efficiency Solar Photon Conversion,” in Proc. of the 2006 IEEE 4th World Conference on Photovoltaic Energy Conversion (WCPEC-4), May 7–12, 2006, Waikoloa, Hawaii (IEEE, Piscataway, NJ), Vol. 1, pp 40–44.

PATENTS

- U.S. 4,634,641 Superlattice Photoelectrodes for Photoelectrochemical Cells (1987)
- U.S. 4,167,461 Photoenhanced Reduction Process (1979)
- U.S. 4,094,751 Photochemical Diodes (1978)
- U.S. 4,090,933 Photoelectrolysis of Water by Solar Radiation (1978)
- U.S. 4,011,149 Photoelectrolysis of Water by Solar Radiation (1977)
- U.S. 3,987,780 Greenhouse Window for Solar Heat Absorbing Systems Derived from Cd_2SnO_4 (1976)
- U.S. 3,957,029 Greenhouse Window for Solar Heat Absorbing Systems (1976)
- U.S. 3,811,953 Light-Transmitting Electrically Conducting Cadmium Stannate (1974)
- U.S. 3,815,036 Infrared Windows and Optical Coatings Derived from Cd_2SnO_4 (1974)
- U.S. 3,773,914 Cadmium Stannate Yellow Pigment (1973)
- U.S. 3,725,099 White Silicon Carbide Solsoloids (1973)