

Curriculum Vitae

Ernesto E. Marinero

School of Materials Engineering
School of Electrical and Computer Engineering
Purdue University, West Lafayette, IN 47907
Phone: 765 494 4068, E-mail: emarinero@purdue.edu

RESEARCH OVERVIEW

Professor Marinero's research group aims at the manipulation of atomic order and microstructure of nanoscale materials for device applications in energy conversion & storage, magnetics & magneto-photonics and biosensing & electromagnetic stimulation. To this effect, we apply our expertise in magnetism, magnetic materials and phenomena, condensed matter physics, sensor devices and nanofabrication to engineer novel functionalities. An overarching goal of our research is the translation of its outcomes into technological applications. Marinero's research career in academia and industry in diverse scientific fields including Materials Science, Condensed Matter Physics, Optics and Lasers, Nanotechnology and their industrial applications in Information Storage, Nano-electronics and Sensor Devices provides the research team the unique skill set and interdisciplinary expertise necessary to accomplish the research team's goals.

EDUCATION

Heriot-Watt University, Edinburgh, Scotland, UK
Bachelor of Science in Physics (1973)

Dissertation: "Laser-induced Damage in InSb and other Semiconductors"
Honors: Degree awarded with "Honors of the First Class"

Heriot-Watt University, Edinburgh, Scotland, UK
Doctor of Philosophy in Physics (1977)

Thesis: "Spectroscopic and Photochemical Applications of a C.W. Dye Layer"

PROFESSIONAL EXPERIENCE AND RESEARCH ACCOMPLISHMENTS

1978 – 1980: Research Scientist, Max-Planck Institute, Göttingen, Germany.

Conducted independent research on picosecond laser physics, laser-isotope separation, ultra-high resolution laser spectroscopy, opto-acoustic spectroscopy and laser photochemistry. Developed a novel picosecond dye laser system and invented a new method to measure the pulse duration of ultra-short laser pulses.

1981 – 1983: Senior Research Associate, Stanford University, Stanford, CA

Working with Professor R.N. Zare, I co-developed the experimental framework to investigate the hydrogen exchange reaction, the most fundamental reaction in chemical physics. We utilized laser photolysis to yield energetic H atoms within a hydrogen pulsed molecular beam, and time-of-flight mass spectrometry together with 3-photon resonant ionization to detect the reaction products. The quantum states of nascent hydrogen products were determined for the first time. In addition, at Stanford I co-developed new VUV and XUV coherent laser sources based on nonlinear frequency generation and conducted one of the earliest investigations on the use of excimer lasers for deep-UV lithography employing inorganic photoresists. Research on the hydrogen exchange reaction is an ongoing research thrust at the Zare lab.

1984 – 1985: Research Staff Member, IBM Research Division, San Jose, CA

Established an independent research program on laser-induced transformations in solid thin films. This included: 1) excimer laser photochemistry of deep UV photoresists; 2) reversible phase transformations in chalcogenide semiconductors for optical storage; 3) photo and thermal dissociation of organometallic compounds for laser-direct writing of metallic interconnects, 4) laser-induced etching of chlorinated metallic surfaces and 5) nonlinear photochemistry of polysilane polymers. This research provided new insights into laser-induced transformations in thin solids and formed the basis for advancement in the development of phase-change materials for optical storage applications.

1986 – 1991: Manager, Optical Media Materials, IBM Research Division, San Jose, CA

Managed Research Staff Members, postdoctoral fellows and visiting faculty members working on materials synthesis and characterization for Optical Storage. Key accomplishments were: the elucidation of the origins of the magnetic anisotropy in rare earth-transition metal materials; the synthesis of chalcogenide semiconductor thin films having crystallization times in the ns regime. This knowledge basis was employed to develop the highest performance optical recording media in the industry and was used in IBM's products.

1992 – 1993: Science for Storage Program Manager

Responsible for developing and coordinating scientific programs and collaborative efforts across the IBM Research Division Laboratories in San Jose, New York and Zurich in support of information storage technology. These programs enabled the speedy development of GMR technology and the most advanced thin film recording media in the industry.

1993 – 2002: Research Staff Member, IBM Almaden Research Center, San Jose, CA

Initiated a research program aimed at overcoming the intrinsic material properties limiting the density of information stored in granular polycrystalline magnetic recording media. Specific accomplishments of this program were: synthesis of thermally stable nanoscale new materials with reduced inter-granular magnetic coupling; uniaxial magnetic anisotropy development through strain engineering. The outcome of this project resulted in information storage increments in IBM products from 0.5 Gb/in² to 100 Gb/in². I was responsible also for the successful technology transfer at all development stages of the newly discovered materials and processing into IBM commercial products.

2003 – 2013: Research Staff Member, HGST San Jose Research Laboratory, San Jose, CA

My initial research efforts in HGST focused in accelerating the transition from longitudinal to perpendicular magnetic recording (PMR). I developed new materials with perpendicular magnetic anisotropy that led to the successful introduction of PMR products by HGST into the market in 2006. Subsequently, my research focused on the development of materials and sensors for data storage towards **Tb/in²** and beyond. Key contributions were: 1) discovery of a new class of sub-nm nucleation layers to control the microstructure (grain size, crystalline orientation and texture) and magnetic properties of hybrid magnetic structures; 2) development of "spring magnet" recording structures for thermal stability improvements and reduction of the magnetic switching field. These contributions resulted in storage density increments from 100 Gb/in² to 650 Gb/in²; 3) Bit Patterned Media (BPM): magnetic islands with diameters <25nm and inter-island spacings <20nm were fabricated to attain 1Tb/in² storage densities. However, the resulting properties of the nanomagnets were found to be inadequate. I developed material compositions and nanomagnet structures with unprecedented low narrow intrinsic switching field distributions that led to the successful demonstration of recording at **1.2Tb/in²**, a new record in magnetic recording technology, achieved on October 14th 2012.

Novel Magnetic Sensors: the ultimate nanoscale size of GMR spintronic sensors is limited by materials thermal stability and by spin-torque effects. We developed a new class of sensors, Lorentz Magneto Resistive devices in which carrier transport is strongly influenced by the interaction with weak external magnetic fields. As no ferromagnetic materials are employed, they are immune to thermal stability issues and spin-torque effects. We employed high carrier mobility materials including InAs quantum wells and graphene to fabricate devices with sensitivities comparable to the best GMR sensors. New attributes were discovered in the graphene-based sensors when gate-biased: a 4X sensitivity signal enhancement and tenability of the sensor frequency response. Thus, providing for the first time, a magnetic sensor whose frequency response can be optimized for magnetic sensing applications ranging from sub-Hz (bio-magnetic) to GHz (data storage).

2010 – 2013: Adjunct Professor, School of Materials Engineering, Purdue University: the objective of the appointment was to engage with Purdue University faculty and students in research areas of common interest. The following interactions resulted from this appointment: 1) study of carbon nanotube thermal interfaces for magneto thermoelectric generator cells with Professor Tim Fisher (ME); 2) studies of high speed laser crystallization of FePt ordered alloys for thermal assisted magnetic recording with Professor Gary Cheng (IE) and 3) biosensor concept development for the detection of mosquito borne viral diseases with Professor Lia Stanciu (MSE).

2013 – Present: Professor, Schools of Materials and Electrical and Computer Engineering, Purdue University: since joining Purdue, I have focused on the following: 1) creation of new research projects, 2) accelerate the growth of entrepreneurship at Purdue; 3) develop strategic partnerships with academic institutions encompassing education, joint research and entrepreneurship.

1. Research projects: i) Energy Conversion & Storage: in energy conversion we employ refractory plasmonic metamaterial solutions for thermophotovoltaic energy conversion to electric power with theoretical efficiencies (>50%). Selective emitters, based on photonic nanostructured materials enables the conversion of the thermal energy absorbed from a plurality of sources (solar, thermal, chemical, wasted heat) into a narrow energy band that matches the bandgap of the photovoltaic device. Our work on energy storage aims at the development of solid state electrolytes with ionic

conductivities on par that of current electrolytes to: a) solve the safety and reliability issues of Li-ion batteries through the replacement of current flammable liquid electrolytes with novel solid-state electrolytes (SSE); b) significantly enhance the capacity and performance of current batteries by integrating the SSE with metal anodes and by incrementing the ion transport efficiency across the electrode components. ii) Magnetics and Magneto-photonics: this project builds on Marinero's re-known expertise on magnetic materials and phenomena. Magneto-Photonics: this new research thrust exploits the interplay between spins and photons in hybrid photonic-magnetic heterostructures to provide solutions to roadblocks in functionality, performance and scalability of future photonic, nano-electronic, and hybrid photonic-electronic devices. The convergence of spintronics, plasmonics and quantum transport permits control of integrated device functionality in unprecedented time scales (fs), spectral bandwidths (beyond THz), compactness (nm-scale) and low energy consumption (pJ). We seek to manipulate electron spin, the properties of photons and charge carrier transport in one integrated nano-scale physical platform, to enable the development of the next generation photonic and electronic quantum devices. In recent years, time-reversal and/or topological symmetry-protected surface states in specially designed photonic systems, have generated a great deal of attention. Ultrafast control of symmetry-protected surface states could open up new frontiers in optics, condensed matter physics and quantum and offer new approaches for the realization of sub-wavelength on-chip photonic devices capable of switching at THz rates. The interplay between photons, spins and electric charge in magneto-photonic nanoscale structures can provide a novel platform for ultrafast control of spin (magnetization) to enable realization of reconfigurable photonic topological insulators, parity-time symmetry broken dielectric magnetic metasurfaces and plasmon-driven magnon (spin wave) generation. iii) Biosensing and Electromagnetic Stimulation: this research aims to develop room temperature, non-intrusive, wearable probes for the detection of magnetic signals from the brain associated with cognitive and physiological processes. In addition, our group is developing culture cell platforms to study neural connectivity in healthy and diseased cells through the detection of electrical and magnetic signals. The platform also contains electrode arrays and transducers to stimulate the cells in-vitro to understand the effects of electromagnetic stimulation on cell neural connectivity, protein expression and biomarkers in reference cells and those subjected to trauma, infections or chemical stimulants.

2. Entrepreneurship: I was appointed in 2013 as Director of Deliberate Innovation for Faculty (DIFF), Nanotechnology, Materials Engineering and Manufacturing. The appointment aims to catalyze significant changes in the entrepreneurship system at Purdue. The DIFF program is an integral component of Purdue's ecosystem and has contributed to the large increment of the number of Purdue startups from an average of 8 prior to 2013 to 26 in the last three years. I have co-founded two Purdue University startups (Folium Nanotechnologies, focused on applications of graphene nanomaterials for energy and medical applications, and SMK Diagnostics aiming at developing point-of care detection platforms for viral diseases. I am currently the CEO of Nano-Meta Technologies, a company focused on metasurface plasmonic materials applications for the direct conversion of thermal energy to electricity.

3. Academic and Business Partnerships Development: a holistic partnership between Purdue and the Institute for Innovation and Technology (I2T2) of Nuevo León Mexico has been established. I2T2 is a consortium of leading academic-business-government institutions organized in 13 technology clusters. The partnership aims to create joint educational, research and business (bi-national) programs of strategic importance to the states of Indiana and Nuevo León. 24 PhD students are studying at Purdue to seed these engagements. A joint program focused on Industry 4.0 is currently being developed. I am also engaged with the Organization of American States in educational and business development outreach activities centered on the commercialization of technologies developed regionally in academia to generate economic development in Latin America. Recent initiatives involve joint research activities with academic partners in France and Japan.

AWARDS AND RECOGNITION

- Elected to the Chair line of the American Association for the Advancement of Science, Section on Industrial Science and Technology, Feb 2020 - Feb 2023.
- Europe Summer Fellowship, Purdue University (2019)
- Visiting Professor, Tohoku University, Japan (2018)
- Elected Regional Committee Member, International Council for Science, for Latin America and the Caribbean (2017)
- NanoSaclay Visiting Professor Award, Laboratoire d'Excellence en Nanosciences and Nanotechnologies, 2017.
- Elected to Chair line of the American Physical Society Group on Energy Research and Applications (2016)
- **Elected Fellow of the American Physical Society (2014)**
- The Acorn Award: Seed for Success, Purdue (2014). For garnering \$1 million or more in research grants.
- HGST Inventor Award for number of Patents awarded in 2012 and 2011
- **Gold Patent Award: most valuable 2010 patents issued to HGST**
- **Appointed to the Editorial Board of Physical Review X, Published by the AIP (2011)**
- Appointed to the DOE Executive Committee of National Users Facility Organization (2011)
- **Energy & Nanotechnology Advisor, El Salvador Ministry of Science and Technology (2011)**
- **Chair of the Forum for Industrial and Applied Physics, American Physical Society (2011)**

- Elected, Executive Committee Member, Molecular Foundry, DOE Center (2011)
- Elected APS Representative of the AAAS Committee on Industrial Science and Technology (2011)
- **HGST Most Valuable Invention Awards (2004, 05, 06, 07, 08, 09, 10, 11)**
- IBM Invention Plateau Awards (1990, 92, 97, 99). Plateaus awarded for every three patents granted by the USPTO
- **Elected to Member of the Royal Society of Chemistry, London UK (1981)**
- **Stanford University Visiting Scholar (1981 – 83)**
- **Max-Planck Gesellschaft Research Fellowship (1978 – 80)**
- Heriot-Watt University Graduate Student Scholar, to pursue PhD Studies (1973 – 76)
- **James Watt Medal and Prize, for highest ranked Bachelor of Science degree (1973)**
- Heriot-Watt University Prize and Medal, Highest Ranked Physics Student (1972)
- El Salvador Government International Scholarship, to study Physics in the UK (1970 – 74)

PROFESSIONAL MEMBERSHIPS AND CAREER SERVICE

PROFESSIONAL SOCIETIES

- **American Physical Society**
 - Elected to Chair-line of the Topical Group on Energy and Applications, GERA, 2016.
 - Chair, Forum for Industrial and Applied Physics, FIAP, 2011
 - Chair-Elect, Forum for Industrial and Applied Physics, FIAP, 2010
 - Elected Vice-chair, Forum for Industrial and Applied Physics, FIAP, 2009.
- **Materials Research Society**
 - Served as Vice-Chair, External Affairs Committee, 1995 - 1997.
 - Served as Vice-Chair, Long Range Planning Committee, 1993 - 1994.
 - Meeting Chair, Spring 1991, San Francisco CA.
 - Short course instructor “Magnetic Thin Films: Physics and Applications”: 1990, 91, 92, 93, 94, 95.
- **American Vacuum Society**
 - Short Course Instructor: “Growth and Characterization of Magnetic Thin Films for the Storage Industry”: 1995, 96, 97, 98, 99, 00, 01, 02.

COMMITTEE SERVICE

- **IBM Research Division, Task Force on Magneto-Optic Science, Chair, (1989).**
- **IBM Almaden Research Center, Council Member of University Relations Committee (1989).**
- **IBM Global Research Strategy, Science of Magnetic Thin Films, Chair, (1991).**
- **Board Member, Pan-American Association of Physics (1992).**
- **Dutch Foundation for Fundamental Research on Matter, Proposal Reviewer (1993).**
- **NSF and European Community Panel on Developing Science in Central America, (1994).**
- **National Science Foundation Small Business Innovation Research Program (SBIR/STTR), (2000).**
- **Science Foundation Ireland, Information and Communication Technology Program (2001).**
- **IBM Research Corporate Review Panel, Research Career Framework, (2001).**
- **Panel Member of The United States-Mexico Foundation for Science (FUMEC) (2005).**
- **International Board MEMBER, Mexican Nanoscience and Nanotechnology Program (2006 – 2009)**
- **International Committee Evaluator, Nanomaterials for Catalysis, Mexico (2005 - 2009).**
- **Hitachi Cambridge Laboratory Technical Review Committee, (2008).**
- **Molecular Foundry, UCB and LBNL DOE Center Scientific Proposal Reviewer (2008 - 2012).**
- **Proposal Evaluator for Mexico National Science and Technology Foundation (CONACYT), (2009).**
- **Scientific Evaluator of the Chilean Center for Nanoscience and Nanotechnology (2010 - 2012)**
- **2010 Physics Leadership Summit Panel, American Physical Society, Washington DC.**
- **Panel Member Innovation, Technology Transfer and Commercialization Workshop, Rio de Janeiro, Brazil, (2010).**
- **Panel Member of the APS Workshop on Physics in Industry and the National Laboratories, (2010).**
- **ARPA-E Reviewer, Rare Earth Alternatives in Critical Technologies for Energy (REACT) (2011).**
- **APS/FIAP Representative, Congress and Science Advocacy, Capitol Hill, Washington DC. (April 2010, 2011)**
- **Users Executive Committee Board Member, Molecular Foundry (2011- 2013)**

- **National User Facility Organization MOF Representative**, (2011 - 2013).
- **Panelist, National Issues in Industrial Physics, American Physical Society** (2014).
- **National Sciences and Engineering Research Council of Canada: *Discovery Frontiers New Materials for Clean Energy and Energy Efficiency Program, Project Selection Committee Member*** (2015).
- **National Sciences and Engineering Research Council of Canada: *Engineered Catalysts for Electrochemical Clean Energy Project Annual Reviewer*** (2016- present).
- **Advisory Committee, Tec Monterrey Innovation and in Engineering Curriculum**, (2017- present).
- **Advisor and Evaluator, OAS Commercialization and Technology HUB for the Americas**, (2016 – present).

SCIENTIFIC JOURNAL REFEREE CAREER SERVICE

Physical Review X, Physical Review B, Physical Review Letters, Journal of Applied Physics, Applied Physics Letters, Applied Physics A, Journal of Magnetism and Magnetic Materials, IEEE Transaction on Magnetics, Journal of Materials Research, Journal of Vacuum Science and Technology, Optics Communications, Journal of the Optical Society of America, Chemical Physics Letters, Journal of Chemical Physics, Advances in Materials Science and Technology.

SCIENTIFIC CONFERENCE ORGANIZATION (CHAIR, CO-CHAIR)

- **Laser-Condensed Matter Interactions and Applications**, Int. Laser Science Meeting, Atlanta, GA. (1988).
- **Meeting Chair IBM Workshop on Fundamentals of Magnetic Materials**, St Paul-de Vence, France, (1990).
- **International Conference on the Physics of Transition Metals**, Darmstadt, Germany, July 1990.
- **Meeting Chair for the MRS Spring 1991 Meeting**, San Francisco CA.
- **MRS Symposia Organizer: Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers**, San Diego, CA (1989); **Magnetic Ultrathin Films, Multilayers and Surfaces Interfaces and Characterization**, San Francisco, CA (1993); **Magnetic Ultrathin Films, Multilayers and Surfaces**, San Francisco, CA (1995).
- **European MRS Symposia Organizer: Magnetic Thin Films Multilayers and Superlattices**, Strasbourg, France (1990); **Laser, Lamp and Synchrotron Assisted Materials Surface Processing**, Strasbourg, France, (1992).
- **IV International Conference on Advanced Materials**, Cancun, Mexico (1995).
- **The Applied Statistical Physics and Molecular Engineering Conference**, Puerto Vallarta, Mexico (2003).
- **International Conference on Nano scale Magnetism**, Istanbul, Turkey, (2005 and 2007).
- **International Conferences on Modern Materials and Technologies (CIMTEC)**, Florence (2002) and Sicily (2006), Italy.
- **Latin American Workshop on Magnetism, Magnetic Materials and their Applications**, Merida, Venezuela (1995), Sao Paulo, Brazil (1998); Bariloche, Argentina (2001); Chihuahua, Mexico (2003), Renaca, Chile (2005), Rio de Janeiro, Brazil (2007).
- **International Materials Research Conference**, Cancun, Mexico (2008, 2009).
- **International and Interdisciplinary Meeting on Nano science and Nanotechnology**, Ensenada, Mexico (2009).
- **American Physical Society March 2010 Meeting**, Invited Symposia and Focus Sessions Organizer for Forum on Industrial and Applied Physics (FIAP), Portland, Oregon.
- **Nanostructure Applications in Crossover Scientific and Technology Fields, XIX International Materials Research Congress**, Cancún, México (2010).
- **Strategies for Academy-Industry Relationships, International Materials Research Congress**, Cancún, México (2008, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18).
- **38th Electronics Materials Symposium**, Santa Clara, California, USA (2010).
- **American Physical Society March 2011 Meeting**, Invited Symposia and Focus Sessions Organizer for Forum on Industrial and Applied Physics (FIAP), Dallas, Texas.
- **39th Electronics Materials Symposium**, Santa Clara, California, USA (2011).
- **American Physical Society March 2012 Meeting**, Invited Symposia and Focus Sessions Organizer for Forum on Industrial and Applied Physics (FIAP), Boston, Mass.
- **40th Electronics Materials Symposium**, Santa Clara, California, USA (2012).
- **American Physical Society March 2013 Meeting**, Invited Symposium Frontiers in Nano manufacturing, Baltimore, MD.
- **41st Electronics Materials Symposium**, Santa Clara, California, USA (2013).
- **American Physical Society March 2014 Meeting**, Invited Symposium on Device Physics at the Nanoscale, Denver, Co.

- **42nd Electronics Materials Symposium**, Santa Clara, California, USA (2014).
- **International Conference on Magnetism**, Barcelona Spain, (2015).
- **43rd Electronics Materials Symposium**, Santa Clara, California, USA (2015).
- **44th Electronics Materials Symposium**, IBM Almaden Research Center, San Jose CA, USA (2016).
- **American Physical Society March 2016 Meeting**, Invited Symposium Beyond STT-MRAM: Future Directions for Spintronic Devices, Baltimore, MD.
- **45th Electronics Materials Symposium**, Santa Clara, California, USA (2017).
- **Workshop on Science, Technology and Applications of Energy Generation**, APS 2018 March Meeting, Los Angeles, CA.
- **46th Electronics Materials Symposium**, Santa Clara, CA (2018).
- **47th Electronics Materials Symposium**, Stanford University, CA (2019)
- **Spintronics Workshop**, Purdue University, IN (2019).
- **Workshop on Energy Materials**, APS 2020 March Meeting, Denver, Co.
- **48th Electronics Material Symposium**, Stanford University, CA (2020)

JOINT RESEARCH STUDY AGREEMENTS: PRINCIPAL INVESTIGATOR

IBM ALMADEN RESEARCH CENTER

- **Excimer Laser Lifetime Extension Studies**, with Drs. R. Sze, G. Balog and L. Blair, Los Alamos National Laboratory, (1984)
- **Chemical Stability of Magnetic Thin Films**, with Professor J. Madix, Chemical Engineering Dept., Stanford University, Department Grant (1986).
- **Transient Temperature Measurements of Laser-annealed Chalcogenide and Magneto-Optical Materials**, with Professor M.O. Thompson, Cornell University, (1986).
- **Atomistic Studies of Amorphous Rare Earth-Transition Metal Thin Films**, with Professor T. Egami, University of Pennsylvania, (1988).
- **High Resolution Electron Microscopy of Magneto-Optic Thin Films**, with Professor D. Smith, Arizona State University, JSA 09804, (1989).
- **Magnetic X-ray Dichroism Studies of Amorphous RE-TM Alloys**, with Professor J. C. Fuggle, University of Nijmegen, Netherlands, (1989).
- **Squid Magnetometry Studies and Neutron Scattering Experiments of Magneto-Optic Multilayers**, with Professor D. Givord, Laboratoire Louis Neel, CNRS, Grenoble, France, (1990).
- **FMR Studies of Magnetic Multilayers** with Professor G. Güntherodt, Aachen University, Germany, JSA, (1990).
- **Magnetism and Microstructure in Thin Films for Information Storage**, with Professor R. White, Stanford University, Research Initiation Grant, (1991).
- **Correlation of Microstructure to Magnetic Properties in Thin Films**, with Professor B. Clemens, Stanford University, (1992).
- **Blue Sensitive Optical Recording Media**, DARPA/NSIC University/Industry Consortium. Participants: IBM, Kodak, 3M, Bellcore, Carnegie Mellon University, University of Nebraska, Stanford University and University of Arizona (1993 – 1996).
- **Synthesis and Characterization of New Magneto-Optical Materials**, with Professor T. D. Sands, UC Berkeley, (1994).
- **Exchange Coupling Dynamics in Magneto-Optic Recording Multilayers**, with Professor M. Kryder, Carnegie Mellon University, JSA 1631 (1995).
- **Ternary and Quaternary Rare Earth-Transition Metal Magnetic Thin Films**, with Professor T. D. Sands, UC Berkeley, JSA 2064, (1996).
- **Sources of Local Magnetic Anisotropy in Amorphous Materials**, with Professor R. Ibarra, University of Zaragoza, Spain, JSA 2057, (1997).
- **High Resolution Electron Microscopy of Magnetic Nanostructures**, with Professor M. Yacaman, INIM (National Institute for Nuclear Research), Mexico, (1998).
- **Magnetic Properties of CoSm Thin Films**, with Professor A. Hernando, IMA, University of Madrid, Spain, JSA 2420, (1999).
- **Initial Stages of Magnetic Thin Film Growth**, with Professor M. Yacaman, U. Texas at Austin, (2002).

HGST SAN JOSE RESEARCH CENTER

- **The Effect of Oxygen in the Segregation Kinetics of Perpendicular Recording Media**, with Professor S. Gleixner, San Jose State University, (2005).
- **Theoretical Studies of Ballistic Transport and Spin-Orbit Coupling Effects in 2DEG Heterostructures**, with Professor F. Mireles, Center for Nanoscience and Technology, UNAM, Mexico, (2006).
- **Novel Ferroelectric and Multiferroic Materials for Storage Applications**, with Professor R. Ramesh, UC Berkeley, (2007).
- **Mesoscopic non-ferromagnetic Magnetic Sensors**, with Dr. D.A. Williams, Hitachi Micro-electronics Laboratory, University of Cambridge, UK (2007 - 2011).
- **Synthesis of Complex Oxide Materials**, with Professor Elizabeth Chavira, Institute of Materials Research, National University of Mexico, (2009).
- **Nanostructured Materials for Photovoltaic Applications**, with Professor Patricia Santiago, Institute of Physics, National University of Mexico, (2012).
- **HRTEM Studies of sub-nm Nucleation Layers**, with Dr. Eric Stach, Brookhaven National Laboratory and Purdue University, (2011 - 2013).
- **Novel Diluted Magnetic Semiconductors based on ScN**, with Professor Tim Sands, Purdue University, (2011 - 2013).
- **CNT Thermal Interfaces**, with Professor Tim Fisher, Purdue University, (2011 - 2013).
- **Laser Crystallization of FePt Alloys**, with Professor Gary Cheng, Purdue University, (2011 - 2013)

RESEARCH PROGRAMS MANAGEMENT EXPERIENCE

INDUSTRY PARTNERSHIPS

- **Removable Optical Disk Development**, IBM - 3M Corporation, to jointly develop removable optical storage media on plastic substrates, (1989 - 1992).
- **Direct Overwrite (DOW) Implementation in Optical Media**, IBM - Nikon Corporation, Japan. Development of direct overwrite solution of magneto-optic recording media for industry-wide standardization and implementation, (1992 - 1994).
- **Portable Optical Storage Media for Digital Copying Applications**, IBM - Canon Corporation, Japan. Development of removable optical storage removable media for digital copiers, (1994 - 1996).
- **Multi-cathode Source for Magnetic Recording Media Fabrication**, IBM - Balzers Process Systems, Germany. Co-development of multi-target cathode designs for magnetic materials synthesis in a manufacturing tool, (1996 - 1997).
- **Advanced Perpendicular Recording Media (PMR) Fabrication**, HGST - Oerlikon Corporation, Liechtenstein, to develop deposition tools with additional film growth capabilities needed for perpendicular recording media products, (2007 - 2009).
- **Battery Innovation Center of Indiana**, managed energy storage programs between the University and the Center (2013 - 2015)
- **Thermophotovoltaic Direct Energy Generation from Hydrocarbon Combustion**, ongoing project with Pioneer Oil of Indiana to generate electricity from waste natural gas in oil extraction, (2018 -).

ACADEMIC PROGRAMS

- **DARPA/National Storage Industry Consortium, Ultrahigh Density Recording Program**, Program Manager. Participants: Stanford University, Carnegie Mellon University, Arizona State University, University of Nebraska, IBM, Bellcore, 3M and Kodak, (1993 - 1996).
- **Nano-UNAM Program Development**: advised leadership of the National University of Mexico (UNAM) to create a university-wide program on nanotechnology, (2010 - 12).
- **Purdue University - I2T2 Nuevo León, Mexico Partnership**: established and currently manage a holistic program involving graduate student education at Purdue, collaborative research, and creation of bi-national startups and companies, (2014 -).
- **Monterrey Tec - Purdue University Program**: created and currently managing joint research program in biotechnology, nanotechnology and medical devices including related entrepreneurial activities, (2015 -).

- **Renewable Energy Institute, UNAM - Purdue University Agreement:** lead collaborative project on research, innovation and technology transfer on topics related to energy, particularly renewable energy, energy storage and efficient energy usage. (2015 -)
- **Spintronics from Atoms to Systems:** co-lead Purdue University program focused on advancing science and technology research findings to develop new nano-electronic devices exploiting spin and charge of electrons (2014 -)
- **Magneto-Photonics:** created and lead new research thrust at Purdue that exploits the confluence of spintronics and photonics in hybrid devices. Participating faculty: Photonics, Quantum Materials and Spintronics (2016 -)

FUNDED RESEARCH AND EDUCATIONAL PROGRAMS

- **PI, Topology and Magnetism,** Alexandra Boltasseva and Vlad Shalaev (Co-PIs), ONR, \$450k (07/31/18 – 08/31/21)
- **PI, Merging Spintronics and Nanophotonics,** Alexandra Boltasseva and Vlad Shalaev (Co-PIs), ONR, \$300k (09/01/16 – 08/31/18)
- **Co-PI, Large Scale Manufacturing of low-cost Functionalized Carbon Nanomaterials for Energy Storage and Biosensor Applications,** with Arvind Raman (PI), Alina Alexeenko, Timothy Fisher and Alexander Wei, NSF, \$1,497,905 (12/01/13 – 11/30/2017).
- **Co-PI, Advanced TEM Facility,** Purdue University, \$1,475,795 (01/01/16 – 12/31/16)
- **Co-PI Energy Storage Center Concept,** with Battery Innovation Center of Indiana, Indiana Development Corporation, \$150k (07/01/13 – 06/30/2015)
- **Purdue University – I2T2-Conacyt Mexico Graduate Student Research Program,** PhD students receive 4-year awards from CONACYT that includes tuition, stipend and health insurance. Average income to Purdue/student is ~ 35k/yr. We have currently 16 students on board resulting in \$560,000/yr. revenue.

MENTORING AND RESEARCH ADVISING

POSTDOCTORAL FELLOWS AND VISITING FACULTY (IBM – HGST)

- Dr. Wolfgang Sesselmann, University of Munich, Germany (1985): *Laser-etching of Solid Surfaces.*
- Dr. Werner Pamlar, University of Regensburg, Germany (1986): *Laser Time-resolved studies of Phase Transformations in Chalcogenide Semiconducting Thin Films.*
- Dr. Bertram Woratschek, University of Munich, Germany (1986): *XPS and AES Studies of Magnetic Interfaces.*
- Dr. Eric Huber, University of Bern, Switzerland (1987): *Nanosecond Crystallization Studies of GeTe Thin Films.*
- Dr. Wayne Bennet, University of Arizona, (1988): *Magnetic Characterization of MBE Grown Magnetic Films.*
- Dr. Michael Hirscher, Max-Planck Institute, Stuttgart, Germany (1989): *Atomistic Studies of Amorphous Rare earth – Transition metal Thin Films.*
- Dr. Charles Lee, University of Michigan, (1990): *MBE Growth of Co/Pt Superlattices.*
- Dr. Xiao Yan, University of Pennsylvania, (1991): *Synchrotron Studies of Co/Pt Superlattices.*
- Dr. Claude Chappert, University of Orsay, France (1993): *Large Kerr Rotation Magneto-Optic Materials.*
- Dr. Luis Morellon, University of Zaragoza, Spain (1998): *Thermal Stability of Magnetic Thin Films.*
- Dr. Juan Arcas, University of Madrid, Spain, (1999): *Uniaxial Anisotropy in CoSmCu Thin Films.*
- Dr. Amit Chatopadhyay, University of Minnesota, (2004 - 05): *Extraordinary Magneto Resistance and Devices.*
- Dr. Masaya Nishioka, University of Maryland, (2008 - 09): *InAs Quantum Well Heterostructure Devices.*
- Dr. Simone Pisana, University of Cambridge, UK, (2008 - 09), *InAs Quantum Well Heterostructure Devices.*
- Professor Michael O. Thompson, Cornell University, (1986).
- Professor Jürgen Küppers, University of Munich, Germany, (1988).
- Professor Gernot Güntherodt, University of Aachen, Germany, (1989).
- Professor Takeshi Egami, University of Pennsylvania, (1990).
- Professor Bruce Clemens, Stanford University (1991).
- Professor Catherine Louis, Université Pierre et Marie Curie, France (2007).
- Professor Enrique Sansores, National University of Mexico (2009).
- Professor Elizabeth Chavira, National University of Mexico (2010).

UNDERGRADUATE AND GRADUATE STUDENTS (IBM – HGST)

Undergraduate Students:

San Jose State University: Jeffrey Willett (1987), Moses Mares (1988), Christina Monis (2002); MIT: Cynthia Shen (1988), Stanford University: Jamaica Potts, Stanford University (1998); Harvey Mudd College: Neel Joshi (1999); Kalamazoo College, Michigan: Kara Butler (2000); University of Iowa: Molly Uhlenhake (2001).

Graduate Students (Masters)

- Ashok Gupta, Master Thesis, with Professor P. Pizzo, San Jose State University: *Oxidation Studies of MO Alloys*, (1989 – 1992).
- Hoa Do, Master Thesis, with Professor P. Pizzo, San Jose State University, *Growth of Co/Pt Multilayer Magnetic Thin Films*, (1988 – 1990).
- Yukiko Kubota, Master Thesis, with Professor R. Sinclair, Stanford University, *Nanosecond Crystallization of Amorphous Thin Films: PtMnSb, Structure and Magnetic Properties*, (1992-1994).
- Sung-Lin Yan, Master Thesis with Professor S. Gleixner, San Jose State University: *A Study of the Influence of Nanoscale Patterning on Magnetic Properties and Nucleation in Co₇₅Pt₂₅ Films*, (2002-2003).
- Qian Sun, Master Thesis with Professor S. Gleixner, San Jose State University: *Oxygen-Effects on the Microstructure of CoPtCr-SiO₂ Perpendicular Recording Media*, (2003-2004).
- Liliana Rojas, Master Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis and Applications of V₂O₅ Nanotubes in Energy Storage and Coherent Light Generation*, (2010 - 2011).
- Joel Martinez, Master Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis of Superconducting Nanoparticles via Solid State Reactions*, (2010 - 2012).
- Adolfo Quiroz, Master Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis of Ca_{1-x}Sr_xRuO₃ Materials for Superconducting and Ferromagnetic Applications*, (2010 - 2012).
- Carlos Hernandez, Master Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis of YbFe_{1-x}Mn_xO₃ Materials for Multi-ferroic applications*, (2011 - 2012).
- Luisa Islas, Master Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis of Functionalized Block Copolymers for Catalysis Applications*, (2011 - 2012).

Graduate Students (PhD)

- Ronald Kapert, PhD Thesis, with Professor J. Fuggle, University of Nijmegen, Netherlands, *Spectroscopic Studies of Local Magnetic Properties in Metals*, (1992).
- Jim Bain, PhD Thesis, with Professor B. Clements, Stanford University, *Structural Characterization of Thin Metallic Films and Multilayers Using X-ray Diffraction*, (1993).
- Allan Ayres, PhD Thesis, with Professor R. White, Stanford University: *Exchange Coupling in Multilayer Rare earth- Transition Metal Thin Films*, (1996).
- Mann Du, PhD Thesis, with Professor M. Kryder, Carnegie Mellon University: *Study of Dynamics in High Density Magneto-Optical Recording Media*, (1997).
- Prabhakar R. Bandaru, PhD Thesis, with Professor T.D. Sands, UC Berkeley: *Chromium-Alloyed MnBi Thin Films for Blue Wavelength Magneto-Optical Recording*, (1998).
- Yukiko Kubota, PhD Thesis, with Professor G. Thomas, UC Berkeley: *Magnetic and Microstructural Properties of Sputter-Deposited Amorphous CoSm Thin Films*, (1995-1998).
- Ruben Cesar, PhD Thesis with Professor F. Mireles, National University of Mexico, UNAM, Ensenada: *Transport Studies in III-V Quantum Well Heterostructures in the Ballistic Regime*, (2006 - 2011).
- Luisa Tafoya, PhD Thesis with Professor P. Santiago, Institute of Physics, National University of Mexico, UNAM, Mexico City: *Synthesis of V₂O₅ Nanostructures for Energy Storage Applications*, (2012 – 2014).
- Rodrigo Castaneda, PhD Thesis with Professor E. Chavira, Institute of Materials Research, National University of Mexico, UNAM, Mexico City: *Synthesis and Magnetic Properties of LaFe_{1-x}As_x Compounds*, (2011 - 2012).

UNDERGRADUATE AND GRADUATE STUDENTS (PURDUE UNIVERSITY)

Undergraduate Students:

- Senior Design 2013 Team: Nolan Lantieri, Daw Gen Lim, Marybeth Pavlick and Wanying Li
- Senior Design 2014 Team: Roman Motyka, Juan Rivera, Rachel Stone, Seung-Yun Song and Ryan

Thompson.

- Senior Design 2015 Team: Benjamin Helfrecht, Quentin Lewis, John Hoo, Shulang Wang
- Senior Design 2018 Team: Alexander Antonuccio, Fiona O'Dowd, Charles Meisel, Alyssa Stubbers
- Research in Materials Engineering (MSE 499, 2013-18): Chloe Director, Gregory Scofield, John Hoo, Laura Wheatcroft, Lawrence Yeh, Maan Bajnaid, Mitchell Lawrence Renchek, Chaoqun Ding, Cadet Trenton Hayes, Cadet Loren Cooper, Hannah Fowler, Thomas Stegall, Keaton Klaff, Andee Reynolds, Nathan Pang, Andrea Martin, Annaliese Payne, Kevin Wu, Arnold Toppo.

Graduate Students (Masters Advisory Committee Chair):

- Derek K. Schwanz, School of Materials Engineering: *Solution-based Processing of Garnet Type Oxides for Optimized Lithium Ion Transport*, with Professor D. Bahr (graduated 2016).
- Muhammed Ramazan Oduncu, School of Materials Engineering: *Development of a Novel Polymer-Garnet Composite Electrolyte Incorporating LiLaZrBiO and Polyethylene*, with Professor J. Youngblood (graduated 2016).

Graduate Students (PhD Advisory Committee Chair):

- Andres Villa Pulido, School of Materials Engineering: *All-solid State Li-ion Batteries* (expected graduation 2019).
- Angel Monroy, School of Materials Engineering: *Novel femto-Tesla Magnetic Sensor Array for Transformational Brain Research*, (expected graduation 2019).
- Bradlee K. Beauchamp, School of Materials Engineering: *Ultrafast, Low-energy Switching Spintronic Devices*, with Professor S. Datta, ECE, (expected graduation 2020).
- Luis Regalado, School of Materials Engineering: *Magnetic Sensors for Brain-Machine Interfacing* (expected graduation 2022).
- Juan Carlos Verdusco, School of Materials Engineering: *Rational Design of Li-ion Battery Electrodes* (expected graduation 2022).
- Alan Chu, School of Materials Engineering: *Hybrid Photonic – Magnetic Interfaces for Energy Conversion and Magneto-Photonics* (expected graduation 2022).

Graduate Students (PhD Research co-advisor):

- Alejandro Ramirez, School of Materials Engineering: *Fabrication of Microparticles via Stop-flow Lithography from pre-Ceramic Polymers*. Main Thesis Advisor: Prof. C. Martinez, (expected graduation 2019).
- Rafatul Faria, School of Electrical and Computer Engineering: *Theoretical Modeling and Benchmarking of Probabilistic Spin Logic*, Main Thesis Advisor: Prof. S. Datta, ECE, (expected graduation 2018).
- Shehrin Sayed, School of Electrical and Computer Engineering: *Spin-based Devices with Materials Exhibiting High Spin Orbit Coupling*, Main Thesis Advisor: Prof. S. Datta, ECE, (expected graduation 2018).
- Nirajan Mandal, Department of Physics and Astronomy: *Optical Studies of Novel Electronic Materials: Topological Insulators, Nickelates and Superconductors*, Main Thesis Advisor: Prof. Y. Chen, Physics, (expected graduation 2018).
- Aveek Dutta, School of Electrical and Computer Engineering, *Magneto-Photonics*, Main Thesis Advisor, Prof. Alexandra Boltasseva (expected graduation 2019)
- Deesha Shah, School of Electrical and Computer Engineering, *Magneto-Photonics Materials*, Main Thesis Advisor, Prof. Vlad Shalaev (expected graduation 2021)
- Orchi Hassan, School of Electrical and Computer Engineering, *Spintronics SPM Dynamics*, Main Thesis Advisor, Prof. Supriyo Datta (expected graduation 2020)
- Aline M. Elquist, School of Materials Engineering: *Bio-sensor for Bacterial Disease Monitoring*, Main Thesis Advisor, Prof. Luna Lu, School of Mechanical Engineering.

POSTDOCTORAL FELLOWS AND VISITING FACULTY (Purdue University)

- Dr. Kerem Camsari, Purdue University, *Computational Design of Spintronics Devices* (2015 - present)
- Dr. Zhaxylyk Kudyshev, Purdue University: *Metamaterials and Plasmonic Devices* (2016 - present)
- Dr. Swati Pol, Bar-Ilan University, India: *Thermophotovoltaic Energy Conversion* (2017 - present)
- Prof. Robert Noll, Indiana State University: *Composite Solid State Electrolytes* (2018 -).

TEACHING EXPERIENCE

- **Mathematics Tutor** to Undergraduate Physics students, Heriot-Watt University, Edinburgh, UK, (1971).

- **Experimental Physics Tutor** to sophomore and junior Physics students, Heriot-Watt University, Edinburgh, UK, (1972 – 1973).
- **Tutor and Laboratory Demonstrator** to Honors Physics students in Quantum Electronics, Optics, Solid State Physics, Heriot-Watt University, Edinburgh, UK, (1973 – 1977).
- **Co-supervisor of PhD students** in the Visible Spectroscopy Group at Heriot-Watt University, Edinburgh, UK, (1977).
- **Materials Research Society Short Course Instructor** with Virgil Speriosu, “*Magnetic Thin Films: Physics and Applications*”, (1990, 91, 92, 93, 94, 95).
- **American Vacuum Society Short Course Instructor** with Bruce Gurney, “*Growth and Characterization of Magnetic Thin Films for the Storage Industry*”, (1995, 96, 97, 98, 99, 00, 01, 02).
- **Institute of Applied Magnetism, University of Madrid**, Course on “*Nanostructured Magnetic Materials*”, Madrid, Feb 5 – 9, (1996).
- **Institute of Materials Research, UNAM, Winter School** “*New Horizons in Materials Science*”, Queretaro, Mexico, Jan 27 – 30, (1998).
- **Center for Advanced Materials Research, Chihuahua, Mexico**, Course on “*Advanced Amorphous and Crystalline Materials*”, October 19 – 24, (1998).
- **Summer School in Materials Physics, San Luis Potosi, Mexico**, “*Magnetism and Microstructure in Thin Films*”, July 1 – 5, (1999).
- **IBM Research Division, Yorktown Heights, New York**, “*Growth, Physics and Applications of Magnetic Thin Films*”, May (2000).
- **Institute of Materials Research, UNAM, Mexico**, “*The Physics and Growth of Thin Film Materials*”, Mexico, March 3 – 8, (2001).
- **Latin American School in Condensed Matter Physics, Merida Venezuela**, “*Nanostructured Materials for Information Storage*”, April 2nd to 7th, (2006).
- **IX School of Science and Engineering of Materials, Mexico City**, “*Nanostructured Materials: Physics and Applications*”, June 29th to July 3rd, (2009).
- **Nanomex 09, Ensenada, Mexico**, “*Nanomaterials: Basic Properties and Applications*”, November 9th (2009).
- **XII School of Science and Engineering of Materials, Mexico City**, “*Nanostructured Materials: Physics and Applications*”, June 25th to June 29th, (2012).
- **Elements of Technology Transfer and Commercialization in Engineering**, Commercialization and Technology Transfer Workshop, Mexico (2016, 2017), Chile (2018).
- **MSE 499 Research in Materials Engineering**, Purdue University (2013, 14, 15, 16, 17, 18, 19, 20).
- **Biomaterials Graduate Class, Summer Instructor**, Monterrey Tec, Monterrey, México, (2017).
- **MSE 430/440 Senior Design Engineering Instructor**, Purdue University: (2017 - 2018)
- **Energy Materials and Devices**, Faculty Development Course, Monterrey Tec, Monterrey, México, (2018).
- **MSE 430/440 Senior Design Engineering Instructor**, Purdue University: (Fall 2018 – Spring 2019).
- **MSE 597 Energy Storage Materials and Devices**, Purdue University (Fall 2019).
- **MSE 502 Defects in Solids**, Purdue University (Spring 2020)
- **Advanced Materials and Devices for Energy Conversion and Storage**, Purdue University (Summer 2020)
- **Magnetic Materials and Nanostructures: Fundamental Properties and Applications**, Purdue University (Fall 2020)

PUBLICATIONS, PATENTS PORTFOLIO, INVITED TALKS, LECTURES AND SELECTED CONFERENCE CONTRIBUTED TALKS

Summary: 144 peer reviewed papers, 5 edited conference proceedings books, editorial board member of 3 journals; portfolio of patents granted: USA (61), Asia (32) and Europe (12); 90 invited talks at international conferences, 70 invited lectures in academia and at national laboratories, 16 at industrial research laboratories and over 100 contributed conference talks.

REFEREED JOURNAL PUBLICATIONS AND CONFERENCE PROCEEDINGS

1. **Optimizing Ionic Transport in Polymer (PEO)-Garnet (LLZO) Composite Solid State Electrolytes**, A. Villa and E.E. Marinero, ACS Materials and Interfaces, submitted (Feb 2020)
2. **Temperature-dependent Magnetic Transitions in CoCrPt-Ru-CoCrPt Synthetic Ferrimagnets**, B. K. Beauchamp and E.E. Marinero, Journal of Magnetism and Magnetic Materials, under review (Feb 2020)
3. **Bi aliovalent substitution in $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ garnets: structural and ionic conductivity effects**, D.K. Schwanz, A. Villa, M. Balasubramanian, B. Helfrecht and E.E. Marinero, AIP Advances, 10, 035204 (2020)
4. **Remote Sensing of High Temperatures with Refractory, Direct-Contact Optical Metacavity**, K. Chaudhuri, U. Guler, S. Azzam, H. Reddy, S. Soham, E.E. Marinero, A. Kildishev, V.M. Shalaev and A. Boltasseva, ACS Photonics, <https://doi.org/10.1021/acsp Photonics.9b01450> (2020)
5. **Superconductivity in Epitaxial TiN Films Points to Surface Magnetic Disorder**, N. A. Tovpeko, N. A. Titova, E.M. Baeva, A. V. Semenov, S. Saha, H. Reddy, S. Bogdanov, E.E. Marinero, V. M. Shalaev, A. Boltasseva, V.S. Khrapai, A. Kadakova and G.N. Goltsman, Phys. Rev. Applied, 054001 (2019).
6. **Preparation, Characterization and Temperature-dependent Photoluminescence in CaSrRuO**, A. Quiroz, A. Mohamed, E. Chavira, V. Garcia, E.E. Marinero and M. Nishioka, Revista Mexicana de Fisica, 64, 30, (2018).
7. **Surface-plasmon Opto-Magnetic Field Enhancement for All-optical Magnetization Switching**, A. Dutta, A.V. Kildishev, V. M. Shalaev, A. Boltasseva and E.E. Marinero, Optical Materials Express, 7, 12, (2017).
8. **Proposal of a Single Nano-Magnet Memory Device**, S. Sayed, S. Hong, E.E. Marinero and S. Datta, IEEE Device Letters, 38(12), 1665, (2017)
9. **Synthesis and Characterization of VO₂ Nanorods by Microwave Irradiation Sol-gel Route**, L.M. García, E. Chavira, E.E. Marinero, P. Santiago, L. R. Vazquez, O. Novelo, C. Flores, J.O. Flores, M.A. Gonzalez and P. Ponce, Journal of Nanomaterials (under review 2017).
10. **Ultrafast Spin-Transfer-Torque Switching of Synthetic Ferrimagnets**, K.Y. Camsari, A.Z. Pervaiz, R. Faria, E.E. Marinero and S. Datta, IEEE Magnetics Letter, 7, 3107205, (2016).
11. **Bismuth Aliovalent Substitution in $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Garnets: Low Temperature Densification and Ionic Conductivity Enhancements**, D.K. Schwanz and E.E. Marinero, Solid State Ionics, (under review).
12. **Impedimetric Dengue Biosensor based on Functionalized Graphene Oxide Wrapped Silica Particles**, S.A. Jin, S. Poudyal, E.E. Marinero, R.J. Kuhn and L.A. Stanciu, Electrochimica Acta, 194, 422, (2016).
13. **Highly Stable Bimetallic AuIr/TiO₂ Catalyst: Physical Origins of the Intrinsic High Stability Against Sintering**, C.W. Han, P. Majundar, E.E. Marinero, A. Aguilar, R. Zanella and V. Ortalan, Nano Letters, 15(12), pp 8141- 8147, (2015).
14. **In Situ HAADF-STEM Imaging and Tomography of AuIr Bimetallic Crystals**. C.W. Han, E.E. Marinero, A. Aguilar, R. Zanella and V. Ortalan, Microscopy and Microanalysis, 20, S-3, 180, (2014).
15. **Bit Patterned Media Optimization of 1Tdot/in2 by Post-annealing**. O. Hellwig, E.E. Marinero, D. Kercher, T. Hennen, A. McCallum, E. Dobisz, T.W. Wu, T. Hirano, R. Ruiz, M.K. Grobis, D. Weller and T.R. Albrecht, J. Appl. Phys., 116, 123913, (2014).
16. **Study of the (Ca_{1-x}Sr_x) RuO₃ System with Nano-Crystals Prepared by the Solid-State Reaction Method**. A. Quiroz, E. Chavira, J.E. Espinosa, R. Palomino, E.E. Marinero, M. Nishioka and V. Garcia-Vazquez,

Materials Sciences and Applications, 6, 16-22. <http://dx.doi.org/10.4236/msa.2015.61003>

17. **Electronic and Optical Properties of ScN and (Sc,Mn)N Thin Films Deposited by DC-Magnetron**, Bivas Saha, Gururaj Naik, Vladimir P. Drachev, Alexandra Bortasseva, Ernesto E. Marinero and Timothy D. Sands, *J. Appl. Phys.*, 114, 063519, (2013).
18. **Bit Patterned Media at 1Td/in² and Beyond**, Thomas R. Albrecht, Elizabeth Dobisz, He Gao, Michael Grobis, Olav Hellwig, Dan Kercher, Jeffrey Lille, Ernesto Marinero, Kanaiyalal Patel, Ricardo Ruiz, Manfred E. Schabes, Lei Wan, Dieter Weller, and Tsai-Wei Wu, *IEEE Trans. Mag.*, 49, 773, (2013).
19. **Fabrication of CoCrPt Alloy Bit Patterned Media at 1 Td/in² and Recording Performance Measurement with a Conventional Read/Write Head**, E.A. Dobisz, D. Kercher, M. Grobis, E.E. Marinero, D. Weller and T.R. Albrecht, *J. Vac. Sc. Tech. B30 06FH01*, (2012).
20. **Carbon Nanotube Thermal Interfaces on Gd Foil**, P.T. McCarthy, E.E. Marinero, and T. Fisher, *Int. Journal of Heat and Mass Transfer*, vol. 55 issue 23-24, 6716, (2012)
21. **Microwave Assisted Magnetic Reversal in Perpendicular Media**, C.T. Boone, J.A. Katine, E.E. Marinero, S. Pisana and B.D. Terris, *IEEE Magnetics Letters*, 3, 3500104, (2012).
22. **Demonstration of Microwave Assisted Magnetic Reversal in Perpendicular Media**, C.T. Boone, J.A. Katine, E.E. Marinero, S. Pisana and B.D. Terris, *J. Appl. Phys.*, 111, 07B907, (2012).
23. **Tuning Fano-type Resonances in Coupled Quantum Point Contacts by Applying Asymmetric Voltages**, R.C. Villareal, F. Mireles, E.E. Marinero and B.A. Gurney, *Applied Physics Letters*, 98, 172102, (2011).
24. **Structural and Electronic Properties of Cubic Ceria: Unpaired electrons in Ceria**, C. Quintanar, R. Caballero, J. Barreto, E. Chavira and E.E. Marinero, *International Journal of Quantum Chemistry*, Vol 110, issue 15, pp 2949, (2010).
25. **Graphene Magnetic Field Sensors**, S. Pisana, P.M. Braganca, E.E. Marinero and B.A. Gurney, *IEEE Trans. Mag.* 46, 1910, (2010).
26. **Tunable Nanoscale Graphene Magnetometers**, S. Pisana, P.M. Braganca, E.E. Marinero and B.A. Gurney, *Nano Letters*, 10, 341, (2010).
27. **Zero Field Spin Splitting in AISb/InAs/AISb Quantum Wells induced by Surface Proximity Effects**, M. Nishioka, B.A. Gurney, E.E. Marinero and F. Mireless, *Applied Physics Letters*, 95, 242108, (2009).
28. **Mesoscopic EMR Device Magnetic Sensitivity in I-V-I-V Configuration**, T.D. Boone, N. Smith, L. Folks, J. Katine, E.E. Marinero, S. Nicoletti, and B. Gurney, *IEEE Elect. Device Lett*, 30, 117 (2009).
29. **Thermal Conductivity in Metals, Semiconductors, Dielectrics and Amorphous Materials**, F. Fernandez, C.J. Frenandez, K.J. Salas, V.J. Garcia and E.E. Marinero, *Rev. Fac. Ing, UCV*, Rev. Fac. Ing. UCV, 23, 5, (2008).
30. **Temperature Dependence of Magnetotransport in Extraordinary Magnetoresistive Devices**, T.D. Boone, L. Folks, J. Katine, S. Maat, E.E. Marinero, S. Nicoletti, M. Field, G. Sullivan, *IEEE Trans. Mag*, 42, 3270 (2006).
31. **Materials Challenges for Tb/in² Magnetic Recording**, E.E. Marinero, in *Magnetic Nanostructures*, B. Aktas, F. Mikailov and L. Tagirov, Eds. Springer, Berlin (2006).
32. **Microstructural Origin of the Orientation Ratio in Magnetic Recording Media**, M.F. Toney, E.E. Marinero and J.A. Hedstrom, *J. Appl. Phys*, 99, 033907, (2006).
33. **Effects of Media Orientation Ratio on Noise, Track Width and Thermal Relaxation**, A.M. Taratorin, K.B. Klaassen and E.E. Marinero, *IEEE Trans. Mag*, 41, 3079, (2005).
34. **Surface Chemistry of NiP Plated Substrates**, T.E. Karis, X.C. Guo, E.E. Marinero and B. Marchon, *IEEE Trans. Mag*, 41, 3247, (2005).
35. **New Technique to Determine the Magnetic Easy Axis Orientation in Recording Media**, A. Berger, E.E. Marinero, X. Bian, K. Tang and A. Polcyn, *J. Appl. Phys*, 97, 10N115, (2005).
36. **Track Width Study of e-beam defined GMR Heads on Longitudinal and Perpendicular Media**, C. Tsang, S. McDonald, S. Samadi, J. Katine, M. Cyrille, E.E. Marinero et al, *IEEE Trans. Mag*, 40, 295, (2004).

37. **High Anisotropy CoPtCrB Magnetic Recording Media**, *M.F. Toney, E.E. Marinero, M.F. Doerner and P.M. Rice*, *J. Appl. Phys*, 94, 4018, (2003).
38. **Design Tradeoffs for Beyond 20 Gb/in²: Using a Merged Notched Head on Low Noise Media**, *M. Madisson et al; E.E. Marinero et al*, *J. Appl. Phys*, 87, 1596, (2000).
39. **Media Noise, Nonlinear Distortions and Thermal Stability in High Density Recording**, *A.M. Taratorin, D. Cheng and E.E. Marinero*, *IEEE Trans. Mag*, 36, 80 (2000).
40. **Magnetic Thin Films for the Storage Industry: Challenges for the XXI Century**, *E.E. Marinero*, *Rev. Mex. Fis.*, 45, 47, (1999).
41. **Magneto-Optical Properties of Chromium-Alloyed MnBi Thin Films**, *P.R. Bandaru, T.D. Sands, D. Weller and E.E. Marinero*, *J. Appl. Phys*, 86, 1596, (1999).
42. **12 Gb/in² Recording Demonstration with SV Heads and Narrow Pole-tip Write Heads**, *C. Tsang, M. Pinarbasi, H.Santini, E.E. Marinero et al*, *IEEE Trans. Mag*, 35, 689, (1999).
43. **Intergrain Magnetic Coupling and Microstructure in CoPtCr, CoPtCrTa and CoPtCrB Alloys**, *Y. Kubota, L. Folks and E.E. Marinero*, *J. Appl. Phys*, 84, 6202, (1998).
44. **Decoupling the Structural and Magnetic Phase Transformations in MnBi Thin Films**, *P.R. Bandaru, T.D. Sands, Y. Kubota and E.E. Marinero*, *Appl. Phys. Lett*, 72, 2337, (1998).
45. **Dynamic Coercivity and Thermal Decay of Magnetic Media**, *K. Rubin, J. Goldberg, H. Rosen, E.E. Marinero, M. Doerner and M. Schabes*, in "High Density Magnetic Recording and Integrated Magneto-optic Materials", J.Bain, M. Levy, J. Lorenzo, T. Nolan, Y. Okamura, K. Rubin, B. Stadler and R. Wolfe, Eds., Vol. 517, pp 261, MRS Pittsburgh, (1998).
46. **Magnetic Interactions and Anisotropy in Amorphous TbFe Films**, *C. Prados, E.E. Marinero and A. Hernando*, *JMMM*, 165, 414, (1997).
47. **Domain Nucleation and Wall Velocity in Magneto-Optical Amorphous Thin Films**, *M. Hirscher, E.E. Marinero and T. Egami*, *Phys. Stat. Solidi-A*, 154, 755, (1996).
48. **Exchange Coupling in Rare Earth-Transition Metal Multilayers for Magnetic Super-resolution**, *A.M. Ayres and E.E. Marinero*, *J. Appl. Phys*, 79, 5680, (1996).
49. **Exchange Interactions in Ferrimagnetic Rare Earth-Transition Metal Multilayers**, *A.M. Ayres and E.E. Marinero*, in "Magnetism, Magnetic Materials and their Applications", F. Leccabue and V. Sagredo, Eds., pp 110, World Scientific (1996).
50. **Nanosecond Structural Transformations of Magnetic Thin Films: PtMnSb, Structure and Magnetic Properties**, *Y. Kubota and E.E. Marinero*, in "Magnetic Ultrathin Films, Multilayers and Surfaces", E.E. Marinero, B. Heinrich, W. Egelhoff, A. Fert, H. Fujimori, G. Guentherodt and R.L. White, Eds., Vol. 384, pp 33, MRS Pittsburgh, (1995).
51. **Large in-plane Lattice Expansion of NiAs-MnSb Thin Films induced by ns Laser Recrystallization**, *Y. Kubota G.L. Gorman and E.E. Marinero*, in "Magnetic Ultrathin Films, Multilayers and Surfaces", E.E. Marinero, B. Heinrich, W. Egelhoff, A. Fert, H. Fujimori, G. Guentherodt and R.L. White, Eds., Vol. 384, pp 115, MRS Pittsburgh, (1995).
52. **Light Intensity Modulation Direct Overwrite on 130 mm 2X Magneto-Optic Media**, *E.E. Marinero, P.C. Arnett, T.W. McDaniel, D.E. Call, B. Finkelstein*, *Proc. SPIE* 2514, 390, (1995).
53. **Magnetic Properties of Fe and Tb Amorphous Films Studied with Soft X-ray Circular and Linear Dichroism**, *J. Vogel, M. Sacchi, R.J.H. Kappert, J.C. Fuggle, J.B. Goedkoop, N.B. Brookes, G. van der Laan and E.E. Marinero*, *JMMM*, 150, 293, (1994).
54. **Magnetic Characterization of Y₅Fe₆O₁₂/Bi₃Fe₅O₁₂ and Y₅Fe₃O₁₂/Eu₁Bi₂FeO₁₂ Heterostructures Grown by Pulsed Laser Deposition**, *B.M. Simion, R. Ramesh, V.G. Keramidas, T.D. Sands, G. Thomas, E.E. Marinero and R.L. Pfeffer*, *J. Appl. Phys*, 76, 6287, (1994).
55. **Epitaxial Magnetic Garnet Thin Films and Heterostructures by Pulsed Laser Deposition**, *B.M. Simion, R. Ramesh, V.G. Keramidas, R.L. Pfeffer, G. Thomas and E.E. Marinero*, in "Epitaxial Oxide Thin Films and Heterostructures", D.V. Forks, J.M. Phillips, R. Ramesh and R.W. Wolf, Eds., Vol 341, pp 65, MRS

Pittsburgh, (1994).

56. **Epitaxial Tetragonal PtCo (001) Thin Films with Perpendicular Magnetic Anisotropy**, *B.M. Lairson, M.R. Visokay, E.E. Marinero, R. Sinclair and B.M. Clemens*, *J. Appl. Phys*, 74, 1922, (1993).
57. **X-ray Analysis of Compositional Modulation in Co/Pt Multilayer Films for MO Recording**, *J.A. Bain, B.M. Clemens, H. Notarys, E.E. Marinero and S. Brennan*, *J. Appl. Phys*, 74, 996, (1993).
58. **Microstructural Dependence of the Perpendicular Magnetic Anisotropy in CoPt Alloys**, *E.E. Marinero, R.F.C. Farrow, G.R. Harp, R.H. Geiss, J.A. Bain and B.M. Clemens*, in "Magnetic Ultrathin Films, Multilayers and Surfaces, Interfaces and Characterization", *B.T. Jonkers et al*, Eds. Vol. 313, pp 677, MRS Pittsburgh, (1993).
59. **Deposition Rate Monitoring Using Laser Induced Fluorescence**, *T.C. Reiley, E.E. Marinero and H. Notarys*, in "Chemical Perspectives of Microelectronics Materials", *C.W. Bates, D.A. Bohling and W.S. Hobson*, Eds., Vol. 282, pp 683, MRS Pittsburgh, (1993).
60. **Atomic in-plane Disorder in Co/Pt Superlattices**, *X. Yan, T. Egami, E.E. Marinero, R.F.C. Farrow and C.H. Lee*, *Appl. Phys. A-Mat.*, 55, 545, (1992).
61. **Growth and Magnetic Anisotropy Studies of CoPt Alloys**, *R.F.C. Farrow, R.H. Geiss, G. Gorman, G. Harp, R.F. Marks and E.E. Marinero*, *J. Mag. Soc. Japan*, 17 (suppl S-1), 140, (1993).
62. **On the Atomic Interdiffusion in Co/Pt Superlattices**, *X. Yan, T. Egami, E.E. Marinero, R.F.C. Farrow and C.H. Lee*, *J. Mat. Res* 7, 1309, (1992).
63. **Characterization of Large Magnetic Anisotropies in (100) and (111) Oriented Co/Pt Multilayers by Brillouin Light Scattering**, *J.V. Herzer, B. Hillebrands, R.L. Stamps, G. Guentherodt, D. Weller, C.H. Lee, R.F.C. Farrow and E.E. Marinero*, *JMMM*, 104, 1863, (1992).
64. **Fundamental Material Issues in Magneto-Optical Recording**, *E.E. Marinero, R.F.C. Farrow, C.H. Lee, H. Notarys, X. Yan and T. Egami*, *Appl. Phys. Comm.*, 11, 359, (1992).
65. **Magnetic Anisotropy of Epitaxial Co/Pt Superlattices**, *C.J. Chien, B.M. Clemens, S.B. Hagstrom, R.F.C. Farrow, C.H. Lee, E.E. Marinero and C.J. Lin*, in "Magnetic Surfaces, Thin Films and Multilayers" pp 465, MRS Pittsburgh, (1992).
66. **Magnetic Ordering in TbFe Amorphous Films: An application of X-ray dichroism with Linearly Polarized Light**, *M. Sacchi, R.J.H. Kappert, J.C. Fuggle and E.E. Marinero*, *Appl. Phys. Lett.* 59, 872, (1991).
67. **Investigation of the Microstructure of TbFeCo Films by High Resolution Electron Microscopy**, *Z.G. Li, D.J. Smith, E.E. Marinero and J.A. Willett*, *J. Appl. Phys.*, 69, 6590, (1991).
68. **High Resolution TEM Studies of Seeded Epitaxial Co/Pt Superlattices**, *C.J. Chien, R.F.C. Farrow, C.H. Lee, C.J. Lin and E.E. Marinero*, *JMMM*, 93, 47, (1991).
69. **Magnetic and Structural Properties of Co/Pt Multilayers**, *C.J. Lin, G.L. Gorman, C.H. Lee, R.F.C. Farrow, E.E. Marinero, H. Do et al*, *JMMM*, 93, 194, (1991).
70. **Bond Orientational Anisotropy and Anelastic Deformation in Sputter-deposited Amorphous TbFeCo Films**, *X. Yan, T. Egami and E.E. Marinero*, *JMMM*, 69, 6590, (1991).
71. **Magnetic Anisotropy and Structural Characterization of Co/Pt Superlattices Grown along Selected Orientations by MBE**, *B.D. Hermsmeier, R.F.C. Farrow, C.H. Lee, E.E. Marinero, C.J. Lin, R.F. Marks and C.J. Chien*, *J. Appl. Phys.*, 69, 5646, (1991).
72. **Molecular-beam Epitaxial Growth of Co/Pt Superlattices Oriented Along the (001), (110) and (111) axes of Pt**, *C.H. Lee, R.F.C. Farrow, B.D. Hermsmeier, R.F. Marks, W.R. Bennett, E.E. Marinero and C.J. Lin*, *JMMM*, 93, 592, (1991).
73. **Direct Observation of Anelastic Bond Orientational Anisotropy in Amorphous TbFeCo Thin Films**, *X. Yan, M. Hirscher, T. Egami and E.E. Marinero*, *Phys. Rev. B*, 43, 9300, (1991).
74. **Interfacial Mixing in Epitaxial Co/Pt Superlattices: a Source of Magnetocrystalline Anisotropy**, *R.F.C. Farrow, B.D. Hermsmeier, C.H. Lee, R.F. Marks, E.E. Marinero, C.J. Lin, C.J. Chien and S.B. Hagstrom*, in "Structure/Property Relationships for Metal/Metal Interfaces", *A.D. Romig, D.E. Fowler and P. Bristowe*, Eds. Vol. 229, pp 115, MRS Pittsburgh, (1991).

75. **Molecular-beam Epitaxial Growth and Magnetic Properties of Co/Pt Superlattices Oriented Along the (001), (110) and (111) axes of Pt**, *C.H. Lee, R.F.C. Farrow, C.J. Lin, E.E. Marinero and C.J. Chien*, *Phys. Rev. B*, 42, 11384, (1990).
76. **Atomistic Study of Magneto-Optical Amorphous Thin Films Using Synchrotron Radiation**, *E.E. Marinero, M. Hirscher and T. Egami*, *J. Appl. Phys.*, 67, 4932, (1990).
77. **Domain Nucleation and Wall Velocity in Amorphous TbFeCo Thin Films**, *M. Hirscher, T. Egami and E.E. Marinero*, *J. Appl. Phys.*, 67, 5340, (1990).
78. **Corrosion Processes in Magneto-Optic Films**, *M.M. Farrow and E.E. Marinero*, *J. Electrochem. Soc.*, 137, 808 (1990).
79. **Materials Transformations in Semiconductor and Magnetic Thin Films**, *E.E. Marinero*, *Appl. Surf. Sci.*, 43, 117, (1989).
80. **EXAFS Study of the Atomic Structure of Amorphous Tb₂₀Fe₈₀**, *C.J. Robinson, M.G. Samant and E.E. Marinero*, *Appl. Phys. A-Mater.*, 49, 619, (1989).
81. **Magnetic and Magneto-Optic Thin Films and Multilayers**, *T. Suzuki and E.E. Marinero*, *Angew. Chem. Int. Edit.* 28, 1134, (1989).
82. **EXAFS Study of Stability of Amorphous TbFe Thin Films**, *M.G. Samant, E.E. Marinero, C.J. Robinson and G.S. Cargill III*, in "Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers", B.T. Jonker, J.P. Heremans and E.E. Marinero, Eds., Vol. 151, pp 249, MRS Pittsburgh, (1989).
83. **XRD Study of Rare Earth Epitaxial Structures grown by MBE onto (111) GaAs**, *W.R. Bennett, R.F.C. Farrow, S.S.P. Parkin, E.E. Marinero and A.P. Segmueller*, in "Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers", B.T. Jonker, J.P. Heremans and E.E. Marinero, Eds. Vol. 151, pp 277, MRS Pittsburgh, (1989).
84. **Exchange Coupling of Contacted Ferromagnetic Films: Fe on Amorphous TbFe**, *M. Aeschlimann, G.L. Bona, F. Meier, M. Stapanoni, A. Vaterlaus, H.C. Siegmann, E.E. Marinero and H. Notarys*, *IEEE Trans. Mag.*, 24, 3180, (1988).
85. **XPS Oxidation Study of TbFeCo Films**, *D.C. Miller, E.E. Marinero and H. Notarys*, *Appl. Surf. Sci.*, 35, 153, (1988).
86. **Magneto-Optical Activity of Ag at the Plasma Frequency**, *E. Huber and E.E. Marinero*, *Appl. Phys. A-Mater.* 47, 131, (1988).
87. **EXAFS Study of Atomic Structure and Relaxation Phenomena in Amorphous Tb₂₀Fe₈₀**, *M.G. Samant, C.J. Robinson, E.E. Marinero and G.S. Cargill*, *J. Non-Cryst. Solids*, 106, 178, (1988).
88. **Atomic Structure and Thermal Stability in Amorphous Rare Earth-Transition Metal Magneto-Optic Alloys**, *C.J. Robinson, M.G. Samant, E.E. Marinero and G.S. Cargill*, *J. Appl. Phys.*, 64, 5507, (1988).
89. **Structural Properties and Magnetism of Magneto Optic Alloys**, *E.E. Marinero*, in "Microstructure-Property Relationships in Magnetic Materials", M. Doyama, S. Somiya and R.P.H. Chang, Eds., Vol. 11, pp 269, MRS Pittsburgh, (1988).
90. **Anisotropy and Coercivity of Amorphous RE-TM Films**, *T. Egami, C. Graham, W. Dmowski, P. Zhou, P. Flanders, E.E. Marinero, H. Notarys, and C.J. Robinson*, *IEEE Trans. Mag.*, 23, 2269, (1987).
91. **Oxidation-induced Magnetic and Structural Changes in Magneto-Optical Alloys**, *E.E. Marinero, D.C. Miller, A.E. Bell, A. Gupta, R. Payne, and H. Notarys*, *IEEE Trans. Mag.*, 23, 2629, (1987).
92. **Laser-induced Crystallization of Amorphous GeTe: A Time-resolved Study**, *E. Huber and E.E. Marinero*, *Phys. Rev. B*, 36, 1595, (1987).
93. **Laser Photoablation Processes in Organosilane Thin Films**, *E.E. Marinero and R.D. Miller*, *Appl. Phys. Lett.*, 50, 1041, (1987).
94. **Magnetic Exchange Interactions in Fe/TbFe Bilayers**, *E.E. Marinero, G.S. Sprokel and H. Notarys*, in "Multilayers: Synthesis, Properties and Non-electronic Applications", T.W. Barbee, F. Spaepen and L. Greer, Eds. Vol. 103, pp 245, MRS Pittsburgh, (1987).
95. **Time Resolved Crystallization of GeTe**, *E. Huber and E.E. Marinero*, in "Beam-Solid Interactions and

Transient Processes”, M.O. Thompson, S.T. Picraux and J.S. Williams, Eds. Vol. 74, pp 257, MRS Pittsburgh, (1987).

96. **Transient Conductivity Studies in Tellurium Thin Films**, *W. Pamler and E.E. Marinero*, J. Appl. Phys., 61, 2294, (1987).
97. **Laser Stimulated Desorption from Noble Metal Surfaces Reacted with Chlorine**, *W. Sesselmann, E.E. Marinero and T.J. Chuang*, Surf. Sci., 178, 787, (1986).
98. **Projection Printing of Gold Micropatterns by Photochemical Decomposition**, *T. H. Baum, E.E. Marinero and C.R. Jones*, Appl. Phys. Lett, 49, 1213, (1986).
99. **Laser-induced Desorption and Etching Processes on Chlorinated Cu and Solid CuCl Surfaces**, *W. Sesselmann, E.E. Marinero and T.J. Chuang*, Appl. Phys. A-Mater., 41, 209, (1986).
100. **Soluble Polysilanes: An interesting New Class of Radiation Sensitive Materials**, *R.D. Miller, D. Hofer, G.N. Fickes and E.E. Marinero*, Polym. Eng. Sci., 26, 1129, (1986).
101. **Laser-induced Metal Cluster Growth and Segregation in Granular Metal-Insulator Systems**, *W. Pamler, E.E. Marinero and M. Chen*, Phys. Rev. B, 33, 5736, (1986).
102. **Time Resolved Laser-induced Transformations in Crystalline Te Thin Films**, *E.E. Marinero, W. Pamler, M. Chen and V.B. Jipson*, in “Beam-Solid Interactions and Phase Transformations”, H. Kurtz, G.L. Olson, J.M. Poate, Eds. Vol. 51, pp 309, MRS Pittsburgh, (1986).
103. **Au-cluster Redistribution During Nanosecond Laser-annealing of Metal/Insulator Matrices**, *W. Pamler, E.E. Marinero and M. Chen*, in “Beam-Solid Interactions and Phase Transformations”, H. Kurtz, G.L. Olson, J.M. Poate, Eds., Vol. 51, pp 289, MRS Pittsburgh, (1986).
104. **Laser-driven Metal Cluster Segregation in Oxide Matrices**, *E.E. Marinero, W. Pamler, M. Chen, V. Jipson and W.Y. Lee*, J. Vac. Sci. Technol. B, 3, 1560, (1985).
105. **Excimer Laser Exposure of Ag₂Se/GeSe₂: High Contrast Effects**, *K. J. Polasko, R.F.W. Pease, E.E. Marinero and M.R. Cagan*, J. Vac. Sci. Technol. B, 3, 319, (1985).
106. **Two-color Photon-gated Spectral Hole-burning in an Organic Material**, *K. H.W.H. Lee, M. Gehrtz, E.E. Marinero and W.E. Moerner*, Chem. Phys. Lett. 6, 611, (1985).
107. **Laser Multiphoton Processes in Thin Films: Non-linear Photochemistry of Organosilane Polymers**, *E.E. Marinero*, Chem. Phys. Lett. 6, 501, (1985).
108. **Time-resolved Detection of Cu Atoms During Photochemical Laser Metal Vapor Deposition**, *E.E. Marinero, and C.R. Jones*, J. Chem. Phys., 82, 1608, (1985).
109. **LIF Study of Cu Atom Generation from Organometallic Photodissociation**, *E.E. Marinero, and C.R. Jones*, in “Lasers and Application”, K. Corcoran, D.M. Sullivan and W.C. Stwalley, Eds., STS Press, McLean, VA., (1985).
110. **XUV Generation in Pulsed Free Jets: Theory of Operation and Application for Hydrogen Detection**, *A.H. Kung, N.A. Gershenfeld, C.T. Rettner, R.N. Zare and E.E. Marinero*, AIP Proc., 119, 10, (1984).
111. **Pulsed Free Jets: Novel Nonlinear Medium for Generation of Vacuum Ultraviolet and Extreme Ultraviolet Radiation**, *C.T. Rettner, E.E. Marinero, R.N. Zare et al*, J. Phys. Chem., 88, 4459, (1984).
112. **Determination of the H + D₂ Product State Distribution Using a Novel Laser Ionization Mass Spectrometer**, *E.E. Marinero, C.T. Rettner and R.N. Zare*, J. Opt. Soc. Am. B, 1, 539, (1984).
113. **Generation of Coherent Extreme Ultraviolet and Vacuum Ultraviolet Radiation Using Pulsed Nozzles**, *C.T. Rettner, E.E. Marinero, R.N. Zare et al*, Proc. Soc. Photo-Opt. Inst. 461, 45, (1984).
114. **H + D₂ Reaction Dynamics: Determination of the Product State Distributions at a Collision Energy of 1.3 eV**, *E.E. Marinero, C.T. Rettner and R.N. Zare*, J. Chem. Phys. B, 80, 4142, (1984).
115. **Deep UV Exposure of Ag₂Se/GeSe₂ Utilizing and Excimer Laser**, *K.J. Polasko, D.J. Ehrlich, J.Y. Tsao, E.E. Marinero and R.F.W. Pease*, IEEE Elec. Devices, L5, 24, (1984).
116. **Spectroscopic and Dynamic Studies in The Extreme Ultraviolet: Recent Progress and Future**

- Possibilities, *E.E. Marinero*, AIP Proc., 100, 203, (1983).
117. **XUV Excitation of H₂ Using the 3rd Harmonic of a Frequency Doubled Dye Laser**, *C.T. Rettner, E.E. Marinero, R.N. Zare et al*, AIP Proc., 100, 345, (1983).
 118. **Excitation of H₂ Using Continuously Tunable Coherent XUV Radiation (97.3 – 102.3 nm)**, *E.E. Marinero, C.T. Rettner, R.N. Zare et al*, Chem. Phys. Lett. 95, 486, (1983).
 119. **Pulsed Supersonic Jets in VUV and XUV Generation**, *A.H. Kung, C.T. Rettner, E.E. Marinero and R.N. Zare*, in "Laser Spectroscopy VI", H.P. Weber and W. Luethy, Eds. Springer, Berlin, pp 399, (1983).
 120. **The E,F₁ Double Minimum State of Molecular Hydrogen: Two Photon Excitation of Inner and Outer Wells**, *E.E. Marinero, R. Vasudev, C.T. Rettner, and R.N. Zare*, J. Chem. Phys., 78, 692, (1983).
 121. **Laser-induced Photo-ionization of Molecular Hydrogen: a Technique to Measure Rovibrational Ground State Populations**, *E.E. Marinero, C.T. Rettner, and R.N. Zare*, AIP Proc., 90, 400, (1983).
 122. **State-to-State Reaction Dynamics: H+D₂→HD+D**, *C.T. Rettner, E.E. Marinero, R.N. Zare*, in Electronic and Atomic Collisions, J. Eichler, I.V. Hertel and N. Stolterfoht, Eds. Elsevier, Berlin pp 51, (1983).
 123. **Quantum-state-specific Detection of Molecular Hydrogen by Three-photon Ionization**, *E.E. Marinero, C.T. Rettner, and R.N. Zare*, Phys. Rev. Lett. 48, 1323, (1983).
 124. **Quantum-state-specific Detection of H₂ by Three-photon Ionization**, *E.E. Marinero, C.T. Rettner, and R.N. Zare*, Appl. Phys. B-Photo. 28, 114, (1983).
 125. **Laser-Photoionization of Molecular Hydrogen: a Technique to Measure Rovibrational Ground State Populations**, *E.E. Marinero, C.T. Rettner, and R.N. Zare*, in "Laser Techniques for XUV Spectroscopy", T.J. McIlrath and R.R. Freeman, Eds. AIP Proc., 90, 400, (1982).
 126. **Nanosecond Risetime Avalanche Transistor Circuit for Triggering a Nitrogen Laser**, *J. Jethwa, E.E. Marinero and A. Mueller*, Rev. Sci. Instr., 52, 989, (1981).
 127. **Versatile Single-shot Background-free Pulse Duration Measurement Technique for Pulses of sub-Nanosecond to Picosecond Duration**, *R. Wyatt and E.E. Marinero*, Appl. Phys., 25, 297, (1981).
 128. **An Interferometrically Tuned and Actively Modelocked CW Dye Laser**, *E.E. Marinero and J. Jasny*, Opt. Commun. 36, 69, (1981).
 129. **A Novel Picosecond-Pulsed Dye Laser System**, *E.E. Marinero and F. Schaefer*, Appl. Phys., 23, 135, (1980).
 130. **Isotope Selective Photo-addition of Iodine Chloride to Acetylene**, *M. Stuke and E.E. Marinero*, Ber. Bunsen Phys. Chem., 84, 657, (1980).
 131. **Resonance in the Rotational Dependence of the Isotope-Selective Reaction between ICl and Acetylene**, *M. Stuke and E.E. Marinero*, Chem. Phys. Lett. 68, 28, (1979).
 132. **Enrichment of Chlorine Isotopes by Selective Photoaddition**, *M. Stuke, E.E. Marinero and F.P. Schaefer*, Ber. Bunsen Phys. Chem., 83, 1151, (1979).
 133. **Selective Photoaddition of Iodine Chloride to Acetylene**, *M. Stuke and E.E. Marinero*, in "Laser-induced Processes in Molecules", K.L. Kompa and S.D. Smith, Eds. Springer, Berlin, pp. 294, (1979).
 134. **Doppler-free Optoacoustic Spectroscopy**, *E.E. Marinero and M. Stuke*, Opt. Commun. 30, 349, (1979).
 135. **High Resolution Optoacoustic Laser Spectroscopy**, *E.E. Marinero* in "Laser Spectroscopy IV", H. Walther and K.W. Rother, Eds. pp 644, Springer, Berlin, (1979).
 136. **Quartz Optoacoustic Apparatus for Spectroscopy of Highly Corrosive Gases**, *E.E. Marinero and M. Stuke*, Rev. Sci. Inst., 50, 241, (1979).
 137. **Selective Photoaddition of ICl to Acetylene: Pressure, Buffer and Wavelength Dependence of the Enrichment**, *M. Stuke and E.E. Marinero*, J. Photochemistry, 9, 186, (1978).
 138. **Online Computer-Controlled CW Dye-Laser Spectrometer for Laser Isotope Separation**, *M. Stuke, and E.E. Marinero*, Appl. Phys. A-Mater., 16, 303, (1978).
 139. **Triple Spectroscopy of Iodine Using a CW Dye Laser**, *M.J. Colles and E.E. Marinero*, in "Lasers in

Chemistry”, M.A. West, Ed., Elsevier, pp 92, (1977).

140. **High Resolution Spectroscopy of Complex Photodissociating Molecules**, *E.E. Marinero, M.J. Colles and N. Geddes*, in “Lasers in Chemistry”, M.A. West, Ed., pp 304, (1977).
141. **The Continuous Photolysis of Nitromethane, Kinetic Studies of the Photo-Oxidation Reactions**, *E.E. Marinero, M.J. Colles and J. Pfab*, in “Lasers in Chemistry”, M.A. West, Ed., pp 310, (1977).
142. **Opto-Acoustic Spectroscopy of Products of Continuous Photolysis of Nitromethane**, *M.J. Colles, A.M. Angus and E.E. Marinero*, *Nature*, 262, 681, (1976).
143. **Opto-Acoustic Spectroscopy with a Visible CW Dye Laser**, *A.M. Angus, E.E. Marinero and M.J. Colles*, *Opt. Communications*, 14, 223, (1975).
144. **A Grating Tuned CW Dye Laser**, *E.E. Marinero, A.M. Angus and M.J. Colles*, *Opt. Communications*, 14, 226, (1975).

EDITOR: CONFERENCE PROCEEDINGS AND SCIENTIFIC JOURNALS

1. **Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers**, Volume 151, Editors: B.T. Jonker, J. P. Heremans and E.E. Marinero, Eds., Materials Research Society, Pittsburgh, PA, (1989).
2. **Magnetic Thin Films, Multilayers and Superlattices**, Volume 16, Editors: A. Fert, G. Güntherodt, B. Heinrich, E.E. Marinero and M. Maurer, Elsevier, North-Holland, Amsterdam, (1991).
3. **Materials Surface Processing**, Volume 32, Editors: M. Stuke, E.E. Marinero and I. Nishiyama, Elsevier, North-Holland, Amsterdam, (1993).
4. **Magnetic Ultrathin Films Multilayers and Surfaces, Interfaces and Characterization**, Vol. 313, Editors: B.T. Jonker, S.A. Chambers, R.F.C. Farrow, C. Chappert, W.J.M. de Jonge, T. Egami, P. Gruenberg, K.M. Krishnan, E.E. Marinero, C. Rau and S. Tsunashima, Materials Research Society, Pittsburgh, PA, (1994).
5. **Magnetic Ultrathin Films, Multilayers and Surfaces**, Vol. 384, E.E. Marinero, B. Heinrich, W.F. Egelhoff Jr., A. Fert, H. Fujimori, G. Guentherodt and R.L. White, Materials Research Society, Pittsburgh, PA, (1995).
6. **NanoWorld: Interdisciplinary Journal of Nanoscience and Nanotechnology**, Editorial Board Member (2009 - 2013). Published by UNAM Press, Mexico.
7. **Advances in Materials Science and Technology**, Editorial Board Member (2006 - 2012), Published by Zwets Zeitlinger, (Holland)/CIRES (Venezuela).
8. **Physical Review X**, Editorial Board Member (2011 - 2018), Published by the American Physical Society, MD. The 2017 impact factor for PRX was 14.38.

PATENT PORTFOLIO

PATENTS GRANTED IN THE USA

1. **Single nanomagnet memory device for magnetic random memory applications**, *S. Sayed, S. Datta and E.E. Marinero*, 10,497,416, December 3rd, 2019.
2. **Solid-state electrolytes and batteries made therefrom, and methods of making solid-state electrolytes**, *D. K. Schwanz and E. E. Marinero*, 10,439,250, October 8th 2019.
3. **Firearm Ammunition, Self-destructing Projectiles and Methods of Making the Same**, *R. Motyka, J.F. Rivera, S-Y Seung, R. J. Stone, R.B. Thompson and E.E. Marinero*, 9,958,243, May 1, 2018.
4. **Magnetic Devices and Magnetic Media with Graphene Overcoat**, *B.A. Gurney, E.E. Marinero and S. Pisana*, 9,305,571, April 5th, 2016.
5. **Method for Improving a Patterned Perpendicular Magnetic Recording Disk with Annealing**, *M.K. Grobis, O. Helwig, E.E. Marinero, A.T. McCallum and D.K. Weller*, 9,147,423, September 29th, 2015.
6. **Generation of Multilayer Structures in a Single Sputtering Module of a Multi-station Magnetic**

Recording Media Fabrication Tool, A.K. Berger, Y. Ikeda, B.H. Lengsfeld, D.T. Margulies and E.E. Marinero, 9,127,365, September 8th, 2015.

7. **Perpendicular Magnetic Recording Disk with Multiple Magnetic Layers and Intermediate Dual Nucleation Films for Control of Grain Size**, E.E. Marinero, D.K. Weller and B.R. York, 9,040,180, May 26th, 2015).
8. **Method for Manufacturing Graphene Electronics**, E.E. Marinero, 8,650,749, February 18th, 2014.
9. **Quantum Well Graphene Structure Formed on a Dielectric Layer having a Flat Surface**, E.E. Marinero and S. Pisana, 8,618,587, December 31st, 2013.
10. **Magnetic Field Sensor**, A. Aleksey, D. Williams, E.E. Marinero, B.A. Gurney and T.D. Boone, 8,587,897, November 19th, 2013.
11. **Patterned Perpendicular Magnetic Recording Disk Drive and Medium with Patterned Exchange Bridge Layer below the Data Islands**, O. Hellwig, D.S. Kercher, E.E. Marinero, M.E. Schabes, D.K. Weller and G. Zeltzer, 8,541,116, September 24th, 2013.
12. **Patterned Perpendicular Magnetic Recording Medium with Multiple Magnetic Layers and Interlayers**, E.E. Marinero, D.K. Weller and B.R. York, 8,320,232, November 27th, 2012.
13. **Magnetoresistive sensor having a quantum well structure and a P-doped trapping layer to prevent surface charge carriers from migrating to the quantum well structure**, B.A. Gurney and E.E. Marinero, 8,274,763, September 25th, 2012.
14. **Patterned Perpendicular Recording Medium with Ultrathin Oxide Film and Reduced Switching Field Distribution**, O. Hellwig, E.E. Marinero and D. K. Weller, 8,268,461, September 18th, 2012.
15. **Quantum Well Graphene Structure**, E.E. Marinero and Simone Pisana, 8,227,842, July 24th, 2012.
16. **Graphene Electronics Fabrication**, E.E. Marinero, 8,193,455, June 5th, 2012.
17. **Magnetic Field Sensor with Graphene Sense Layer and Ferromagnetic Biasing Layer below the Sense Layer**, B.A. Gurney, E.E. Marinero and S. Pisana, 8,189,302, May 29th, 2012.
18. **Method for Manufacturing an Extraordinary Magnetoresistive (EMR) Device with Novel Lead Structure**, T.D. Boone, L. Folks, B.A. Gurney, J.A. Katine, E.E. Marinero and N. Smith, 8,166,633, May 1st, 2012.
19. **Magnetoresistive Sensor having Quantum Well Structure and a Trapping Layer for Preventing Charge Carrier Migration**, B.A. Gurney and E.E. Marinero, 8,159,791, April 17th, 2012.
20. **Fabrication of Mesoscopic Lorentz Magnetoresistive Structures**, B.A. Gurney, E.E. Marinero, A.S. Troup, D.A. Williams and J. Wunderlich, 8,125,742, February 28th, 2012.
21. **Perpendicular Magnetic Recording Disk with Ultrathin Nucleation Film for Improved Corrosion Resistance and Method for Making the Disk**, E.E. Marinero, 8,119,264, February 21st, 2012.
22. **Slider with Integrated Writer and Semiconductor Heterostructure Read Sensor**, R.E. Fontana, B.A. Gurney and E.E. Marinero, 8,107,197, January 31st, 2012.
23. **Perpendicular Magnetic Recording Disk with Ordered Nucleation Layer and Method for Making the Disk**, T. R. Albrecht, M.K. Grobis, E.E. Marinero, H. J. Rosen, R. Ruiz, 8,048,546, November 1st, 2011.
24. **Lorentz Magnetoresistive Sensor with Integrated Signal Amplification**, B.A. Gurney, E.E. Marinero, A.S. Troup, D.A. Williams, J. Wunderlich, 8,035,032, October 11th, 2011.
25. **Patterned Perpendicular Magnetic Recording Medium with Exchange Coupled Recording Layer Structure and Magnetic Recording System using the Medium**, A.K. Berger, E.E. Fullerton, O. Hellwig, B.H. Lengsfeld and E.E. Marinero, 8,021,769, September 20th, 2011.
26. **Enhanced magnetoresistance and localized sensitivity by gating in Lorentz magnetoresistors**, T.D. Boone, B.A. Gurney and E.E. Marinero, 8,000,062, August 16th, 2011.
27. **Extraordinary magnetoresistive (EMR) Device with Novel Lead Structure**, T.D. Boone, L. Folks, B.A. Gurney, J.A. Katine, E.E. Marinero and N. Smith, 7,881,020, February 1st, 2011.
28. **Integrated Servo and Read EMR Sensor**, E.E. Marinero and B.A. Gurney, 7,848,060, December 7th, 2010.

29. **Intermediate Tri-layer Structure for Perpendicular Recording Media**, *E.E. Marinero, N.F. Supper and B.R. York*, 7,833,640, November 16th, 2010.
30. **Narrow Track Extraordinary Magneto Resistive (EMR) Device with Wide Voltage Tabs and a Diad Lead Structure**, *T. D. Boone, B. A. Gurney and E.E. Marinero*, 7,738,219, June 15th, 2010.
31. **Recording Medium Comprising Laminated Underlayer Structures**, *E.E. Marinero and Brian York*, 7,772,967, May 25th, 2010.
32. **Perpendicular magnetic recording disk with ultrathin nucleation film for improved corrosion resistance and method for making the disk**, *E.E. Marinero*, 7,713,389, May 11th, 2010.
33. **Integrated Servo and Read EMR Sensor**, *B.A. Gurney and E.E. Marinero*, 7,564, 656, June 21st, 2009.
34. **Narrow Track Extraordinary Magneto Resistive (EMR) Device with Wide Voltage Tabs**, *T.D. Boone, B.A. Gurney, E.E. Marinero and N. Smith*, 7,508, 635, March 24th, 2009).
35. **Contact Magnetic Transfer Template having Magnetic Islands of Antiferromagnetically-coupled Ferromagnetic Films**, *Z.Z. Bandic and E.E. Marinero*, 7,504, 167, March 17th, 2009.
36. **Multiple Extraordinary Magnetoresistive (EMR) Sensor Utilizing both Current Leads**, *B.A. Gurney, S. Maat, E.E. Marinero and B.A. Wilson*, 7,502, 206, March 10th, 2009.
37. **Positioning of a Magnetic Head in a Magnetic Data Recording Device Using a Multiple Sensor Array**, *T. R. Albrecht, B.A. Gurney, E.E. Marinero*, 7,502, 193, March 10th, 2009.
38. **Magnetic Head Having a Hall Effect Sensor and Circuit for Detecting Recorded Bits from Magnetic Recording Media**, *A. Chattopadhyay, S. Maat, E.E. Marinero and B.A. Gurney*, 7,440,227, Oct. 21st, 2008.
39. **Apparatus for Patterning Recording Media**, *E.E. Marinero and H.K. Wickramasinghe*, 7,394,730, July 1st, 2008.
40. **Magnetic Thin Film Media with an Underlayer of CrMoZr, CrMoNb or CrMoMn**, *X. Bian, J. Chang, E.E. Marinero and M. Mirzamaani*, 7,300,713, November 27th, 2007.
41. **Narrow Track Extraordinary Magneto Resistive Device**, *A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero*, 7,295,406, November 13th, 2007.
42. **Planar Extraordinary Magnetoresistance Sensor**, *A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero*, 7,203,036, April 10th, 2007).
43. **Magnetoresistive Sensor with Decoupled Hard Bias Multilayers**, *M.C. Cyrille, M. Deng, K.S. Ho, P. Kasiraj, E.E. Marinero, J.L. Nix and B.R. York*, 7,199,986, April 3rd, 2007.
44. **GMR Sensor with Oriented Hard Bias Stabilization**, *K.S. Ho, P. Kasiraj, E.E. Marinero and J.L. Nix*, 7,161,763, January 9th, 2007.
45. **Apparatus for Patterning Recording Media**, *E.E. Marinero and H.K. Wickramasinghe*, 7,126,885, October 24th, 2006.
46. **Seed Layer Structure for Improved Crystallographic Orientation of a Hard Magnetic Material**, *E.E. Marinero and B.R. York*, 7,112,375, Sep 26th, 2006.
47. **Method of Forming a Servo Pattern on a Rigid Magnetic Recording Disk**, *Z.Z. Bandic and E.E. Marinero*, 7,106,531, September 12th, 2006.
48. **Method for Biasing Magnetoresistive Sensor with Decoupled Hard Bias Multilayers**, *M.C. Cyrille, M. Deng, K.S. Ho, P. Kasiraj, E.E. Marinero and J.L. Nix*, 7,072,156, July 4th, 2006.
49. **Magnetic Thin Film with a Nonuniform Composition**, *E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York*, 6,979,388, December 27th, 2005.
50. **Hard Bias Magnetic Structure Including a Conductive Layer and a Transition Layer and a Seed Layer**, *E.E. Marinero*, 6,967,824, November 22nd, 2005.
51. **Method of Forming a Patterned Magnetic Recording Medium**, *E.E. Marinero, H.K. Wickramasinghe*, 6,773,764, August 10th, 2004.
52. **CoCrPtB Alloys with Increased Boron Content and Method of Producing Same**, *D.T. Margulies, E.E.*

Marinero, H.J. Rosen, B.R. York and K.A. Rubin, RE38474, March 23rd, 2004.

53. **Magnetic Thin Film Disks with a Nonuniform Composition**, *E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York, 6,709,774, March 23rd, 2004.*
54. **Magnetic Media with Ferromagnetic Overlay Materials for Improved Thermal Stability**, *E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, 6,440,589, August 27th, 2002.*
55. **Magnetic Recording Media with Antiferromagnetically coupled Host Layer for the Magnetic Recording Layer**, *E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, 6,383,668, May 7th, 2002.*
56. **Thin Film Disk with Highly Faulted Crystalline Underlayer**, *E.E. Marinero, T.M. Reith and B.R. York, 6,268,036, July 31st, 2001.*
57. **CoCrPtB Alloys with Increased Boron Content and Method of Producing Same**, *D.T. Margulies, E.E. Marinero, H.J. Rosen, B.R. York and K.A. Rubin, 6,183,832, February 6th, 2001.*
58. **Patterned Magnetic Media and Method of Making the Same Using Selective Oxidation**, *R.E. Fontana, R. Hsiao, E.E. Marinero, H.A.E. Santini and B.D. Terris, 6,168,845, January 2nd, 2001.*
59. **Thin Film Disk with Acicular Magnetic Grains**, *E.E. Marinero, T.M. Reith and B.R. York, 5,989,674, November 23rd, 1999.*
60. **Magneto-Optical Recording Device Capable of Reducing Thermal Interference Between Recording Pits**, *P.C. Arnett, D.E. Call, B.I. Finkelstein, G.A. Jaquette and E.E. Marinero, 5,602,806, February 11th, 1997.*
61. **Method and Apparatus for Measuring the Duration of Optical Radiation Pulses**, *R. Wyatt and E.E. Marinero, 4,472,053, Sep 18th, 1984.*

PATENTS GRANTED IN ASIA

1. **Circuit Structure Using Graphene and Manufacture Method Thereof**, *E.E. Marinero, China, 101771022A, July 7th, 2010.*
2. **Lorentz Magneto-resistive Sensor and Fabrication thereof**, *B.A. Gurney, E.E. Marinero, A.S. Troup, D.A. Williams, J. Wunderlich, China, 11393961A, March 25th, 2009.*
3. **Soft Underlayer for Perpendicular Media with Mechanical Stability and Corrosion Resistance**, *D. Braunstein, Q. Dai, Y. Ikeda and E.E. Marinero, China, 11174426A, May 5th, 2009.*
4. **Magneto-resistive Sensor with Decoupled Hard Bias Layer**, *M. Ding, P. Kasiraj, E.E. Marinero and B. York, China, 10371990C, February 27th, 2008.*
5. **Method for Making a Perpendicular Recording Disk**, *E.E. Marinero, China, 110936A, August 29th, 2007.*
6. **Perpendicular Magnetic Recording Disk and Method for Making the Disk**, *E.E. Marinero, China, 1988005A, June 27th, 2007.*
7. **Intermediate Tri-Layer Structure for Perpendicular Recording Media**, *E.E. Marinero, N.F. Supper and B.R. York, China, 1917046A, February 21st, 2007.*
8. **Narrow Track Extraordinary Magneto Resistive (EMR) Device**, *A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero, China, 1734560A, May 5th, 2007.*
9. **Contact Magnetic Transfer Template Having Magnetic Islands of Antiferromagnetic Ferromagnetic Films**, *Z.Z. Bandic and E.E. Marinero, China, 1805017A, July 19th, 2006.*
10. **Magnetic Thin Film Disk with a Nonuniform Composition**, *E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York, China, 124238C, February 15th, 2006.*
11. **Magnetic Read Head with Hard Bias Magnet Structure**, *E.E. Marinero, China, 1551107A, December 1st, 2004.*
12. **Magnetic Recording Medium**, *E. Fullerton, D.T. Margulies and E.E. Marinero, China, 1419688T, May 21st, 2003.*
13. **Magnetic Media with Ferromagnetic Overlay Materials for Improved Thermal Stability**, *E. Fullerton, D.T. Margulies and E.E. Marinero, and M. Schabes, Taiwan, 200514888B, December 21st, 2002.*

14. **Magnetic Recording Media with Antiferromagnetically Coupled Host Layer for the Magnetic Recording Layer**, E. Fullerton, D.T. Margulies and E.E. Marinero and M. Schabes, Taiwan, 200509919B, November 11th, 2002.
15. **Perpendicular Magnetic Recording Disk with Ultrathin Nucleation Film for Improved Corrosion Resistance and Method for Making Disk**, E.E. Marinero, Korea 7067600A, June 6th, 2007.
16. **Narrow Track Extraordinary Magnetoresistive (EMR) Device**, A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero, Korea, 6050044A, May 19th, 2006.
17. **Magnetic Recorder and Method for Manufacturing the Same**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, Korea, 1020939A, March 15th, 2001.
18. **Magneto-Optical Apparatus and Method**, P.C. Arnett, D.E. Call, B. Finkelstein, J.G. Alran, E.E. Korea, 211787B1, August 2nd, 1999.
19. **Magnetic Read Head with Hard Bias Magnetic Structure**, E.E. Marinero, Singapore, 0130028A1, March 20th, 2007.
20. **Magnetic Media with Ferromagnetic Overlay Materials for Improved Thermal Stability**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes Singapore, 0090729A1, August 20th, 2002.
21. **Thin Film Disk With Acicular Magnetic Grains**, E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York, Singapore, 0087030A1, March 3rd, 2002.
22. **Perpendicular Magnetic Recording Disk and Method of Manufacturing the Same**, T.R. Albrecht, M.K. Grobis, E.E. Marinero, H.J. Rosen and R. Ruiz, Japan, 2011129241A2, June 30th, 2011.
23. **Electronic Device**, E.E. Marinero and S. Pisana, Japan, 2011066427A2, March 31st, 2011.
24. **Magnetic Field Sensor**, B.A. Gurney, E.E. Marinero and S. Pisana, Japan, 2011040750A2, February 24th, 2011..
25. **Magnetic Field Sensor**, A. Aleksey, D.A. Williams, E.E. Marinero, B.A. Gurney, E.E. Marinero and T. Boone, Japan, 2010080958A2, April 8th, 2010.
26. **Vertical Magnetism Recording Medium Equipped with Mechanical Stability and Corrosion Resistance**, D. Braunstein, Q. Dai, Y. Ikeda, E.E. Marinero and W. Run-Han, Japan, 2008097812A2, April 24th, 2008.
27. **Method for Manufacturing Perpendicular Magnetic Recording Disk**, E.E. Marinero, Japan, 2007220280A2, August 30th, 2007.
28. **Perpendicular Magnetic Recording Disk Provided with Super Thin Nucleation Film for Improving Corrosion Resistance and Manufacturing Method of the Same**, E.E. Marinero, Japan, 2007172815A2, July 5th, 2007.
29. **Narrow Track Extraordinary Magnetoresistive (EMR) Device**, A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero, Japan, 2006041515A2, February 9th, 2006.
30. **Magnetic Recording Medium and Method of Manufacturing the Same**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, Japan, 2001023144A2, January 26th, 2001.
31. **Direct Overwriting Magneto-Optical Device and Method**, P.C. Arnett, D.E. Call, B.I. Finkelstein, G.A. Jaquette and E.E. Marinero, Japan, 09017058A2, January 17th, 1997.
32. **Magnetic Recording Medium**, D.T. Margulies, E.E. Marinero and M.E. Schabes, Australia, AU0140880A5, October 8th, 2001.

PATENTS GRANTED IN EUROPE

1. **Magnetisches Aufzeichnungsmedium**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, Germany, DE60124888C0, January 11th, 2007.
2. **Magnetische Medien mit Ferromagnetischen Ueberzugsmaterialien fuer verbesserte thermische Stabilitaet**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, Germany, DE10026050A8, September 2nd, 2004.
3. **Verfahren und Einrichtung zum Messen der Dauer von Kohaerenten Strahlungsimpulsen**, E.E. Marinero

and R. Wyatt, **Germany**, DE3108177C2, July 21st, 1983.

4. **Magnetisches Aufzeichnungsmedium**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, **Austria**, 0347164E, December 15th, 2006.
5. **Magnetic Recording Medium**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, **European Patent Office**, 1275110B1, November 29th, 2006.
6. **Extraordinary Magnetoresistive (EMR) Device**, A. Chattopadhyay, R.E. Fontana, B.A. Gurney, S. Maat and E.E. Marinero, **European Patent Office**, 1619514A2, November 12th, 2008.
7. **Extraordinary Magnetoresistive (EMR) Device**, T.D. Boone, L. Folks, B.A. Gurney, J.A. Katine, E.E. Marinero and N. Smith, **European Patent Office**, 1990647A2, November 12th, 2008.
8. **Perpendicular Magnetic Recording Disk with Ultrathin Nucleation Film and Method for Making the Disk**, E.E. Marinero, **European Patent Office**, 1801790A1, June 27th, 2007.
9. **Magnetic Thin Film Disks with a Nonuniform Composition**, E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York, **European Patent Office**, 1430476A1, June 23rd, 2004.
10. **Magnetic Thin Film Disks with a Nonuniform Composition**, E.E. Marinero, T.M. Reith, H.J. Rosen and B.R. York, **World Intellectual Property Organization**, 03025909A1, March 27th, 2003.
11. **Magnetic Recording Medium**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, **World Intellectual Property Organization**, 0173762A3, October 4th, 2001.
12. **Magnetic Recording Medium**, E.E. Fullerton, D.T. Margulies, E.E. Marinero and M.E. Schabes, **Canada**, 2398950AA, April 10th, 2001.

USPTO PATENT APPLICATIONS

1. **Surface Plasmon Magnetization Switching**, A. Dutta, V.M. Shalaev, A. Boltasseva and E.E. Marinero, 2019-0348710-A1, October 31st, 2019
2. **Spin-transfer-torque Synthetic Anti-ferromagnetic Switching Device**, K.Y. Camsari, A.Z. Pervaiz, R. Faria, E.E. Marinero and S. Datta, 2019-0081236 A1, March 14, 2019.
3. **Metamaterial Device and Method of Making the Same**, A.V. Kildishev, U. Guler, K. Chaudhury, A. Shaimaa, E.E. Marinero, H. Reddy, A. Boltasseva and V.M. Shalaev, 20180329115 A1, Nov. 15 2018.
4. **Functionalized Particles for Label-free DNA Impedimetric Biosensor for DNA and RNA Sensing**, E.E. Marinero, R.J. Kuhn, L.A. Stanciu and S.A. Jin, 2017-0107565 A1, April 20, 2017

USPTO PROVISIONAL PATENT APPLICATIONS

1. **High ionic Conductivity Composite LiLaZrBiO Garnet-Polymer Electrolyte**, E.E. Marinero, M.R. Oduncu and A. Villa, 62/859,498, 06/10/2019.
2. **Surface Plasmon Magnetization Switching**, E. E. Marinero, A. Dutta, A. Boltasseva and V. M. Shalaev, 16/399,917, 4/30/2019.
3. **Refractory Sensors for Harsh Environments**, U. Guler, V.M. Shalaev, A.V. Kildishev and E.E. Marinero, 15/978,548, 5/14/2018.
4. **Multi-state Spin Switch Device Having a Plurality of Output Signal Levels and Fabrication Thereof**, S. Datta and E.E. Marinero, D2015-0285, 11/16/15.
5. **Ultrafast Spin Transfer Torque Switching of Spintronic Devices**, S. Datta, E.E. Marinero, K.Y. Camsari and A.Z. Pervaiz PCT#US17/22383, September 14th 2018..

INVITED TALKS AT MAJOR CONFERENCES, SYMPOSIA AND WORKSHOPS

1. **Resonant Energy Transfer between Electronically Excited and Ground State ICI Molecules**, E.E. Marinero and M. Stuke, VI International Conference on Molecular Energy Transfer, Lioujas, France, (1979).
2. **Laser-induced Photoionization of Hydrogen: A Technique to Measure Rovibrational Ground State Populations**, E.E. Marinero, Conference on Laser Techniques for Extreme Ultraviolet Spectroscopy, Boulder, CO, March, (1982).
3. **Quantum-State-Specific Detection of Hydrogen by Three Photon Ionization**, E.E. Marinero, C.T. Rettner

and R.N. Zare, XII International Quantum Electronics Conference, Munich, Germany, June, (1982).

4. **Spectroscopic and Dynamic Studies in The Extreme Ultraviolet: Recent Progress and Future Possibilities**, E.E. Marinero, Topical Meeting on Excimer Lasers, Lake Tahoe, NV, January, (1983).
5. **Reactive Scattering between Hydrogen Atoms and Molecular Deuterium**, E.E. Marinero, Gordon Conference on Atomic and Molecular Interactions, New Hampshire, August, (1984).
6. **Laser-driven Metal Cluster Segregation in Oxide Matrices**, E.E. Marinero, W. Pamler, M. Chen, V. Jipson and W.Y. Lee, AVS Meeting on the Microphysics of Surfaces, Beams and Adsorbates, Santa Fe, New Mexico, February, (1985).
7. **Laser Interactions with Optical Recording Materials**, E.E. Marinero, MRS Symposium on Beam Solid Interactions and Phase Transformations, Boston, MA. November, (1986).
8. **Structural Properties and Magnetism in Magneto Optical Alloys**, E.E. Marinero, MRS International Meeting on Advanced Materials, Tokyo, June, (1988).
9. **Material Transformations in Semiconductor and Magnetic Thin Films by Rapid Laser Quenching**, E.E. Marinero, E-MRS Meeting, Strasbourg, France, June, (1989).
10. **Magnetic and Structural Properties of Co/Pt Multilayers**, C.J. Lin, G.L. Gorman, C.H. Lee, R.F.C. Farrow, E.E. Marinero, H. Do and H. Notarys, E-MRS Symposium on Magnetic Thin Films, Multilayers and Surfaces, Strasbourg, France, June, (1990).
11. **Structural and Magnetic Anisotropy in Amorphous Rare earth – Transition Metals**, E.E. Marinero, IEEE International Magnetism Conference, Brighton, UK, April, (1990).
12. **Anisotropy Origins in Magneto-Optic Structures**, E.E. Marinero, II Workshop on Magneto-Optic Data Storage Media, Tucson, Az., February, (1991).
13. **Microstructural Dependence of the Perpendicular Magnetic Anisotropy in CoPt Alloys**, E.E. Marinero, R.F.C. Farrow, G.R. Harp, R.H. Geiss, J.A. Bain and B. Clemens, Spring MRS Symposium on Magnetic Ultrathin Films, San Francisco, April, (1993).
14. **Materials Requirements for Higher Performance Magneto-Optical Recording**, E.E. Marinero, International Conference on Magneto-Optic Materials, Los Alamos National Laboratory, New Mexico, June, (1994).
15. **Materials Issues in the Data Storage Industry**, E.E. Marinero, Joint Meeting of the Canadian, American and Mexican Physical Societies, Cancun, Mexico, September, (1994).
16. **Structure and Magnetism in Amorphous Thin Films**, E.E. Marinero, III Latin American Workshop on Magnetism, Magnetic Materials and Applications, Merida, Venezuela, August, (1995).
17. **Materials Science in the Data Storage Industry**, E.E. Marinero, SACNACS Conference, El Paso, Texas, January, (1995).
18. **Microstructure Control of Magnetic Thin Films for Information Storage**, E.E. Marinero, IV Latin American Workshop on Magnetism, Magnetic Materials and Applications, Sao Paulo, Brazil, June, (1998).
19. **Thin Films for Information Storage: the Role of the Electron Microscope**, E.E. Marinero and Y. Kubota, XIV International Congress on Electron Microscopy, Cancun, Mexico, August, (1998).
20. **Magnetic Recording Materials for the XXI Century: Challenges and Opportunities**, E.E. Marinero, 29th Electronic Materials Conference, Santa Clara, CA, February, (2001).
21. **Nanostructured Magnetic Materials: Route to Engineering Material Properties for Future Magnetic Recording Technology**, E.E. Marinero, International Conference on Advanced Materials, ICAM-2001, Cancun, Mexico, August, (2001).
22. **Microstructure-Property Relationships in Magnetic Materials**, E.E. Marinero, International Conference on Modern Materials and Technologies (CIMTEC), Florence, Italy, July, (2002).
23. **Applications of Nanostructured Magnetic Materials**, E.E. Marinero, Workshop on Science and Technological Applications of Nanostructured Materials, San Luis Potosi, Mexico, May (2002).
24. **Nanostructured Magnetic Materials for Information Storage**, E.E. Marinero, XI International Materials Research Conference, Cancun, Mexico, August, (2002).
25. **Physical Origins of the Magnetic Orientation Ratio in Recording Media**, E.E. Marinero, T. Reith, M. Toney and B. York, 47th IEEE Conference on Magnetism and Magnetic Materials, Tampa, FL, November, (2002).
26. **Materials Requirements for Tb/in² Magnetic Recording**, E.E. Marinero, VI Latin American Workshop on

- Magnetism, Magnetic Materials and Applications, Chihuahua, Mexico, April, (2003).
27. **TEM Characterization of Magnetic Nanostructured Processing**, P.M. Rice, R.E. Fontana, J.R. Childress, S.S.P. Parkin and E.E. Marinero, IEEE International Magnetics Conference, Boston, MA, April, (2003).
 28. **Magnetostriction - Induced Uniaxial Anisotropy in Amorphous CoSmCu Thin Films**, J. Arcas, B. York, E.E. Marinero and A. Hernando, XVIII International Colloquium on Magnetic Films and Surfaces, Madrid, Spain, July (2003).
 29. **Growth and Characterization of Nanostructured Magnetic Thin Films**, E.E. Marinero, ASTAPHYS-Mex 2003, Puerto Vallarta, Mexico, August, (2003).
 30. **Microstructural Control of Magnetic Materials for Tb/in² Magnetic Recording**, E.E. Marinero, NATO Workshop on Nanostructured Magnetic Materials and Their Applications, Istanbul, Turkey, July, (2003).
 31. **Nanotechnology: Emerging Business Opportunities**, E.E. Marinero, Workshop on Perspectives for Bi-National Collaboration on Nanoscience, San Luis Potosi, Mexico, May, (2005).
 32. **Magnetic Nanostructures and Semiconductor Heterostructures for Tb/in² Recording**, E.E. Marinero, XV International Materials Research Congress, Cancun, Mexico, August, (2006).
 33. **Read Sensor and Recording Materials Challenges for Ultrahigh Magnetic Recording**, E.E. Marinero, XI Symposium on Materials Physics, UNAM, Ensenada, Mexico, Feb (2006).
 34. **Nanotechnology: Science and Technology Driver**, E.E. Marinero, Societal Impact of Nanotechnology Forum, Madrid, Spain, April (2007).
 35. **Low Temperature Magneto-transport Studies and Confinement Effects in InAs 2DEG Structures**, E.E. Marinero, T. Boone, L. Folks, B. Gurney, and J. Katine, IV Hitachi Global Spintronics Symposium, Cambridge, UK, July, (2007).
 36. **Magnetic and Semiconductor Nanostructures for Ultra High Density Magnetic Recording**, E.E. Marinero, NATO Workshop on Nanostructured Magnetic Materials and Their Applications, Istanbul, Turkey, July, (2007).
 37. **Metrology Challenges for Nanoscale Materials**, E.E. Marinero, XXII Instrumentation Congress, Monterey, Mexico, October, (2007).
 38. **Nanoscale InAs Hall Crosses Excited with Localized Magnetic and Electric Fields**, L. Folks, A.S. Troup, T.D. Boone, J.A. Katine, E.E. Marinero and B.A. Gurney, Stanford University Workshop on Mesoscopic Magnetic Sensors, Stanford, May, (2008).
 39. **Strategies for Academia-Industry Relationships**, E.E. Marinero, International Materials Research Conference, Cancun, Mexico, August, (2008).
 40. **Nanoscience and Nanotechnology: Generators of Basic Science and Future Technologies**, E.E. Marinero, Nanomex 2008 Forum, Mexico City, Mexico, November, (2008).
 41. **Mesoscopic Extraordinary Magnetoresistance and the Effects of Impact Ionization and Velocity Saturation**, T. D. Boone, L. Folks, J. Katine, E.E. Marinero, N. Smith and B. Gurney, Intermag, Madrid, Spain, (2008).
 42. **Confinement Effects in III-V Quantum Well Mesoscopic Devices**, E.E. Marinero, V Hitachi Global Spintronics Symposium, Tokyo, Japan, November, (2008).
 43. **Nanostructured Magnetic and Semiconductor Materials for Future Information Storage Technology, Magnetism, Nanosciences and Applications**, E.E. Marinero, Magnetism Workshop, Temuco, Chile, January, (2009).
 44. **Nanoscience and Nanotechnology: Challenges and Opportunities for Emerging Economies**, E.E. Marinero, Workshop on Nanoscience and Nanotechnology Opportunities, Puebla, Mexico, April (2009).
 45. **Nanoscience and Nanotechnology: Fostering Science and Industrial Development**, E.E. Marinero, Forum on Technology Development, San Salvador, El Salvador, June (2009).
 46. **Collaborative Research between Industry and Academia: from Inception to Technology Transfer, What works and What does not**, E.E. Marinero, XVIII International Conference on Materials Research, Cancun, Mexico, August (2009).
 47. **Nanostructured Materials and Devices for Information Storage and Microelectronics**, E.E. Marinero, International and Interdisciplinary Meeting on Nanoscience and Nanotechnology (Nanomex 09), Ensenada, Baja California, Mexico, November (2009).
 48. **Synthesis of Ordered 2D Nanostructures Employing Directed Self-assembly in Block Copolymers**, E.E.

Marinero, International Conference on Polymers and Advanced Materials (Polymat 2009), Huatulco, Mexico, November, (2009).

49. **Nano-devices and Nanomaterials for Ultra-high Density Magnetic Recording**, E.E. Marinero, Mexico-Chile Workshop on Nanomagnetism, Cocoyoc, Mexico, January, (2010).
50. **Tunable Nanoscale Graphene Magnetometers**, E.E. Marinero, XV Materials Science Symposium, Center for Nanoscience and Nanotechnology, Ensenada, Mexico, February (2010).
51. **Science and Nanotechnology: The Past 15 Years**, E.E. Marinero, XV Materials Science Symposium, Center for Nanoscience and Nanotechnology, Ensenada, Mexico, February, (2010).
52. **Physics in Industry and National Laboratories Panel Discussion**, E.E. Marinero, American Physical Society Meeting, Portland, Oregon, March, (2010).
53. **Nanoscale Magnetic Field Sensors for Magnetic Recording**, B. Gurney, S. Pisana, P. Braganca, E.E. Marinero, J. Katine, B. Willson, S. Maat and J. Childress, American Physical Society Meeting, Invited Session, "Measuring Magnetism at the Nanoscale", Portland, Oregon, March, (2010).
54. **Magnetic and Semiconductor Nanostructured Materials and Devices for Ultrahigh Density Recording**, E. E. Marinero, Symposium on Nanostructured Materials and Nanotechnology, IMRC-2010, Cancun, August, (2010).
55. **Novel Nanoscale Materials and Devices: the route from Invention to Technology Transfer and Commercialization**, E. E. Marinero, Workshop on Nanoscale Science, Technology and Innovation, Rio de Janeiro, Brazil, September, (2010).
56. **Magnetic Recording at Tb/in² and Beyond: Nanostructured Materials, Nanofabrication and Nanosensor Requirements**, E. E. Marinero, XVII Chilean Symposium on Physics, Pucon, Chile, November (2010).
57. **Nanoscale Magnetic Materials and Magnetic Sensors**, E. E. Marinero, At the Frontiers of Condensed Matter V (FCM2010), Buenos Aires Argentina, December, (2010).
58. **Innovation, Novel Solutions and New Devices: The Engines that Drive the Magnetic Storage Industry**, E. E. Marinero, APS March Meeting, Dallas, Texas, (2011).
59. **Physics Careers in Nanotechnology-based Industries**, E. E. Marinero, Workshop on Physics Careers in Industry and Government, APS March Meeting, Dallas, Texas, (2011).
60. **Nanomaterials: Basic Physical Properties and Applications**, E. E. Marinero, Workshop on Nanoscience and Nanotechnology, El Salvador, Central America, May (2011).
61. **Nanostructured Materials and Novel Nano-Sensor Devices: Technology Evolution Enablers**, E. E. Marinero, XX International Materials Research Conference, Cancun, Mexico August, (2011).
62. **Nanotechnology and Innovation: New Business Opportunities**: E. E. Marinero, INNOVATECBAJA, Forum on Technology and Entrepreneurship, Ensenada, Mexico, September, (2011).
63. **Towards Single-Digit Atomic Layers Thick Carbon Overcoats for Information Storage Technology: Needs and Challenges**, E. E. Marinero, International Specialist Meeting on Carbon, Puerto Vallarta, Mexico, September, (2011).
64. **Nanotechnology Impact on Emergent Economies**, E. E. Marinero, 40th Anniversary of CCADET Foundation, UNAM, Mexico City, December, (2011).
65. **Collaborative Research between Industry and Academia: What Factors Determine Success**, E. E. Marinero, International and Interdisciplinary Meeting on Nanoscience and Nanotechnology (Nanomex 12), Puebla, Mexico, June, (2012).
66. **The Impact of Nanotechnology in Established and Emergent Industries**, E. E. Marinero, International and Interdisciplinary Meeting on Nanoscience and Nanotechnology (Nanomex 12), Puebla, Mexico, June, (2012).
67. **Academia-Industry Interactions: A Comparative Analysis between USA and Mexico**, E. E. Marinero, International Materials Research Conference, Cancun, Mexico, August, (2012).
68. **The Impact of Nanotechnology in Renewable Energy Research and Development**, E. E. Marinero, UNAM Center for Energy Research, Cuernavaca, Mexico, September, (2012).
69. **The Impact of Nanoscience and Nanotechnology in the Information Storage Industry: Enabling Current and Future Products**, E. E. Marinero, Workshop on Nanoscience and Nanotechnology Opportunities for High Tech Industry, Center for Functional Nanomaterials, Brookhaven National Laboratory, November, (2012).

70. **Materials and Device Challenges for Future Information Storage Technology**, E. E. Marinero, Colombia-US Workshop on Nanotechnology in Energy and Medical Applications, Medellin, Colombia, Monterrey, Mexico, November, (2012).
71. **Nanoscience and Nanotechnology in the Information Storage Industry: Enabling Current and Future Products**, E. E. Marinero, 4th International Forum on Industrial Applications of Nanotechnology, Medellin, Colombia, March, (2013).
72. **Purdue University Discovery Park: A New Paradigm for Interdisciplinary Research**, A. Rebar and E. E. Marinero, International Materials Research Congress, Symposium on Strategies for Academy-Industry Relationships, Cancun, Mexico, August, (2013).
73. **Academia-Industry Interactions in the XXI Century: Trends and New Tools**, E. E. Marinero, International Materials Research Congress, Symposium on Strategies for Academy-Industry Relationships, Cancun, Mexico, August, (2014).
74. **Novel Nanomaterials and Devices for Sustainable Energy Generation and Storage**, E. E. Marinero, Nano-Monterrey International 2015 Forum, Monterrey, Mexico, October, (2015).
75. **A Model for Bi-national Technology and Business Creation: I2T2-Purdue University Partnership**, E. E. Marinero, Latin-American Academy for the Technology Transfer and Commercialization, La Paz, Baja California, Mexico, March, (2016).
76. **Spintronic Devices for Trusted Microelectronics**, E. E. Marinero, Microelectronics Integrity Meeting, Indianapolis, Indiana, July, (2016).
77. **Refractory Plasmonic Materials for Heat Assisted Magnetic Recording**, A. Boltasseva, U. Guler, A. V. Kildishev, E. E. Marinero and V. M. ShalaeV, VII International Conference on Metamaterials, Photonic Crystals and Plasmonics, Torremolinos, Spain, July, (2016).
78. **Refractory Plasmonic Nanostructures and Metamaterial Devices**, A. Boltasseva, V. ShalaeV, U. Guler and E. E. Marinero, XXV International Materials Research Conference, Cancun, Mexico, August, (2016).
79. **Highly Stable Bimetallic AuIr Catalyst: Physical Origins of the Intrinsic High Stability Against Sintering**, C. W. Han, V. Otarlan, E. E. Marinero, P. Majundar, J. Greeley, A. Aguilar and R. Zanella, XXV International Materials Research Conference, Cancun, Mexico, August, (2016).
80. **Deliberate Innovation and Technology Transfer**, E. E. Marinero, XXV International Materials Research Conference, Cancun, Mexico, August, (2016).
81. **Innovation and Entrepreneurship in Technology Development**, E. E. Marinero, Commercialization and Technology Transfer HUB for the Americas, La Paz, Baja California, Mexico, May, (2017).
82. **Solar-Thermo-Photovoltaic Energy Conversion: Ultra-efficient Portable Power Generation**, E. E. Marinero, U. Guler, A. Boltasseva and V.M. ShalaeV, Materials and Technologies for Energy Conversion, Savings and Storage, XXVI IMRC, Cancun, Mexico, (August 2017).
83. **Magneto-Photonics: Confluence of Spins and Photons, Novel Physics and Devices**, E. E. Marinero, Workshop on Novel Spintronics Physics and Materials for Future Information Processing, Tohoku University, Japan (Feb. 2018)
84. **Fostering Innovation and Entrepreneurship at Purdue University: from the Laboratory to the Market**, E. E. Marinero, APS March Meeting, Los Angeles, CA, (March 2018).
85. **Ultrafast Switching of Spintronic Devices**, E. E. Marinero, G-P Spin Seminar, Advanced Institute for Materials Research, Tohoku University, Japan (Aug 2018).
86. **The Role of Innovation and Entrepreneurship in Business Creation in an Academia**, E. E. Marinero, Commercialization and Technology Transfer HUB for the Americas, Santiago de Chile, (Sept. 2018).
87. **Nanomaterials and Nanodevices for Energy Conversion and Biosensing**, E. E. Marinero, XVII Science and Technology Meeting, Panama City, Panama, (Oct. 2018).
88. **Refractory Plasmonic Nanostructures and Metamaterials Devices**, E. E. Marinero, X Workshop on Magnetism, Nanoscience and Applications, San Luis Potosí, Mexico, (Oct. 2018).
89. **Technology Development and Transfer in an Academic Environment**, E. E. Marinero, Commercialization and Technology Transfer HUB for the Americas, Panama City, Panama, May, (2019).
90. **Nanostructured Materials and Devices for Energy**, E. E. Marinero, First International Workshop of Technology Foresight for the Americas, Lima, Peru, October, (2019).

INVITED LECTURES AND SEMINARS

ACADEMIA AND NATIONAL RESEARCH LABORATORIES

1. Department of Physics, University of Illinois, Chicago, host Prof. C.K. Rhodes (1982).
2. Lawrence Berkeley Laboratory, Berkeley, CA, host Dr. F. Schlachter, (1982).
3. Department of Chemistry, Stanford University, host Prof. R.N. Zare, (1983).
4. Department of Chemistry, Los Alamos National Laboratory, host Dr. R. Sze, (1983).
5. Department of Physics, Santa Clara University, Santa Clara, CA , (1985).
6. Department of Chemistry, UC Berkeley, host Prof. B. Moore (1984).
7. Department of Chemistry, Stanford University, host Prof. R.N. Zare, (1987).
8. Department of Materials Science and Engineering, Univ. of Pennsylvania, host Prof. T. Egami, (1987).
9. Department of Metal Science and Technology, Kyoto University, Japan, host Prof. Yoji Nakamura, (1988).
10. Institute of Chemical Research, Kyoto University, Japan, host Prof. T. Shinjo, (1988).
11. Department of Physical Electronics, Tokyo Institute of Technology, Japan, host Prof. M. Abe, (1988).
12. Institute of Materials Research, Tohoku University, Japan, host Prof. K. Suzuki, (1988).
13. Optical Sciences Center, University of Arizona, host Prof. C. Falco, (1988).
14. Physics Department, University of Aachen, Germany, host Prof. G. Güntherodt, (1989).
15. Max-Planck Institute, Göttingen, Germany, host Prof. M. Stuke, (1989).
16. Laboratoire de Magnetisme, CNRS, Paris, France, host Dr. R. Krishnan, (1989).
17. Center for Solid State Science, Arizona State University, host Prof. D.J. Smith, (1989).
18. LURE, Université Paris-Sud, France, host Prof. Alain Fontaine, (1990)
19. Laboratoire de Physique des Solides, Univ. Paris-Sud, Orsay, France, host Prof. A. Fert, (1990).
20. Institut de Electronique Fondamentale, Université Paris-Sud, France, host Prof. J.P. Renard (1990).
21. Laboratoire Louis Neel, Grenoble, France, host Prof. D. Givord, (1990).
22. Laboratorium für Festkörperphysik, ETH, Zürich, Switzerland, host Prof. J. Schönes, (1990).
23. Dept. of Physics, Cavendish Laboratory, University of Cambridge, host Prof. J.A.C. Bland, (1990).
24. Department of Materials Science, University of Cambridge, host Dr. R. Somekh, (1990).
25. Department of Physics, Simon Fraser University, Canada, host Prof. B. Heinrich (1991).
26. Physics Department, Rice University, host Prof. C. Rau, (1992).
27. Magnetic Materials Laboratory, Tohoku University, Japan, host Prof. H. Fujimori (1992).
28. Department of Materials Science and Engineering, Stanford University, host Prof. B. Clemens (1993).
29. Department of Materials Science and Engineering, UC Berkeley, host Prof. T. Sands (1994).
30. Dept. of Electrical Engineering and Computer Science, CMU, Pittsburgh, host Prof M. Kryder (1994).
31. Los Alamos National Research Laboratories, NM, host Dr. F. Mueller, (1994).
32. Sandia National Laboratory, Albuquerque, NM, host Dr. J. Tsao, (1994).
33. Institute of Materials Physics and Chemistry, U. of Strasbourg, France, host Dr. P. Panissod, (1995).
34. Department of Physics, University of Texas, Austin, host Prof. A. De Lozanne, (1995).
35. Department of Physics, University of Zaragoza, Spain, host Prof. R. Ibarra (1996).
36. Department of Physics, University of Sao Paolo, Brazil, host Prof. F. Missell (1998).
37. Lawrence Berkeley National Laboratory, Berkeley, CA, host Dr. K. Krishnan, (1998).
38. Department of Materials Science, Royal Institute of Technology, Sweden, host Prof. K.V. Rao, (2002).
39. Department of Chemical Engineering, Univ. of Texas, Austin, host Prof. M. Yacaman, (2002.)
40. School of Physics and Astronomy, Nottingham, UK, host Prof. B. Gallagher, (2004).
41. Chemical and Materials Engineering Dept., San Jose State University, host Prof. S. Gleixner, (2005).
42. Department of Materials Science and Engineering, UC Berkeley, host Prof. R. Ramesh (2005).
43. Department of Physics, Technical University of Vienna, host Prof. R. Grössinger, (2006).
44. Department of Physics, University of Madrid, Madrid, host Prof. A. Cremades (2007).

45. Institute of Materials Science, CSIC, Madrid, host Dr. M. Vazquez (2007).
46. Center for Condensed Matter Physics, U. Mexico, Ensenada, host Dr. S. Fuentes, (2007).
47. Birck Nanotechnology Center, Purdue University, Indiana, host Prof. T. Sands, (2008).
48. Blackett Laboratory, Imperial College, London, UK, host Prof. L. Cohen, (2008).
49. National Physical Laboratory, London, UK, host Dr. O. Kazakova, (2008).
50. Microelectronics Laboratory, University of Cambridge, Dr. D. Williams, (2008).
51. Institute of Physics, National University of Mexico, host Prof. J. Saniger (2008).
52. Molecular Foundry, LBNL and UCB, host Professor J. Bokor, (2008).
53. Institute of Materials Research, National Univ. of Mexico, host Prof. E. Sansores, (2009).
54. Department of Physics, University of Texas, San Antonio, host Prof. M. Yacaman, (2010).
55. Dept. of Physics, Naval Postgraduate School, Monterey, CA. host Prof. K. Gamani, (2010).
56. Department of Physics, UC Davis, CA. host Prof. S. Chiang, (2010).
57. Center for Nanoscience and Nanotechnology, UNAM, Ensenada, Mexico, host Prof. S. Fuentes, (2010).
58. Center for Renewable Energy Research, UNAM, Cuernavaca, Mexico, host Prof. C. Estrada, (2011)
59. Institute of Physics, UNAM, Cuernavaca, Mexico, host Prof. L. Martinez, (2012)
60. Center for Advanced Materials Research, Monterrey, Mexico, host Dr. L. Gomez, (2013)
61. Department of Physics, Purdue University, host Prof. Yong Chen, (2013)
62. Department of Physics, New Mexico State University, host Prof. S. Zollner, (2014).
63. Department of Physics, Indiana University, host Prof. W.M. Snow, (2016).
64. Renewable Energy Institute, UNAM, Cuernavaca, Mexico, host Prof. A. del Rio, (2016).
65. Instituto Potosino de Investigación Científica y Tecnológica, host Prof. L. Moran-Lopez (2018).
66. Jet Propulsion Laboratory, Pasadena, CA, host Dr. V. Scott (2019).
67. University of Paris-Sud, Saclay, France, host Prof. A. Fert (2019)
68. University of Grenoble Alpes, France, host Dr. B. Dieny (2019)
69. University of Cambridge, Cavendish Laboratory, UK, host Dr. C. Barnes (2019)
70. Army Research Laboratory, Adelphi, MD, host Dr. M. Waits (2019).

INDUSTRIAL RESEARCH LABORATORIES

1. TDK Research Laboratory, Tokyo, Japan, host Dr. Y. Yamaoka, (1988).
2. Siemens Research Laboratories, Erlangen, Germany, host Dr. H.E. Hoenig, (1989).
3. IBM Zurich Research Laboratory, Switzerland, host Dr. R. Allenspach, (1990).
4. 3M Corporate Research Laboratories, St Paul, MN, host Dr. W. Mitchell, (1990).
5. Philips Research Laboratory, Eindhoven, Netherlands, host Dr. J. Smits, (1991).
6. Thompson CSF Research Laboratory, Paris, France, host Dr. M. Maurer, (1991).
7. Sony Research Laboratory, Tokyo, Japan, host Dr. M. Kaneko, (1992).
8. Eastman Kodak Research Laboratory, Rochester, NY, host Dr. R. Victora (1993).
9. Bellcore Research Laboratory, Red Bank, NJ, host Dr. T.D. Sands, (1993).
10. Hitachi Maxell Research Laboratory, Tokyo, Japan, host Dr. N. Ohta, (1993).
11. Nikon Research Laboratory, Tokyo, Japan, host Dr. J. Saito, (1993).
12. Canon Corporate Research Laboratories, Tokyo, Japan, host Dr. K. Matsumoto, (1994, 1995, 1996).
13. Balzers Corporate R&D, Alzenau, Germany, host Dr. B. Cord, (1996).
14. Hewlett Packard Research Laboratories, Palo Alto, CA, host Dr. C. Perlov, (1997)
15. Hitachi Central Research Laboratory, Tokyo, Japan, host Dr. K. Furusawa, (2005).
16. Hitachi Cambridge Research Laboratory, England, host Dr. D. Williams, (2005, 2007, 2008).

SELECTED CONFERENCE CONTRIBUTED TALKS

1. **The Continuous Photolysis of Nitromethane, Kinetic Studies of the Photo-Oxidation Reactions**, E.E. Marinero, M.J. Colles and J. Pfab, Int. Conf. Lasers in Chemistry, Royal Society, London, June, (1977).
2. **Triple Spectroscopy of Iodine Using a CW Dye Laser**, M.J. Colles and E.E. Marinero, Int. Conf. Lasers in Chemistry, Royal Society, London, June, (1977).
3. **High Resolution Spectroscopy of Complex Photodissociating Molecules**, E.E. Marinero, M. J. Colles and N. Geddes, Int. Conf. Lasers in Chemistry, Royal Society, London, June, (1977).
4. **Selective Photoaddition of ICl to Acetylene**, M. Stuke and E.E. Marinero, IX International Conference on Photochemistry, Cambridge, England, August, (1978).
5. **Quartz Opto-Acoustic Apparatus for Photochemical Studies in Highly Corrosive Environments**, E.E. Marinero, Int. Conf. Laser-induced Processes in Molecules, Edinburgh, Scotland, September, (1978).
6. **Doppler-Free Opto-Acoustic Spectroscopy**, E.E. Marinero, IV International Conference on Laser Spectroscopy, Rottach-Egern, Germany, June, (1979).
7. **XUV Generation in Pulsed Free Jets: Theory of Operation and Application to Hydrogen Detection**, E.E. Marinero, A.H. Kung, N.A. Gerhenfeld, C.T. Rettner, D. Bethune and R.N. Zare, OSA Conference on Laser Techniques in the Extreme Ultraviolet, Boulder, CO., March, (1984).
8. **Determination of H+D₂ Product State Distribution Using a Novel Laser Ionization Mass Spectrometer**, E.E. Marinero, C.T. Rettner and R.N. Zare, XIII International Quantum Electronics Conference, Anaheim, CA, June, (1984).
9. **Projection Printing of Au and Cu Microcircuit Patterns by Laser Gas-Phase Photochemistry**, E.E. Marinero, T. Baum and C. Jones, MRS Symposium on Laser Chemical Processing of Semiconductors, Boston, MA, November, (1984).
10. **Laser Induced Fluorescence Study of Cu-Atom Generation from Organometallic Photodissociation**, E.E. Marinero and C.R. Jones, International Conference on Lasers, San Francisco, CA, November, (1984).
11. **Time-resolved Laser Induced Transformations in Crystalline Te Thin Films**, E.E. Marinero, W. Pamler and M. Chen, MRS Symp. Beam Solid Interactions and Phase Transformations, Boston, MA, November, (1985).
12. **Au-cluster Redistribution During Nanosecond Laser Annealing of Metal/Insulator Matrices**, W. Pamler, E.E. Marinero and M. Chen, MRS Symp. Beam Solid Interactions and Phase Transformations, Boston, MA, November, (1985).
13. **Laser-induced Crystallization of Amorphous GeTe**, E. Huber and E.E. Marinero, MRS Symp. Beam Solid Interactions, Boston, MA, December, (1986).
14. **Oxidation-induced Magnetic and Structural Changes in MO Alloys**, E.E. Marinero, D.C. Miller, A. Gupta, R.N. Payne and H. Notarys, IEEE International Magnetism Conference, Tokyo, April, (1987).
15. **Anisotropy and Coercivity of Amorphous RE-TM Films**, T. Egami, C.D. Graham, P.J. Flanders, E.E. Marinero, H. Notarys and C. Robinson, IEEE International Magnetism Conference, Tokyo, April, (1987).
16. **Laser Induced Magnetic and Structural Changes in Amorphous TbFe Thin Films**, C.J. Robinson, D. Rugar, M.G. Samant and E.E. Marinero, MRS Symp. Beam Solid Interactions, Boston, MA, November, (1987).
17. **Magnetic Interactions in Fe/TbFe Bilayers**, E.E. Marinero, G.S. Sprokel and H. Notarys, MRS Symposium on Multilayers: Synthesis and Nanoelectronic Applications, Boston, MA, December, (1987).
18. **Exchange Coupling Origin at Interfaces of Ferromagnetic Layers**, E.E. Marinero, P.S. Bagus, H. Notarys, H.C. Siegmann and F. Meier, International Conference on Magnetism, Paris, France, July, (1988).
19. **Investigation of the Microstructure of Thin TbFeCo Thin Films by HRTEM**, Z.G. Li, D.J. Smith, E.E. Marinero and J.A. Willett, 34th MMM Conference, Boston, MA, November, (1989).
20. **Atomistic Study of Magneto-Optic Amorphous Thin Films Using Synchrotron Radiation**, M. Hirscher, T. Egami, and E.E. Marinero, 34th MMM Conference, Boston, MA, November, (1989).
21. **Domain Wall Motion and Nucleation**, E.E. Marinero, M. Hirscher and T. Egami, 34th MMM Conference, Boston, MA, November, (1989).
22. **Large Anisotropy, High Coercivity CoPt Alloys for MO Recording**, R.F. Farrow, G. Gorman, G. Harp, R. Marks and E.E. Marinero, Magneto-Optic Recording International Symposium, (MORIS), Tucson, AZ, December, (1993).
23. **Nanosecond Structural Transformations of Magnetic Thin Films: PtMnSb, Structure and Magnetic Properties**, Y. Kubota and E.E. Marinero, MRS Symposium on Magnetic Ultrathin Films, San Francisco, April, (1995).
24. **Large in-plane Lattice Expansion in NiAs-MnSb Thin Films by ns Recrystallization**, Y. Kubota, G. Gorman, R. Savoy and E.E. Marinero, MRS Symposium on Magnetic Ultrathin Films, San Francisco, April, 1995.

25. **Light Intensity Modulation Direct Overwrite on 130 mm 2X MO Media**, [E.E. Marinero](#), P.C. Arnett, T.W. McDaniel, D.E. Call, B.I. Finkelstein and G.A. Jacquette, SPIE Meeting on Optical Data Storage, San Diego, CA, July, 1995.
26. **Magnetic Switching Volume and Grain Size in Recording Media**, [L. Morellon](#), Y. Kubota, E.E. Marinero, T. Reith and B. York, Joint MMM and INTERMAG Conf., San Francisco, CA, January, (1998).
27. **Magnetic Relaxation and Recording Characteristics of CoSm Alloys**, [E.E. Marinero](#), Y. Kubota, L. Morellon, W. McChesney, K. Rubin and J. Goldberg, INTERMAG Conf., San Francisco, CA, January, (1998).
28. **Beyond 35Gb/in² Using a Merged Notched Head**, [M. Madison](#), T. Arnoldussen, M. Pinarbasi, M. Parker, M. Doerner, X. Bian, K. Tang, M. Mirzaamani, E.E. Marinero et al, INTERMAG-2000, Toronto, Canada, April, (2000).
29. **Effects of Media Orientation on Noise**, [A. Taratorin](#), K.B. Klaassen and E.E. Marinero, IEEE International Magnetic Conference, Nagoya, Japan, April, (2005).
30. **Surface Chemistry of NiP Plated Substrates**, [T.E. Karis](#), X.C. Guo, E.E. Marinero and B. Marchon, IEEE International Magnetic Conference, Nagoya, Japan, April, (2005).
31. **Dual Layer Magnetic Recording Media**, [E.E. Marinero](#), D. Margulies, H. Do, E. Fullerton, M. Schabes, A. Taratorin and H. Rosen, IEEE International Magnetic Conference, Nagoya, Japan, April, (2005).
32. **Magneto-optical Characterization of Multiferroic Thin Film Nanostructures**, [M.T. Corbo](#), H. Zheng, V. von Hinten, E.E. Marinero, Y. Suzuki and R. Ramesh, MRS Symposium on Current and Future Trends of Functional Oxide Films, San Francisco, CA, April, (2006).
33. **Temperature Dependence of Magnetotransport in Extraordinary Magnetoresistive Devices**, [T.D. Boone](#), L. Folks, J. Katine, S. Maat, E.E. Marinero, S. Nicoletti, M. Field, G. Sullivan, IEEE International Magnetic Conference, San Diego, CA, May, (2006).
34. **Finite Element Modeling of the Bit-Resolution of EMR Sensors with IVIV Lead Geometry**, [S. Maat](#), A. Chatthopadyay, T. Boone, L. Folks, E.E. Marinero, J. Katine, S. Nicoletti and B. Gurney, IEEE International Magnetic Conference, San Diego, CA, May, (2006).
35. **Magneto-Transport Studies in Mesoscopic InAs 2DEG Devices**, [E.E. Marinero](#), T. Boone, L. Folks, B. Gurney, J. Katine, and S. Nicoletti, International Conference on the Physics of Semiconductors, Vienna, Austria, July, (2006).
36. **Electrical Field Dependence of Magnetic Field Sensitivity in InAs 2-DEG**, [T. Boone](#), L. Folks, J. Katine, E. Marinero, N. Smith, and B. Gurney, Electronics Materials Conf., 2007, South Bend, Indiana, June, (2007).
37. **Magnetic Sensitivity in Mesoscopic EMR Devices in IVIV Configuration**, [T. Boone](#), J. Katine, L. Folks, E.E. Marinero, N. Smith and B. Gurney, Device Materials Conference, South Bend, Indiana, June, (2007).
38. **Magneto-Transport Studies in Mesoscopic InAs 2DEG Devices**, [E.E. Marinero](#), T. Boone, L. Folks, B. Gurney, J. Katine, and S. Nicoletti, American Physical Society Fall Meeting, UC Berkeley, CA, October, (2007).
39. **Nanoscale InAs Hall Crosses Excited with Localized Magnetic and Electric Fields**, [L. Folks](#), A. Troup, T. Boone, J. Katine, G.J. Sullivan, M. Field, E.E. Marinero and B. Gurney, Intermag, Madrid, Spain, (2008).
40. **Segregation Mechanisms in Co-based Oxide Recording Media**, [E.E. Marinero](#), D.T. Margulies, B. R. York and P. Rice, Intermag, Madrid, Spain, (2008).
41. **Confinement Effects on Electron Transport in AlSb/InAs/AlSb Quantum Well Devices**, [E.E. Marinero](#), F. Mireles, T. Boone, J. Katine and B. Gurney, International Conference on the Physics of Semiconductors, Rio de Janeiro, Brazil, (2008).
42. **Localized Magnetic and Electric Field Response in Mesoscopic InAs Quantum Well Hall Crosses**, [M. Nishioka](#), L. Folks, J. Katine, E.E. Marinero and B.A. Gurney, AVS 56th International Symposium, San Jose, CA, November, (2009).
43. **Graphene Extraordinary Magnetoresistive Devices**, [S. Pisana](#), P.M. Braganca, M. Pelliccione, M. Nishioka, N. Smith, E.E. Marinero and B.A. Gurney, AVS 56th Int. Symposium, San Jose, CA, November, (2009).
44. **Tunable Nanoscale Graphene Magnetometers**, [S. Pisana](#), P.M. Braganca, [E.E. Marinero](#) and B.A. Gurney, International Materials Research Conference, Cancun, Mexico, August, (2010).
45. **Structural and Electronic Properties of Cubic Ceria**, [E. Chavira](#), J. Barreto, C. Quintanar, R. Caballero and E. E. Marinero, International Materials Research Conference, Cancun, Mexico, August, (2010).
46. **New Superconductor with Cubic Structure, T_c = 88K**, [J.M. Estrada](#), E. Chavira, E.E. Marinero, M. Nishioka, V. Garcia-Vazquez, I. Rosales, O. Novelo, E. Fregoso-Israel and M. Suhomel, International Materials Research Conference, Cancun, Mexico, August, (2010).
47. **Non-Cuprate Superconductor with Cubic Structure, T_c = 88K**, J. Martinez, [E. Chavira](#), E.E. Marinero, M. Nishioka, V. Garcia-Vazquez, I. Rosales, O. Novelo, E. Fregoso-Israel and M. Suhomel, APS March Meeting, Dallas Texas, (2011).

48. **A New Method to Synthesize Vanadium Nano-Rods**, L.M. Garcia, E. Chavira, P. Santiago, E.E. Marinero, A. Tejada, E. Fregoso-Israel, C. Flores, International Materials Research Conference, Cancun, Mexico, August, (2011).
49. **Demonstration of Microwave Assisted Magnetic Reversal in Perpendicular Media**, C.T. Boone, J.A. Katine, E.E. Marinero, S. Pisana and B.D. Terris, IEEE Conference on Magnetism and Magnetic Materials, Scottsdale, Arizona, (2011).
50. **Synthesis, Structural and Magnetic Characterization of Rare-Earth doped SrMnO₃ Compounds**, M.A Juarez, E. Chavira, E.E. Marinero, J.I. Betancourt, L. Bucio and X. Bokhimi, APS Meeting, Boston, (2012).
51. **Synthesis and Structural Characterization of Orthorhombic Vanadium Oxide Nanorods**, L. M. Garcia, E. Chavira, P. Santiago, L. Rendon and E.E. Marinero, APS Meeting, Boston, (2012).
52. **Magnetic, Structural and Resistivity Characterization of New R₃Gd₃Ba₂Ca₂Cu₇O₁₀:Li Compounds**, C. Aguilar, E. Chavira, E.E. Marinero, L. Bucio and H. Pfeiffer, APS Meeting, Boston, 2012.
53. **Synthesis, Structural Characterization and Magnetic Properties of YbFe_{1-x}Mn_xO₃ Perovskites**, C. Hernandez, E. Chavira, I. Rosales, A. Tejada, L. Huerta and E.E. Marinero, APS March Meeting, Baltimore, MD, March, (2013).
54. **Synchrotron Soft X-ray Absorption Studies of YbFe_{1-x}Mn_xO₃ Perovskites**, P. Olalde-Velasco, W.L. Yang, C. Hernandez, E. Chavira, I. Rosales, A. Tejada, L. Huerta and E.E. Marinero, APS March Meeting, Baltimore, MD, March, (2013).
55. **Synthesis and HRTEM Electron Diffraction Characterization of Monocrystalline V₂O₅**, L. Tafoya, L. Rendon, P. Santiago, E. Chavira, E.E. Marinero, V. Garibay and L. Gonzalez, APS March Meeting, Baltimore, MD, March 2013.
56. **Magneto Thermoelectric Generator with Carbon Nanotube Thermal Interfaces**, P.T. McCarthy, T.S. Fisher and E.E. Marinero, APS March Meeting, Baltimore, MD, March, (2013).
57. **Electronic and Optical Properties of ScN and (Sc,Mn)N Thin Films Deposited by DC-Magnetron Sputtering**, B. Saha, G. Naik, V. Drachev, A. Boltasseva, E.E. Marinero and T. Sands, APS March Meeting, Denver, Co, March, (2014).
58. **Assisted Writing in Spin Transfer Torque Magnetic Tunnel Junctions**, S. Ganguly, Z. Ahmed, S. Datta and E.E. Marinero, APS March Meeting, San Antonio, TX, March, (2015).
59. **Aliovalently-Doped Garnets for Li Battery Solid State Electrolytes**, D.K. Schwanz and E.E. Marinero, APS March Meeting, San Antonio, TX, March, (2015).
60. **High Ionic Conductivity LiLaZrXO Solid State Electrolytes**, D.K. Schwanz and E.E. Marinero, MRS Spring Meeting, San Francisco, CA, April, (2015).
61. **Highly Stable Bimetallic AuIr Catalysts**, C.W. Han, V. Otarlan, E.E. Marinero, P. Majundar, J. Greeley, A. Aguilar and R. Zanella, APS March Meeting, Baltimore, MD, March, (2016).
62. **Low Temperature Synthesis of Cubic Bi-doped Garnet Solid State Electrolytes**, D.K. Schwanz and E.E. Marinero, APS March Meeting, Baltimore, MD, March 2016.
63. **Impedimetric Zika and Dengue Biosensor based on Functionalized Graphene Oxide Wrapped Silica Particles**, *Seon-Ah Jin, E.E. Marinero, L. Stanciu, S. Poudyal and R. J. Kuhn*, APS March Meeting, New Orleans, LA, March 2017.
64. **Composite Polymer-Garnet Solid State Electrolytes**, A. Villa, M.R. Odunco, G.D. Scofield, E.E. Marinero and S. Forbey, APS March Meeting, New Orleans, LA, March 2017.
65. **Bismuth Aliovalent Substitution in LiLaZrO Garnets**, D. Schwanz and E.E. Marinero, APS March Meeting, New Orleans, LA, March 2017.
66. **Surface-Plasmon Opto-Magnetic Field Enhancement for Magnetization Reversal of On-Chip Nanomagnets**, A. Dutta, D. Shah, B. Beauchamp, K. Roy, V.M. Shalaev, E.E. Marinero and A. Boltasseva, CLEO: Science and Innovation, San Jose, CA, May 2017.
67. **High Ionic Conductivity Composite Ceramic-Polymer Electrolytes**, A. Villa, M. Odunco and E.E. Marinero, APS March Meeting, Los Angeles, CA, March 2018.
68. **X-ray Absorption Spectroscopy Study of the Lattice Site Occupancy of Bi-dopants in LiLaZrO Garnets**, E.E. Marinero, M. Balasubramanian and D.K. Schwanz, APS March Meeting, Los Angeles, CA, March 2018.
69. **Surface-plasmon Opto-magnetic Field Enhancement for All-optical Magnetization Switching**, A. Gupta, D. Shah, B. Beauchamp, V.M. Shalaev, A. Boltasseva, A. Kildishev and E.E. Marinero, APS March Meeting, Los Angeles, CA, March 2018.
70. **All-optical deterministic switching of synthetic CoCrPt Ferrimagnets**, B. Beauchamp, A. Dutta, A. Boltasseva, V.M. Shalaev and E.E. Marinero, APS March Meeting, Boston, MA, March 2019
71. **Sol-gel synthesis of Fe-doped cubic phase LiLaZrO solid-state electrolyte**, A. Pulido, M. Tan and E.E. Marinero, APS March Meeting, Boston, MA, March 2019