SAMUEL P. HERNANDEZ-RIVERA BIOGRAPHICAL SKETCH

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EDUCATIONAL BACKGROUND

1986	Ph.D.	Physical Chemistry, Johns Hopkins University, Baltimore, MD
1982	M.A.	Chemistry, Johns Hopkins University Baltimore, MD
1980	M.S.	Chemistry, University of Puerto Rico, Mayagüez, PR
1974	B.S.	Chemistry, University of Puerto Rico, Mayagüez, PR

AWARDS AND FELLOWSHIPS

2015-Present	Member, Board of Directors, PR Institute of Photonics
2012 -14	Editor-in-Chief, *Sensing and Imaging: An International Journal*
2012	Member, Editorial Board, Hindawi Spectroscopy: An International Journal
2007	Member, Editorial Board, Sensing and Imaging: An International Journal
2005	Who's Who among Teachers
2003	Swarthmore Who's Who
2002	Who's Who among Professors of American Universities, Multi-year Award, nominated by students
1997	Who's Who among Profs. American Universities, nomin. by Students
1993	Who's Who among Profs. American Universities, nomin. by Students
1989	Armed forces Institute of Pathology, Summer Faculty Fellow, Division of Toxicologic and Drug Induced Pathology, Walter Reed, Washington, DC.
1987	University of Puerto Rico-Rio Piedras, Department of Physics, Summer Research Fellow, San Juan, PR.
1986	NASA/ASEE Summer Faculty Research Fellow, Goddard Space Flight Center, Greenbelt, MD.
1980 -1982	National Hispanic Fellow
1978 -1982	NSF Pre-Doctoral Fellow
1977 -1982	Ford Foundation Fellow
1976	First Prize, Junior Technical Meeting
1974	BS, University of PR-Mayagüez, Commencement, Magna cum Laude
1974	BS, University of PR-Mayagüez, Commencement, Antoine Lavoisier Medal to Most Distinguished Chemistry Student
1974	Who's Who Among Students in American Universities and Colleges
1974	Nominated for Phi Kappa Phi, member since 1974
1974	ACS Recognition to Best Chemistry Students among Universities in PR
1970-1974	Dean's Honor List

PROFESSIONAL EXPERIENCE

Academic Rank: Professor

Service on Faculty 38 years - 33 after tenure

2007 – Present Co-PI, ALERT-UPRM Component of DHS-COE

2002 – Present	Director, Center for Chemical Imaging & Surface Analysis (CCISA) DoD – TSA – PRIDCo
2002 – Present	Director, Center for Chemical Sensors (CCS), MURI-DOD
1999 – 2000	Interim Associate Chairman, Department of Chemistry, UPRM
1995 – 2000	Chairman, Physical Chemistry Division, University of UPRM
1995 – 1999	Coordinator, Physical Chemistry Laboratories, University of UPRM
1994 – 1998	Advisory Board, UPR-M Central Research Instrumentation Lab
1994 – Present	Professor of Physical Chemistry, University of UPRM
1989 – 1994	Associate Professor, University of Puerto Rico - Mayaguez
1986 – 1989	Assistant Professor, University of Puerto Rico-Mayaguez
1984 – 2000	Elected member, Department of Chemistry Personnel Committee, President, four years, three different occasions
1986 – 2000	Member, Personnel Committee, School of Arts and Sciences.

COURSES LECTURED

1998 – 2018	Modern Methods and Applications in Analysis of Explosives
2007	Chemical Thermodynamics
2002	Nuclear Chemistry
2000	Special Topics in Chemistry: Raman Spectroscopy
1986 – 2018	Advanced Physical Chemistry
1984 – 2012	Physical Chemistry I and II, Physical Chemistry Lab I and II
1984 – 1994	Introduction to Quantum Chemistry
1984 – 1988	Computer Applications in Chemistry
1982 – 1984	General Chemistry
1976 – 1977	General Chemistry, General Chemistry Lab, Organic Chemistry Lab

COURSES LECTURED AS CONTINUED EDUCATION AND COMMUNITY SERVICE

2004	Vibrational Chemical Imaging
2003	Raman Spectroscopy workshop: From theory to Experiments
2001 – 2004	New Methodology for Cleaning Validation of Batch Reactors of Pharmaceutical Plants
2001 – 2016	Chemistry of Explosive Substances and Modern Methods of Analysis
2001 – 2003	Vibrational Raman Spectroscopy: Theory, Instrumentation, Experimental Techniques and Applications
2001 – 2005	Phys Chem Review for Board Examination, PR Chemists Association

GRADUATE STUDENTS, POST-DOCTORAL FELLOWS & VISITING SCHOLARS

Visiting Scholars

#	Name	Year
1.	Alberto Santana	2006
2.	Jonathan Mbah	2012
3.	María L Ospina-Castro	2015
4.	Joaquín A. Aparicio-Bolaño	2015

5.	Ricardo Infante-Castillo	2017

Post-Doctoral Fellows

#	Name	Year
1.	Jairo Castillo-Chará	2005-06
2.	Leonardo C. Pacheco-Londoño	2012-15
3.	Pedro M. Fierro-Mercado	2014-15
4.	William Ortiz-Rivera	2014-15
5.	José L. Ruiz-Caballero	2017-18

Ph.D. Granted:

#	Name	Year
1.	Ricardo Infante-Castillo	2009
2.	Michael L. Ramírez-Cedeño	2009
3.	Álvaro. Peña-Quevedo	2009
4.	Oliva M. Primera-Pedrozo	2010
5.	Leonardo C. Pacheco-Londoño	2011
6.	Sandra N. Correa-Torres	2012
7.	Hilsamar Félix-Rivera	2012
8.	William Ortiz-Rivera	2013
9.	Pedro M. Fierro-Mercado	2013
10.	Marcia de R. Balaguera-Gelves	2013
11.	Gloria M. Herrera-Sandoval	2013
12.	Eduardo A. Espinosa-Fuentes	2014
13.	Amira C. Padilla-Jiménez	2014
14.	John R. Castro-Suarez	2016
15.	Nataly J. Galán-Freyle	2016
16.	Jorge Castellanos	2016
17.	José L. Ruiz-Caballero	2017
18.	César A. Manrique-Bastidas	2019
19.	Vladimir Villanueva-López	2021

MS Granted:

#	Name	Year
1.	Antonio Rivera-Brown	1990
2.	Jairo Castillo-Chará	1993
3.	María Guntín	1995
4.	Ricardo Infante-Castillo	1997
5.	Alberto Santana	1998
6.	Patricia Jacobo	1998
7.	Martha Allende-Grafals	1998
8.	Nilka Rivera-Portalatín	1999
9.	Iris Vázquez	1999

10. Carlos Nieves 2001
11. Susan Martínez 2001
12. Javier Goenaga 2001
13. Javier Figueroa 2002
14. Mariana Álvarez 2002
15. Israel González 2003
16. Santa Cardona 2003
17. Cesar Manrique 2003
18. Yesenia Cedeño 2005
19. Alejandro Blanco 2005
20. Sandra Natalia-Correa 2005
21. Oliva M. Primera-Pedrozo 2005
22. Bibiana Báez-Angarita 2005
23. Pedro M. Fierro-Mercado 2005
24. Leonardo C. Pacheco-Londoño 2005
25. Luz Marina Ballesteros 2006
26. Gloria Marcela Herrera 2006
27. Doris Núñez 2006
28. Marcia Balaguera 2006
29. Tatiana Luna-Pineda 2006
30. Edwin de la Cruz-Montoya 2007
31. Alessandra Mattei 2007
32. Jacqueline Indira-Jerez 2007
33. Sandra L. Peña 2007
34. William Ortiz 2008
35. Omar Rivera-Betancourt 2009
36. Eduardo Espinosa 2009
37. José L. Ruiz-Caballero 2010
38. John R. Castro-Suarez 2011
39. Dustin Pérez 2011
40. Carlos A. Ortega-Zúñiga 2014
41. Nataly Y. Galán 2014
42. Amanda M. Figueroa-Navedo 2017
43. Luis A. Pérez-Almodovar 2019
44. Gabriela I. Padilla-Rivera 2020
45. Annette M. Colón-Mercado 2020
46. Francheska M. Colón-González 2020
47. Wilmaris Muñiz-López 2020
48. Naihomy M. Tirado Robles 2021

Ph.D. Candidates:

1. Orlando Ruiz-Pesante
2. Marcos A. Barreto-Cabán

3. Wilmer Carrión-Roca (AbbVie)
4. Edgardo González-Arvelo
5. Jorge L. Plata-Enriquez
6. Melina Pérez-Altamar
7. Tamara Félix-Massa
8. Annette M. Colón-Mercado
9. Francheska M. Colón-González
10. Melina Pérez-Altamar
11. Marianna Scarpato Colon
12. Cristian Maldonado-Figueroa

MS Candidates:

1. Edwin R. Caballero-Agosto
2. Steven Palmer-Velázquez
3. María Villareal
4. Giancarlo L. Vargas Alers
5. Priscilla D. Soler-Rodríguez

PROFESSIONAL AFFILIATIONS

American Chemical Society (ACS),	member
American Physical Society (APS),	member
Phi Kappa Phi,	member
Sigma Xi,	member
Puerto Rico Chemists Association	member
Society for Applied Spectroscopy	member
International Society for Optical Engineering (SPIE)	member
Optical Society of America	member

RESEARCH SUPPORT

Awarded:

Soft target Engineering to Neutralize the Threat RealitY (SENTRY) DHS Engineering Secure Environments from Targeted Attacks (ESE) Center of Excellence (COE)	**2021** **DHS-OUP**	**$1,800,000**
Innovative Wide Area Sensing Mitigation Technologies for CWMD, Countering Weapons of Mass Destruction Academic Research Initiative (ARI)	**2021** **DHS-ARI**	**$2,500,000**
Cleaning Validation of Processing Equipment Using MID-IR Quantum-Cascade Lasers	**2015** **P&G**	**$61,000**
Confocal Raman-AFM-SNOM Imaging Spectroscopic System: An Initiative to Expand Materials Research in Puerto Rico	**2014** **DoD-DURIP-ARO**	**$225, 900**

UPR-Central Administration Match for DURIP Project	**2014-15**	**$285,000**
Research Training in Cross-Disciplinary Chemical Sciences Co-PI; O. Cox, PI, UMET-AGMUS	**2013** **NSF**	**$750,000**
ALERT-I DHS Center of Excellence for Explosives Research R3-C: Standoff Detection of Explosives: Mid-Infrared Spectroscopy Chemical Sensing	**2013 – 2021** **DHS**	**$785,000**
IED Sentry Based on Mid-Infrared Laser Arrays Co-PI WITH Eos Photonics (Cambridge, MA and Thermo-Scientific (Ahura); RIF Program ($3M)	**2012** **DTRA**	**$300,000**
Applications of Quantum Cascade Laser Scanners in Detection ofChemical and Biological Weapons of Mass Destruction Program for Historically Black Colleges and Universities and Minority Serving Institutions	**2011** **DOD**	**$571,000**
Laser Enhanced Detection of Weapons of Mass Destruction Proposal No. 55808-RT-ISP FY08. **Funded; program halted.** Department of Defense (DoD) Program for Historically Black Colleges and Universities and Minority Institutions	**2009** **DOD**	**$575,000**
UPRM: Raman telescope for remote spectroscopic detection Explosives and other threat agents, in Northeastern Univ. ALERT Center of Excellence for Explosives Detection, Mitigation and Response	**2008 – 2013** **DHS**	**$750,000**
Remote Raman Detection of Explosives: Signatures, Cross Sections, Diffuse Reflectance and other properties of High Explosives	**2008** **Lockheed-Martin**	**$25,000**
Surface and Nanochemistry Studies for Detection of Chemical Agents, Explosives and Toxic Industrial Chemicals	**2005** **ARO-DOD**	**$1,275,000**
Fiber Optic Coupled FTIR for Detection and Quantification of API Residues in Pharmaceutical Batch Reactors, PI	**2004** **CPPR**	**$69,900**
Establishing a Chemical Imaging Center at UPRM, PI	**2002** **PRIDCO**	**$163,500**
Establishment of a Center for Development of Chemical Sensors for Explosives at UPR-Mayagüez, PI	**2002** **DOD**	**$7,400,000**
Explosives Detection: I-Sensors Development: II- Explosives	**2001**	**$1,200,000**

Surfaces Interactions, PI	**FAA**	
Vibrational Chemical Imaging of Fingerprint-like Samples of Plastic Explosives Using Raman and Infrared Imaging Spectroscopy, PI	**2000 FAA**	**$234,468**
Detection of Smokeless Powder, Black Powder, Nitrocellulose and Ammonium Nitrate Using IMS, GC-Chemiluminescence Detection, FT-IR, FT-Raman, and Raman Microspectroscopy, PI	**2000 FAA**	**$50,000**
Smart Fiber Optics-Coupled Spectroscopy (FOCS) for Pharmaceutical Cleaning Validation, Phase III, Co-PI	**2000 INDUNIV**	**$20,000**
Smart Fiber Optics-Coupled Spectroscopy (FOCS) for Pharmaceutical Cleaning Validation, Phase II, Co-PI	**1999 INDUNIV**	**$23,000**
Characterization of Fingerprint-Like Samples of Plastic Explosives Using Raman Microprobe Spectroscopy, PI	**1999 FAA**	**$135,000**
Smart Fiber Optics-Coupled Spectroscopy (FOCS) for Pharmaceutical Cleaning Validation, Phase I, Co-PI	**1998 INDUNIV**	**$73,000**
Evaluation of Explosives Trace Detection Equipment Phase II	**1998 CSDC – FAA**	**$32,500**
Evaluation of Explosives Trace Detection Equipment Phase I	**1997 CSDC – FAA**	**$12,500**
A Novel Detoxification Approach: Photo-Oxidation of Volatile Organics in Ground Waters of Puerto Rico-Phase I: Laboratory Scale Using UV LASERS, Co-PI	**1996 US-WRI**	**$19,804**
Sugar Cane Production Study at Plata Processing Plant: 1991 vs. 1992 Productions.	**1992 PR-AGRI DEPT**	**$21,000**
Synthesis and Spectroscopic Characterization of High Transition Temperature Superconductors. Co-PI.	**1991 NSF-RIMI**	**$179,700**
Spectroscopic Characterization of Polycyclic Aromatic Hydrocarbon-Protein Interactions. Planning grant. PI	**1990 NSF-MRI**	**$11,988**
Strengthening the Quality of Instruction of the Physical Chemistry Laboratory at the UPRM PI	**1989 DE-MSIP**	**$50,000**
Design and Construction of Electron Gun for Electron	**1986**	**$4,000**

Impact Excitation/Ionization Studies. PI	**UPR-SEED**	
Development of a Research Instrumentation Facility for the Western Region of Puerto Rico. Co-PI.	**1984 NSF-RIMI**	**$245,800**
Total:		**$17,085,000**

PATENTS AND INVENTION DISCLOSURES

AWARDED

1. Patent: **US 10,379,033 B1 08/13/2019** "Coupling of thin layer chromatography (TLC) to quantum cascade laser spectroscopy (QCLS) for qualitative and quantitative field analyses of explosives and other pollutants." Inventors: Samuel P. Hernández-Rivera; and John R. Castro-Suarez.
2. Patent: **US 8,932,384 B1, 01/13/2015** "Surface Enhanced Raman Spectroscopy Gold Nanorods substrates for detection of 2,4,6-trinitrotoluene and 3,5-dinitro-4-methylbenzoic acid explosives." Inventors: O.M. Primera-Pedrozo.; A.N. Chamoun-Emanuelli.; W. Medina-Ramos.; and S.P. Hernández-Rivera.

INVENTION DISCLOSURES OR PATENTS PENDING

3. Patent: Application number: 61/471,478 of April 4, **2011**. "Synthesis of Ag, Cu, Pt and Au Nanostructures for Continuous Deposits on Surfaces by Micro-Patterned Laser Image Formation." Inventors: L.C. Pacheco-Londoño, J.A. Aparicio-Bolaños; and S.P. Hernández-Rivera.
4. Invention Disclosure (**2014**): "Hydrogen sulfide (H_2S) species as an integrated method for inhibiting amyloid fibril formation in Lysozyme and Insulin". Inventors: Juan López-Garriga; Igor K. Lednev; Samuel P. Hernández-Rivera; Manuel F. Rosario-Alomar; Tatiana Quiñones-Ruiz.
5. Invention Disclosure (**2017**): "Grazing Angle Probe Mount for Quantum Cascade Lasers." Inventors: Samuel P. Hernández-Rivera and Leonardo C. Pacheco-Londoño.
6. Invention Disclosure (**2021**): "LabVIEW™ Virtual Instrument System for Spectroscopic Data Acquisition and Processing". Inventors: Vladimir Villanueva-López, Leonardo C. Pacheco-Londoño, and Samuel P. Hernández-Rivera

PUBLICATIONS (214)

SUBMITTED FOR PUBLICATION

CHAPTERS IN BOOKS (24):

2021 (1)

1. Colón-Mercado, A.M., Vázquez-Vélez, K.M., Colón-González, F.M., Castro-Suárez, J.R., Galán-Freyle, N.J., Villanueva-López, V., Caballero-Agosto, E., Pacheco-Londoño, L.C., and Hernández-Rivera, S.P., Mid Infrared Quantum Cascade Laser Reflection - Absorption Spectroscopy at the Grazing Angle Incidence, Advances in Optics: Reviews, Vol. 5, Yurish, S.Y., ed., International Frequency Sensor Association (IFSA) Publishing, S. L., 2021

2019 (3)

2. Rosario-Alomar, M.F., Quiñones-Ruiz, T., Kurouski, K., Sereda, V., DeBarros-Ferreira, E., De Jesús-Kim, L., Hernández-Rivera, S., Zagorevski, D.V., Cruz-Collazo, L.M., Lednev, I.,

López-Garriga, J. "Inhibition of Protein Fibrillation by Hydrogen Sulfide," DOI: 10.5772/intechopen.86221 in "Amyloid Diseases,", Kurouski, D., ed. IntechOpen, London, UK, **2019**. DOI: 10.5772/intechopen.73821

3. Pacheco-Londoño, L.C., Castro-Suarez, J.R., Galán-Freyle, N.J., Figueroa-Navedo, A.M., Ruiz-Caballero, J.L., Infante-Castillo, R., Hernández-Rivera, S.P.; "Mid-Infrared Laser Spectroscopy Applications I: Detection of Traces of High Explosives on Reflective and Matte Substrates", Chapter 2, pp. 11-34, DOI: 10.5772/intechopen.81923, in "Infrared Spectroscopy: Principles, Advances, and Applications" Marwa El-Azary, ed. IntechOpen, London, UK, **2019**. Print ISBN: 978-1-78984-968-4; OnLine ISBN: 978-1-78984-969-1
4. Pacheco-Londoño, L.C., Galán-Freyle, N.J., Padilla-Jiménez, A.C., Castro-Suarez, J.R., Figueroa-Navedo, A.M., Ruiz-Caballero, J.L., Infante-Castillo, Rios-Velazquez, C. Hernández-Rivera, S.P. "Mid-Infrared Laser Spectroscopy Applications in Process Analytical Technology: Cleaning Validation, Microorganisms, and Active Pharmaceutical Ingredients in Formulations", Chapter 3, pp. 35-57, DOI: 10.5772/intechopen.82402, in "Infrared Spectroscopy: Principles, Advances, and Applications" Marwa El-Azary, ed. IntechOpen, London, UK, **2019**. Print ISBN: 978-1-78984-968-4; OnLine ISBN: 978-1-78984-969-1

2014 (1)

5. Félix-Rivera, H. and Hernández-Rivera, S.P. "Detection of Bioaerosols Using Raman Spectroscopy," in "Bioaerosol Detection Technologies", Per Jonsson, Göran Olofsson, Torbjörn Tjärnhage, editors, Integrated Analytical Systems, Springer, **2014**, pp 203-240. ISBN: 978-1-4419-5581-4 (Print) 978-1-4419-5582-1 (Online).

2013 (1)

6. Castro-Suarez, J.R., Ortiz-Rivera, W., Galán-Freyle, N., Figueroa-Navedo, A., Pacheco-Londoño, L.C. and Hernández-Rivera, S.P., "Multivariate Analysis in Vibrational Spectroscopy of Highly Energetic Materials and Chemical Warfare Agents Simulants", http://dx.doi.org/10.5772/54104, in "Multivariate Analysis in Management, Engineering and the Sciences", Valim de Freitas, L. and Barbosa Rodrigues de Freitas, A.P., eds., ISBN 978-953-51-0921-1, Hard cover, 254 pages, Publisher: InTech, Rijeka, Croatia, **2013**, DOI: 10.5772/3301.

2012 (1)

7. Gaensbauer, N., Wrable-Rose, M. Nieves-Colón, G., Hidalgo-Santiago, M., Ramírez, M. Ortiz, W., Primera-Pedrozo, O.M., Pacheco-Londoño, Y.C., Pacheco-Londoño, L.C. and Hernandez-Rivera, S.P., "Applications of Optical Fibers to Spectroscopy: Detection of High Explosives and other Threat Chemicals", in "Optical Fibers Book 4", Moh, Y., Harun, S.H. and Arof, H., eds., **2012**, InTech Open, Rijeka, Croatia, ISBN 979-953-307-653-8.

2011 (5)

8. Infante-Castillo, R. and Hernández-Rivera, S.P. "Experimental and Theoretical Studies of the Molecular Structure of Five New 2-Methylbenzimidazole Derivatives", in "Advances in Chemistry Research", Volume 11, Taylor, J.C., ed., Nova Science Publishers, Inc.

Hauppauge, NY, ISBN**:** 978-1-61324-676-4 (hard cover); **2011**, ISBN: 978-1-61324-815-7 (eBook).

9. Castro-Suarez, J.R., Pacheco-Londoño, L.C., Vélez-Reyes, M. Diem, M., Tague, Jr., T.J. and Hernandez-Rivera, S.P., "Open-Path FTIR Detection of Explosives on Metallic Surfaces", in "Fourier Transforms: New Analytical Approaches and FTIR Strategies", **2011**, G. S. Nikolić, ed. InTech Open, Croatia, 978-953-307-232-6.
10. Hernández-Rivera, S.P., Pacheco-Londoño, L.C., Ortiz-Rivera, W., Castro-Suarez, J.R., O.M. Primera-Pedrozo and Félix-Rivera, H., Remote Raman and Infrared Spectroscopy Detection of High Explosives, in "Explosive Materials: Classification, Composition and Properties", Janssen, T.J., ed., Chemical Engineering Methods and Technology Series, Nova Science Publishers, Inc., Hauppauge, NY, **2011**, ISBN: 978-1-61761-188-9.
11. Primera-Pedrozo, O.M., Pacheco-Londoño, L.C. and Hernandez-Rivera, S.P., "Applications of Fiber Optic Coupled-Grazing Angle Probe FT Reflection-Absorption IR Spectroscopy," in "Fourier Transforms: New Analytical Approaches and FTIR Strategies," **2011**, G. S. Nikolić, ed. InTech Open, Croatia, ISBN: 978-953-307-232-6.
12. Espinosa-Fuentes, E.A., Peña-Quevedo, A.J., Pacheco-Londoño, L.C., Infante-Castillo, R. and Hernández-Rivera, S.P., "A Review of Peroxide Based Homemade Explosives: Characterization and Detection", in "Explosive Materials: Classification, Composition, and Properties", Janssen, T.J., ed., Chemical Engineering Methods and Technology Series, Nova Science Publishers, Inc. Hauppauge, NY, **2011**, ISBN: 978-1-61761-188-9.

2010 (3)

13. Fierro-Mercado, P.M., Primera-Pedrozo, O.M., Hornedo, A., Hernández-Rivera, S.P., "An *in situ* FTIR Fiber Optic Method for the Detection of Active Pharmaceutical Ingredients and Excipients on Metallic Substrates," in "Fourier Transform Infrared Spectroscopy: Developments, Techniques and Applications", Rees, O.J., ed., Chemical Engineering Methods and Technology Series, Nova Science Publishers, Inc. Hauppauge, NY, **2010**, ISBN**:** 978-1-61668-835-6.
14. Pacheco-Londoño, L.C., Primera-Pedrozo, O.M., Hernández-Rivera, S.P., "Evaluation of Samples and Standards of Energetic Materials on Surfaces by Grazing Angle-FTIR Spectroscopy" in "Fourier Transform Infrared Spectroscopy: Developments, Techniques, and Applications," Rees, O.J., ed., Chemical Engineering Methods and Technology Series, Nova Science Publishers, Inc. Hauppauge, NY, **2010**, ISBN**:** 978-1-61668-835-6.
15. Primera-Pedrozo, O.M., Soto-Feliciano, Y.M., Pacheco-Londoño, L.C., Hernández-Rivera, S.P., "Fiber Optic-Coupled Grazing Angle Probe-Fourier Transform Reflection Absorption Infrared Spectroscopy for Analysis of Energetic Materials on Surfaces," in "Fourier Transform Infrared Spectroscopy: Developments, Techniques, and Applications," Rees, O.J., ed., Chemical Engineering Methods and Technology Series, Nova Science Publishers, Inc. Hauppauge, NY, **2010**, ISBN**:** 978-1-61324-383-1.

2009 (3)

16. Ramirez, M.L., Pacheco, L.C., Barreto M.A., and Hernández-Rivera, S.P., "Enhanced Raman Detection using Spray-On Nanoparticles/Remote Sensed Raman Spectroscopy," in *Nanoscience and Nanotechnology for Chemical and Biological Defense*, R. Nagarajan, Walter Zukas, T. Alan Hatton, Stephen Lee, Eds., ACS Symposium Series # 1016, Ch. 10, pp. 131-140, Oxford University Press, New York, NY, **2009**.

17. Hernández-Rivera, S.P., Briano, J.G., de la Cruz-Montoya, E., Pérez-Acosta, G.A. and Jeréz-Rozo, J.I., "Enhanced Raman Scattering of Nitroexplosives on Metal Oxides and Nanoparticles of Ag/TiO_2", in *Nanoscience and Nanotechnology for Chemical and Biological Defense*, R. Nagarajan, Walter Zukas, T. Alan Hatton, Stephen Lee, Ed., ACS Symposium Series # 1016, Ch. 16, pp. 205-216, Oxford University Press, New York, NY, **2009**.
18. Chamoun-Emanuelli, A.M., Primera-Pedrozo, O.M., Barreto-Cabán, M.A., Jerez-Rozo, J.I., and Hernández-Rivera, S.P., "Enhanced Raman Scattering of TNT on Nanoparticles Substrates: Ag, Au and Bimetallic Au/Ag Colloidal Suspensions", in *Nanoscience and Nanotechnology for Chemical and Biological Defense*, R. Nagarajan, Walter Zukas, T. Alan Hatton, Stephen Lee, Eds., ACS Symposium Series # 1016, Ch. 17, pp. 217-232, Oxford University Press, New York, NY, **2009**.

2008 (1)

19. Hernández-Rivera, S.P., Pacheco-Londoño, L.C., Primera-Pedrozo, O.M., Ruiz, O., Soto-Feliciano, Y., Ortiz, W., "Vibrational Spectroscopy of Chemical Agents Simulants, Degradation Products of Chemical Agents and Toxic Industrial Compounds," in "Spectral Sensing Research for Water Monitoring Applications and Frontier Science and Technology for Chemical, Biological, and Radiological Defense", Woolard, D. and Jensen, J., eds., Selected Topics in Electronics and Systems, Vol. 48, Wei, T.J., ed., World Scientific Publishing Co., Pte. Ltd., Singapore, **2008**.

2007 (1)

20. Nieto, S., Santana, A., Delgado, R., Hernandez, S.P., Chamberlain, R.T., Lareau, R. and Castro, M.E., "Nanoscaled Science and Engineering for Sensing: Quantum Dots Fluorescence Quenching for Organic NO_2 Sensing", Technical Proceedings of 2004 NSTI Nanotechnology Conference and Trade Show, Volume 3. Chapter 8: Nanoparticles and Molecules, **3(8)**: 399-401, **2007**. ISBN: 0-9728422-9-2.

2003 (1)

21. Posada, B., Mercado, L., Hernandez, S., Castro, W., Murillo, L., Briano, J., Irizarry, R., Sola, L., Ishikawa, Y. and Castro, M., "Raman spectroscopy study of SOx species adsorbed on gold nanocluster surfaces", Technical Proceedings of the 2003 NSTI Nanotechnology Conference and Trade Show (Nanotech 2003), Vol. 3, Chap. 2, Nanoparticles and molecules, Materials and Nanostructures Studies, 123-125, **2003**.

2002 (1)

22. Torres, P., Cotte, I, Mina, N., Hernandez-Rivera, S.P., Chamberlain, R.T., Garcia, J., Lareau R. and Castro, M.E. "Density functional calculations as a tool for the characterization of ultra-thin organic films: synthesis and spectroscopic characterization of RDX "monolayers" on glass substrates", **2002**, Proceedings of the International Conference on Computational Nanoscience and Nanotechnology, (ICCN 2002), Chapter 16: Materials and Nanostructures Studies, 443-446.

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NON-DISCLOSURE AGREEMENTS WITH INDUSTRIAL PARTNERS

1. Pfizer Pharmaceuticals, Barceloneta, PR
2. Procter & Gamble, Cincinnati, OH
3. HRL, Malibu, CA
4. Hewlett-Packard, Aguadilla, PR.
5. REMSPEC Corporation, Sturbridge, MA.

6. AbbVie, Barceloneta, PR
7. AMGEN, Juncos, PR
8. Abbott Pharmaceuticals, Barceloneta, PR
9. Bruker Optics, Billerica, MA.
10. ITT Corporation, Alexandria, VA
11. Agiltron, Inc., Boston, MA
12. Eos Photonics, Cambridge, MA
13. Block Engineering/Block MEMS, LLC.