

Biographical Sketch

JAIME SANTILLAN MERCADO

Current status

PhD Candidate

Dept. of Physics, UPR-Rio Piedras

Email: Jaime.santillan@upr.edu

Education

2013 - 2018 PhD Chemical-Physics (expected)

2010 - 2013 BS Physics



Current Research Interests: My research has focused on the design and preparation of polymeric scaffolds for bone tissue regeneration. Currently, we are exploring different techniques for fabrication of 3D scaffolds that resemble the geometrical and mechanical properties of the native extracellular matrix.

Research Experience

2016 – present Research Assistant (mentor, Dr. Eduardo Nicolau)

University of Puerto Rico, Rio Piedras

2018 Visiting Student Researcher (mentor, Dr. Phillip Messersmith)

UC Berkeley

2012 - 2016 Research Assistant (mentor, Dr Ratnakar Palai)

University of Puerto Rico, Rio Piedras

2015 (Summer) Research Assistant (mentor, Dr. Jorge Santiago)

University of Pennsylvania

2013 (Summer) Undergraduate Research Fellow (mentor, Dr. Daniel Siderius)

National Institute of Standards and Technology

Other Research Activities

2013 Rocksat Project - Micrometeorite Impact Detection System

Puerto Rico Nasa Spacegrant

2012 Rocksat Project – Mass spectrometry in the near space

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Honors

- 2015 Research Initiative for Scientific Enhancement (RISE) Fellowship
- 2014 Bridge to the Doctorate Fellowship– NSF PR-LSAMP
- 2013 National Institute of Standards and Technology (NIST) Certificate
- 2013 University of Puerto Rico, Distinguished alumni

Presentation at Local Meetings

Santillan, J.; Rodriguez, Y.; Bello, Samir.; Nicolau, E. Biofabrication of 3D-Bone Tissue Model for Regenerative Medicine and Controlled Drug Delivery. 2017 Sixth Lilly Academy Technical Forum, San Juan, Puerto Rico. March 24th, 2017.

Santillan, J.; Bello, Samir.; Rodriguez, Y.; Nicolau, E. Effect of Nanohydroxyapatite and Nanodiamond-coated Electrospun Cellulose Acetate Scaffolds on Cell Morphology, Proliferation and Differentiation. 2016 40th ACS Puerto Rico Section Senior Technical Meeting, Guánica, Puerto Rico. October 29, 2016.

Santillán, J.; Palai, R. Fabrication of Nanostructures by CVD. 50th ACS Junior Technical meeting/PRISM. San Juan, Puerto Rico. March 2015.

Santillán, J.; Palai, R. Atomic Layer Deposition of thin films. Institute of Functional Nanomaterials meeting. Caguas. PR. 2014

Santillán, J.; Resto. O. Micrometeorite Impact Detection system. Puerto Rico NASA Spacegrant Consortium Annual Meeting. San Juan, PR. 2013

Santillán, J.; Palai, R. InGaN Quantum Dots. Puerto Rico Interdisciplinary Scientific Meeting (PRISM). 2013

Santillán, J.; Palai, R. Growth, Microstructure and photoluminescence properties of InGaN Quantum dots. 8th Workshop on Frontiers in Electronics. San Juan, Puerto Rico. 2013

Santillán, J.; Palai, R. Rare Earth oxide thin films. Puerto Rico Interdisciplinary Scientific meeting (PRISM) 2012

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Presentations at National Meetings

Santillán, J.; Nicolau, E.; Bello, S.; Rodriguez, Y. Effect of Nanohydroxyapatite and Nanodiamond-coated Electrospun Cellulose Acetate Scaffolds on Osteoblast Morphology, Proliferation and Differentiation. 2016 Materials Research Society Fall Meeting. Boston, MA November 27-December 2nd, 2016.

Santillan, J.; Nicolau, E. Applications of nanotechnology in bone tissue regeneration. 25th ACS National Meeting & Exposition, New Orleans, Louisiana. March 18th, 2018. Dwomoh, E.; **Santillan, J.;** Rodriguez, Y.; Ortiz, E.; Nicolau, E. Synthesis and Characterization of Polycaprolactone Membranes as Scaffolds for Bone Tissue Engineering 2017 ACS 253rd National Meeting, San Francisco, CA. April 2-6, 2017.

Santillan, J.; Rodriguez, Y.; Bello, Samir.; Nicolau, E. Development of Engineered Bionanomaterials Based on Dispersed Nanodiamond into Self-Assembled Polystyrene-Block-Poly (Ethylene Oxide) Copolymer 2017 ACS 253rd National Meeting, San Francisco, CA. April 2-6, 2017.

Santillán, J.; Siderius, D. Collection of Standard Reference Data for Gas Adsorption via Molecular Simulation, Gaithersburg, Maryland, 2013

Publications

Vega-Figueroa, K.; **Santillán, J.;** Ortiz-Gómez, V.; Ortiz-Quiles, E. O.; Quiñones-Colón, B. A.; Castilla-Casadiago, D. A.; Almodóvar, J.; Bayro, M. J.; Rodríguez-Martínez, J. A.; Nicolau, E., Aptamer-Based Impedimetric Assay of Arsenite in Water: Interfacial Properties and Performance. *ACS Omega* **2018**, 3 (2), 1437-1444. DOI: 10.1021/acsomega.7b01710.

Santillán-Mercado, J. A.; Rodríguez-Avilés, Y. G.; Bello, S. A.; González-Feliciano, J. A.; Nicolau, E., Electrospun Cellulose and Nanocellulose Composites as a Biomaterial. **2017**, 57-107. DOI: 10.1007/978-3-319-70049-6_3.

Vega-Figueroa, K.; **Santillan, J.;** García, C.; Gonzales-Feliciano, J.; Bello, S.; Rodríguez, Y.; Ortiz-Quiles, E.; Nicolau, E. (2017) Assessing the suitability of Cellulose-Nanodiamond Composite as a Multifunctional Biointerface Material for Bone Tissue Regeneration. DOI: 10.1021/acsbiomaterials.7b00026g

Martinez, M.; Rivera, I.; **Santillan, J.;** Perales, O.; (2016) Induced structural defects in Ti-doped ZnO and its two-photon-excitation. DOI: 10.1117/12.2213750