

David A. Castilla-Casadiego

13 Calle San Juan, Mayaguez, PR 00680/Mobile phone: 787-3859347/Email: david.castilla@upr.edu

EDUCATION

- **PhD Chemical Engineering Student, University of Puerto Rico**, Mayaguez
- **MS Chemical Engineering, University of Puerto Rico**, Mayaguez, 2016
- **BS Chemical Engineering, Universidad del Atlántico**, Colombia, 2011
- **Technical Courses**
 - Modeling, Design and Construction of Deep Well, Asociación Colombiana de Ingeniería Sanitaria y Ambiental (ACODAL – Seccional Caribe), June 2012
 - Environmental management, Universidad del Atlántico, Colombia, January 2010
 - Internal management of solid waste, Universidad del Atlántico, Colombia, January 2010
 - Water treatment systems, Universidad del Atlántico, Colombia, January 2010
 - Plant evaluation and water treatment, Universidad del Atlántico, January 2009
 - Occupational safety: Risk factors and prevention of accidents, Sena Virtual, Colombia, September 2009
 - Preparation of Aqueous Solutions, Sena Virtual, Colombia, September 2009
 - Safe Handling of Chemical substances, Sena Virtual, Colombia, October 2009
 - Plastic materials: properties, characteristics and methods, Sena Virtual, Colombia, October 2009

PROFESSIONAL EXPERIENCE

UNIVERSITY OF PUERTO RICO at Mayaguez, Chemical Engineering Department, Polymeric Biomaterials Laboratory, Graduate Researcher Assistant

- Characterization of 2D and 3D Biomaterials for the presentation of the Osteogenic Peptide GFOGER. August 2013 – present

UNIVERSITY OF PUERTO RICO at Mayaguez, Chemical Engineering Department, in collaboration with Integra Lifesciences, Añasco, PR. Reconfigurable and Multifunctional Soft Materials REU program, Mentor: Student at the Department of Chemical, Biological and Bio Engineering, North Carolina Agricultural and Technical State University, Greensboro, NC.

- Executed project: Electrospinning of Collagen Nanofibers May – August 2015

UNIVERSITY OF PUERTO RICO at Mayaguez, Chemical Engineering Department, Teacher Assistant

- Development of laboratory practices in the fluid mechanics area and heat transfer. August 2013 - December 2015

UNIVERSIDAD DEL ATLÁNTICO, Colombia, Project Leader.

- Young researcher project and Innovative of Colciencias, Obtaining docosahexaenoic acid (DHA) from different species of saltworks microalgae, Abril 2012 - June 2013

UNIVERSIDAD DEL ATLÁNTICO, Colombia, Project Leader.

- Consolidation and implementation of the Efficient Water Management Program at the Universidad del Atlántico. January 2011 - December 2013

AQUATERRA ENGINEERS S.A.S, Colombia, Project Leader.

- Development of efficient use plan and saving water to the Zona Franca of Argos Cartagena Plant and Santa Ana mine – Turbaco, September 2011 - January 2012

AWARDS

- Scholar of the Convocation for Institutional Support of the Universidad del Atlántico, for Masters and Doctorate studies, Universidad del Atlántico, June 2013
- Winner of 9 scholarships for the best semester average, by the Chemical Engineering Faculty at the Universidad del Atlántico, Colombia, 2005 - 2010
- Young Researcher and Innovator of the Colombian Institute for the Development of Science and Technology Francisco Jose de Caldas - COLCIENCIAS, selected in the national call No. 525 - 2011 program of young researchers and innovators "Virginia Gutiérrez de Pineda", Colombia, 2011
- Winner in the undergraduate category, for the best oral presentation, Algal Biotechnology area, in the 3rd Latin-American Congress of SOLABIAA. "ALGAL BIOTECHNOLOGY AT THE SOCIETY SERVICE", carried out in David, Chiriqui - Republic of Panama, since 6 to 11 of April 2013.

SCIENTIFIC PUBLICATIONS

BOOK CHAPTER

1. **David A. Castilla Casadiego**, Carol Rivera, Beatriz Quiñones, Jorge Almodovar. *Electrospun Collagen Scaffolds: Electrospun Biomaterials and Related Technologies*, ISBN: 978-3-319-70049-6, ed. Springer. 2018.
2. Jorge Almodovar, **David A. Castilla Casadiego**, Heleine V. Ramos Avilez, "Chapter 9: Polysaccharide-based biomaterials for cell-material interface", *Cell and Material Interface: Advances in Tissue Engineering, Biosensor, Implant, and Imaging Technologies: United States* ISBN: 9781482256123, ed. CRC Taylor Francis Group, 2015.
3. Heleine V Ramos Aviles, **David A. Castilla Casadiego**, Ana L Vega Avilez, Oscar J Perales Perez, Jorge Almodovar, "Chapter 15: Production of Chitosan Coatings on Metal and Ceramic Biomaterials", *Chitosan Coatings: United States*, ISBN: 978-0-08-100230-8 ed. Elsevier, 2015.

SCIENTIFIC ARTICLES

1. **Castilla-Casadiego, D. A.**, Pinzon-Herrera L. C., Perez-Perez M., Quiñones-Colón B. A., Suleiman D. and Almodovar J. (2017). Simultaneous characterization of physical, chemical, and thermal properties of synthetic and natural polymeric multilayers using infrared spectroscopic ellipsometry. Submitted to Applied Surface Science.
2. Vega-Figueroa, K., Santillán, J., Ortiz-Gómez, V., Ortiz-Quiles, E. O., Quiñones-Colón, B. A., **Castilla-Casadiego, D. A.**, ... & Nicolau, E. (2018). Aptamer-Based Impedimetric Assay of Arsenite in Water: Interfacial Properties and Performance. *ACS omega*, 3(2), 1437.
3. **Castilla-Casadiego, D. A.**, Ramos-Avilez, H. V., Herrera-Posada, S., Calcagno, B., Loyo, L., Shipmon, J., Aldo, A. and Almodovar, J. (2016). Engineering of a Stable Collagen Nanofibrous Scaffold with Tunable Fiber Diameter, Alignment, and Mechanical Properties. *Macromolecular Materials and Engineering*, 301(9), 1064-1075.
4. **Castilla-Casadiego, D. A.**, Maldonado, M., Sundaram, P. and Almodovar, J., (2016). "Green" electrospinning of a collagen/hydroxyapatite composite nanofibrous scaffold. *MRS Communications*, 6(4), pp.402-407.
5. **Castilla-Casadiego, D. A.**, Albis Arrieta, A. R., Angulo Mercado, E. R., Cervera Cahuana, S. J., Baquero Noriega, K. S., Suárez Escobar, A. F., and Morales Avendaño, E. D. (2016). Evaluation of Culture Conditions to Obtain Fatty Acids from Saline Microalgae Species: *Dunaliella salina*, *Sinecosyfis* sp., and *Chroomonas* sp. *BioMed Research International*, 2016.

INTERNATIONALS AND NATIONAL PRESENTATIONS

1. Quiñones Colón Beatriz, **Castilla Casadiego David**, Almodóvar Jorge, "Characterization of polymeric film prepared by the Layer By Layer Technique: an infrared variable angle

- spectroscopic ellipsometry study” Abstract accepted for oral presentation at the Emerging Researchers Conference, Washington, DC, March 2017
2. **Castilla Casadiego David**, Almodóvar Montanez Jorge, “Engineering Versatile and Stable Collagen Nanofibers from a Mild Solvent” Poster presented at the (BMES) Annual Meeting - Biomedical Engineering Society, in Minneapolis, Minnesota, October 2016
 3. Quiñones Colón Beatriz, **Castilla Casadiego David**, Almodóvar Jorge, “Engineering biopolymeric nanostructured fibers and films for tissue engineering applications” Abstract accepted for oral presentation at the 2016 Symposium on Biomaterials Science from the NJ Center for Biomaterials, New Jersey, October 2016
 4. **Castilla-Casadiego David**, Almodóvar J.; “Green electrospinning of 3D biomimetic scaffolds of bone extracellular matrix” Poster presented at the Forward Research & Innovation Summit in San Juan, PR. September 2016
 5. Pinzon L, **Castilla-Casadiego David**, Quiñones, B. Almodóvar J.; “Characterization of polymeric films prepared by the layer-by-layer technique: evaluating the rinsing step” Poster presented at the Forward Research & Innovation Summit in San Juan, PR. September 2016
 6. **Castilla-Casadiego David**, Almodóvar J.; “Production of a type I collagen nanofibrous scaffold via electrospinning using a mild solvent that preserves its chemical structure” Poster presented at the Institute for Functional Nanomaterials Annual Meeting in Caguas, PR. April 2016
 7. Almodóvar J., **Castilla-Casadiego David** “Engineering of a collagen-based extracellular matrix mimetic scaffold via electrospinning” Paper presented at the 10th World Biomaterials Congress in Montréal, Canada. May 2016
 8. Quiñones B., **Castilla-Casadiego David**, Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Poster presented at the UPRM’s Department of Biology Annual Symposium in Mayaguez, PR. April 2016
 9. Quiñones B., **Castilla-Casadiego David**, Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Paper presented at the 6th Annual Research Symposium of the Asociacion de Estudiantes de Medicina de Puerto Rico in San Juan, PR. April 2016
 10. Burgos E., Quiñones B., **Castilla-Casadiego David**, Almodóvar J.; “Evaluating the effect of degree of crosslinking and RGD peptide over cellular adhesion in polymeric bilayers” Paper presented at the 6th Annual Research Symposium of the Asociacion de Estudiantes de Medicina de Puerto Rico in San Juan, PR. April 2016
 11. Quiñones B., **Castilla-Casadiego David**, Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Poster presented at the XXI Sigma Xi Poster Day at UPRM in Mayaguez, PR. April 2016
 12. Burgos E., Quiñones B., **Castilla Casadiego David**, Almodóvar J.; “Evaluating the effect of degree of crosslinking and RGD peptide over cellular adhesion in polymeric bilayers” Paper presented at the 2016 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Ponce, PR. March 2016
 13. Quiñones B., **Castilla-Casadiego David**, Almodóvar J.; “Polysaccharide-based polyelectrolyte multilayers: Physicochemical characterization and in vitro studies” Paper presented at the 2016 Junior Technical Meeting (JTM) and the Puerto Rico Interdisciplinary Meeting (PRISM) in Ponce, PR. March 2016
 14. **Castilla-Casadiego David**, Jorge Almodóvar Montanez, “Production of a type I collagen nanofibrous scaffold via electrospinning using a mild solvent that preserves its chemical structure” Poster presented at the Society of Hispanic Professional Engineers (SHPE), in Baltimore, Maryland, November 2015
 15. **Castilla-Casadiego David**, Jorge Almodóvar Montanez, “Engineering versatile and stable collagen nanofibers from a mild solvent that preserves its secondary structure” Poster presented at the 39th Senior Technical Meeting American Chemical Society (ACS), Puerto Rico Local Section in Ponce, Puerto Rico, November 2015
 16. Jacoby Shipmon, **Castilla-Casadiego David**, Jorge Almodóvar, “Electrospinning of Collagen Nanofibers” Poster presented at the Reconfigurable and Multifunctional Soft Materials REU program, in Mayagüez, Puerto Rico, July 2015

17. **Castilla-Casadiago David,** Jorge L. Almodovar-Montañez, "Characterization of 2D and 3D biomaterials for the presentation of the osteogenic peptide GFOGER" Paper presented at the Graduate investigation symposium INQU, in Mayagüez, Puerto Rico, April 2015
18. Carol Rivera Martínez, **Castilla-Casadiago David,** Jorge Almodóvar Montanez, "Engineering biopolymeric nanofibers as biomaterials for tissue regeneration" Poster presented at the 8th North East Alliance Science Day, Mayagüez, Puerto Rico, February 2015
19. **Castilla-Casadiago, D. A.** Albis Arrieta, A. R, Angulo Mercado, E. R, Cervera Cahuana, S. J, Baquero Noriega, K. S, Morales Avendaño, E. D. "Obtaining of fatty acids starting from Salinas microalgae from Litoral Atlántico" Poster presented at the III Latin-American Congress of SOLABIAA. Algal Biotechnology at the Society Service, in David, Chiriquí Republic of Panamá, April 2013

SKILLS

- Excellent interpersonal relationships, leadership, and teamwork skills
- Ability to lead, analyze, and organize complex tasks
- Characterization Techniques:
 - Infrared variable angle spectroscopic ellipsometry (IRVASE)
 - Scanning Electron Microscopy (SEM)
 - Fourier transform infrared spectroscopy (FTIR)
- Knowledge in:
 - Cell Culture: NIH-3T3 Cell Line, type: fibroblast, Electrospinning Technique, Layer by Layer Technique, Freeze Dryer Technique, fluorescent and Confocal Microscopy, Matlab, HYSYS, AutoCAD, IGOR Pro, Microsoft Visio, Windows XP Office (Word, Excel, Power Point), Internet.