Cesar Calero-Rubio

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Education

University of Delaware
Ph.D. Candidate in Chemical Engineering (expected 2018)
Advised by Prof. C.J. Roberts
GPA: 3.91/4.00

Universidad Industrial de Santander, UIS (Bucaramanga, Colombia)
Bachelor of Engineering in Chemical Engineering (2012)
Graduated with Highest Distinction: *Cum Laude*
Advised by Prof. L.J. López-Giraldo, Prof. E. Stashenko and Prof. J.R. Martínez
Thesis: *"Developing new semi-empirical models for solubility of polyphenols in ternary solutions with supercritical carbon dioxide and ethanol"*
GPA: 4.43/5.00

Research & professional experience

Dept. of Chemical & Biomolecular Engineering, University of Delaware (2013 – present)
Graduate Research Assistant

- Created a computational framework to simulate and predict protein second osmotic virial coefficients (B_{22}) and protein-protein Kirkwood-Buff integrals (G_{22}) for highly concentrated monoclonal antibody (mAb) and other protein solutions.
- Developed novel approaches to measure protein-cosolute and protein-solvent interactions in liquid solutions via density measurements for dilute protein solutions.
- Tuned coarse-grained molecular models to accurately model unfolding and self-association behavior of peptides and scFv molecules.
- Studied non-native and native aggregation of peptides and proteins using continuous light scattering monitoring and size exclusion chromatography.
- Evaluated long-term monoclonal antibody non-native aggregation as a function of solution formulation at pharmaceutically relevant conditions.

CENIVAM (Bucaramanga, Colombia) (2012-2013)
Research and Production Engineer

- Developed stable formulations for essential oils-based products.
- Extracted metabolites and antioxidants from natural raw materials using supercritical CO_2.
- Produced essential oils-based products under *Chicamocha Magic*® brand.
- Extracted essential oils using *water-vapor* and *microwave induced* extraction.
- Studied the viability and development of tick repellent formulations based on organic waste.

Dept. of Chemical Engineering, UIS (Bucaramanga, Colombia) (2010-2012)
Undergraduate Research Assistant

- Developed mathematical models for supercritical extractions.
- Studied the viability of using supercritical CO_2 to obtain secondary metabolites from organic waste, flowers and fruits.