

# Camila Saez Cabezas

csaez@utexas.edu • (202) 250-4352 • www.linkedin.com/in/csaezcab

## EDUCATION

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- University of Texas at Austin, Cockrell School of Engineering** Austin, TX  
*Doctor of Philosophy, Chemical Engineering* Expected December 2019  
Advisors: Professors Delia J. Milliron and Thomas M. Truskett GPA 3.78
- University of Texas at Austin, Cockrell School of Engineering** Austin, TX  
*Master of Science in Engineering, Chemical Engineering* December 2018
- University of Maryland, A. James Clark School of Engineering** College Park, MD  
*Bachelor of Science (Cum Laude), Chemical and Biomolecular Engineering* May 2014

## RESEARCH EXPERIENCE

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- McKetta Department of Chemical Engineering, University of Texas at Austin** Austin, TX  
*Graduate Student Researcher (Advisors: Prof. Delia J. Milliron and Thomas M. Truskett)* 2014-Present
- Investigating assembly methods using metal oxide nanocrystal building blocks to impart nanoscale structure and achieve highly tunable electrochromic materials.
    - Developed original method to assemble tin-doped indium oxide (ITO) nanocrystal gels with a near-infrared optical response.
    - Preparing and designing colloidal dispersions of polymer-coated ITO nanocrystals in aqueous media for “green” processing of transparent conductive thin films and gels.
- University of Maryland Department of Chemical Engineering** College Park, MD  
*Undergraduate Student Researcher (Advisor: Prof. Srinivasa Raghavan)* 2013-2014
- Synthesized chitosan microbeads using microfluidic techniques for biomimetic clustering applications and developed an original protocol to functionalize the surface of the microbeads with cyclodextrin.
- Laboratory of Scientific Image Analysis (SCIAN)** Santiago, Chile  
*Research Intern (Principal Investigator: Dr. Steffen Hartel)* Jan. 2013
- Researched and compared the technical specifications of virtual microscopy scanners to identify a cost-effective and application-compatible instrument purchase for SCIAN.

## SKILLS & EXPERTISE

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- **Materials Processing:** colloidal nanocrystal synthesis, polyoxometalate synthesis, electrodeposition, gel processing, nanocrystal-polymer composite processing, surface functionalization.
- **Materials Characterization Techniques:** RAMAN/FTIR/UV-VIS Spectroscopy, *in-situ* spectroelectrochemistry, Scanning Electron Microscopy (SEM/STEM), Small Angle X-Ray Scattering (SAXS), X-Ray Diffraction (XRD), Dynamic Light Scattering (DLS) and Zeta Potential, Brightfield Microscopy, Thermogravimetric Analyzer (TGA), Elemental Analysis (ICP-AES, EDX), Profilometry.
- **Other Laboratory Skills:** Schlenk line, Glovebox, Laboratory Safety Coordinator (2 years), Inventory.

- **Software Applications:** Igor Pro, ImageJ, Adobe Illustrator, Microsoft Office.
- **Languages:** Spanish (native, spoken and written) and French (spoken and written).

## **PUBLICATIONS** (4 first author, 4 co-author)

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1. **Saez Cabezas, C.A.**, Miller, K., Heo, S., Leblanc, G., Milliron, D.J. “Direct Electrochemical Deposition of Conformal Transition Metal Oxide Thin Films from Polyoxometalates”, 2019, *In Preparation*.
2. Ong, G.K\*, **Saez Cabezas, C.A.\***, Agrawal, A., Skjaervo, S.L., Pham, D., Milliron D.J. “Ultrafast Niobium Oxide Nanorod Near Infrared Electrochromics,” 2019, *In preparation*. \*Equal contribution
3. Maho, A.\* , **Saez Cabezas, C.A.\***, Meyertons, K.A., Reimnitz, L.C., Helms, B.A., Milliron, D.J. “Hydrophilic Polymer Functionalization of Tin-Doped Indium Oxide Nanocrystals and their Spray Coating Processing for Thin Film Electrochromics,” 2019, *In preparation*. \*Equal contribution
4. Staller, C.M., Agrawal, A., Gibbs, S.L., **Saez Cabezas, C.A.**, Johns, R., Milliron, D.J. “Quantitative Analysis of Semiconductor Nanocrystal Ensemble Optical Extinction,” 2019, *Submitted*.
5. **Saez Cabezas, C.A.**, Ong, G.K, Jadrich, R.B., Lindquist, B.A., Agrawal, A., Truskett, T.M., Milliron, D.J. “Gelation of plasmonic metal oxide nanocrystals by polymer-induced depletion attractions”, *Proc Natl Acad Sci USA*, 2018, DOI: 10.1073/pnas.1806927115.
6. Guillaussier, A., Yu, Y., Voggu, V., Aigner, W., **Saez Cabezas, C.**, Houck, D.W., Shah, T., Smilgies, D.M., Pereira, R., Stutzmann, M., Korgel, B. “Silicon Nanocrystal Superlattice Nucleation and Growth”, *Langmuir*, 2017, DOI: 10.1021/acs.langmuir.7b02710.
7. Arya, C., **Saez Cabezas, C.A.**, Huang, H., Raghavan, S.R. “Clustering of Cyclodextrin-Functionalized Microbeads by an Amphiphilic Biopolymer: Real-Time Observation of Structures Resembling Blood Clots”, *Applied Materials & Interfaces*, 2017, DOI: 10.1021/acsami.7b05435.
8. Llordés, A., Wang, Y., Fernandez-Martinez, A., Xiao, P., Lee, T., Poulain, A., Zandi, O., **Saez Cabezas, C.A.**, Henkelman, G., Milliron, D.J. “Linear topology in amorphous metal oxide electrochromic networks obtained via low-temperature solution processing”, *Nature Materials*, 2016, DOI:10.1038/nmat4734.

## **SELECTED CONFERENCE PRESENTATIONS**

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- **Saez Cabezas, C.A.**, Jadrich, R.B., Ong, G.K., Truskett, T.M., Milliron, D.J. “Assembly of Tin-Doped Indium Oxide Nanocrystals into Three-Dimensional Plasmonic Gels via Depletion-Attraction Interactions,” *Materials Research Society (MRS)*, Session NM3.8, 19 April 2017, Oral Presentation.

## **PATENTS**

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“Porous Electrochromic Niobium Oxide Films and Methods of Making and Use Thereof,” U.S. provisional patent application #62/742,556.

## **LEADERSHIP & MENTORING EXPERIENCE**

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- **Student Leadership Council President, Center for Dynamics and Control of Materials** 2018- 2019
- **Co-Chair Society of Women Engineers, Graduate Chapter, University of Texas at Austin** 2017-2018
- **Research Mentor, Milliron Group, University of Texas at Austin**  
Chemical Engineering Undergraduate students Yongdan Wang (Fall 2018-Present), Kendall Meyertons (Summer 2016-2017), and Kristen Miller (Summer 2015-Spring 2017).