

SERGIO GRANADOS-FOCIL

**Gustaf H. Carlson School of
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CURRENT AND PAST APPOINTMENTS

- Associate Professor, Gustaf H. Carlson School of Chemistry, Clark University
September 2014-present
- Assistant Professor, Gustaf H. Carlson School of Chemistry, Clark University
July 2008-August 2014
- Research Assistant Professor, Gustaf H. Carlson School of Chemistry, Clark University
February 2008-July 2008
- Postdoctoral Research Associate, Department of Polymer Science and Engineering, University of
Massachusetts, Amherst
October 2005-June 2008

EDUCATION

- Ph.D., Macromolecular Science and Engineering, Case Western Reserve University. January 2006.
Dissertation: A new class of polyelectrolytes: Polyphenylene sulfonic acids and its copolymers as proton exchange membranes for PEM fuel cells. Advisor: Prof. Morton H. Litt.
- Master of Science, Materials Science and Engineering, National Autonomous University of Mexico (UNAM), Materials research institute. March 2002.
Dissertation: Chemical Insertion of Heterocyclic Luminescent Chromophores to Polystyrene via Free Radical Copolymerization. Advisor: Dr. Dmitri Likhatchev
- Bachelor of Science, Chemistry, National Autonomous University of Mexico (UNAM). April 2000.
Undergraduate thesis advisor: Dr. Dmitri Likhatchev

AWARDS

Fellow of the American Chemical Society. August, 2017.

ACADEMIC SERVICE/RESPONSIBILITIES

Service outside Clark University.

- *Past Chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society, January 2016-December 2016*
- *Chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society, January 2015-December 2015*
- *Chair-elect for the Polymeric Materials Science and Engineering Division of the American Chemical Society, January 2014-December 2014.*
- *Co-Organizer of the NanoWorcester symposium, 2013, 2015.*
- *Vice chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society, January 2013-December 2013.*
- *Discussion leader, Gordon Research Conference in Polymers. June 2011*
- *Treasurer for the Polymeric Materials Science and Engineering Division of the American Chemical Society, January 2011-December 2012*

- *Blind reviewer* for the Journal of Applied Polymer science, The Journal of Membrane Science, The Journal of Physical Chemistry C, the Journal of Macromolecular Science –part A and ACS Macroletters, Reactive functional polymers, Macromolecules, Journal of Polymer Science, Part A, Polymer Chemistry. Spring 2009-present.
- *Grant application reviewer for the NSF-DMR polymer division.* Fall 2009-present.
- *Grant application reviewer for the ACS PRF.* Fall 2010-present.

Service within Clark University.

- Graduate program coordinator for the Chemistry department. Fall 2017-Present
- *Member of the Working Committee on scheduled salary increases.* Spring 2015
- *Member of College Board.* Spring 2015
- *LEEP mentor.* Summer 2013, 2014, 2015
- *Member of the Chemistry Department Faculty search committee,* Fall 2010, Fall 2011
- *Member of the Physics Department Faculty search committee,* Fall 2010
- *Faculty mentor for the chemistry club,* Fall 2009-2015
- *First-year Academic advisor,* Clark University, Fall 2008-present
- *Speaker for the Science preview day.* Spring 2009-present
- *Presenter for the Accepted Students open house.* Spring 2010, 2011, 2013, 2015
- *Host for the Alumni weekend.* Spring 2010.
- *Member of the Undergraduate Judicial Board.* Fall 2009.
- *Co-Organizer of the Annual Harry Allen Symposium.* Spring 2009, Spring 2014

OUTREACH TO THE SURROUNDING COMMUNITY.

- Designed a hands-on lab experience for high school students where they prepared ice cream using liquid nitrogen. The protocol was designed to have the students quantitatively estimate the effect of the cream/milk ratio on the quality of the resulting ice cream. The experience has been already used 3 times with students from King Phillip's High School and students from High School students from the City of Worcester.
- Served as judge for the science fair at Keene, NH's High School and Middle school.
- Hosted a senior high school student from UPCS (Pablo Larrea). Pablo assisted in the design and optimization of some of the lab protocols used for the polymeric biomaterials lab.
- Hosted Robert Naughton '11 as a research student in my lab. Bobby is interested in pursuing a career as a high school science teacher. During his stay in my lab he designed, adapted and optimized 6 laboratory protocols that could be used at the high school level. In collaboration with the science teachers at UPCS, the lab protocols will "test run" during the summer and implemented at UPCS next academic year.

TEACHING EXPERIENCE

- **Lecturer** (the numbers in [brackets] correspond to typical contact hours/week)
 - **Fall 2008.** Polymer Science (Chem 281/381) [5]
 - **Spring 2009.** Organic Chemistry I (Chem 131) [10]
Thermal analysis (Chem 289/389) [4]
Directed study (Chem 299) [2]
 - **Fall 2009.** Organic Chemistry II (Chem 132) [10]
Directed study (Chem 299) [2]
 - **Spring 2010.** Organic Chemistry I (Chem 131) [10]
Polymeric Biomaterials (Chem 283/383) [8]

- Directed study (Chem 299) [2]
- **Fall 2010.** Organic Chemistry II (Chem 132) [10]
- **Spring 2011.** Organic Chemistry I (Chem 131) [10]
Polymer Science (Chem 281/381) [5]
Directed study (Chem 299) [2]
- **Fall 2011.** Organic Chemistry II (Chem 132) [10]
Advanced Organic Chemistry (Chem 231/331) [5]
Directed study (Chem 299) [4]
- **Spring 2012.** **Pre-tenure sabbatical leave**
- **Fall 2012.** Organic Chemistry I (Chem 131) [14]
Polymer Science (Chem 281/381) [5]
Honors (Chem 297) [4]
- **Spring 2013.** Organic Chemistry II (Chem 132) [14]
Honors (Chem 297) [4]
- **Fall 2013.** Organic Chemistry I (Chem 131) [8]
Advanced Organic Chemistry (Chem 231/331) [5]
Honors (Chem 297) [2]
- **Spring 2014.** Organic Chemistry I (Chem 131) Lab [6]
Polymeric Biomaterials (Chem 283/383) [5]
Honors (Chem 297) [2]
- **Fall 2014** Organic Chemistry II (Chem 132) [8]
Organic Chemistry I (Chem 131) Lab [6]
Directed study (Chem 299/BCMB) [7]
- **Spring 2015** Organic Chemistry I (Chem 131) [8]
Polymeric Biomaterials (Chem 283/383) [5]
Directed study (Chem299/BCMB299) [3]
- **Fall 2015** Advanced Organic Chemistry (Chem 231/331) [5]
Organic Chemistry I (Chem 131) Lab [6]
Directed study (Chem 299/BCMB) [8]
- **Spring 2016** Directed study (Chem299/BCMB299) [8]
Sabbatical leave
- **Fall 2016** Directed study (Chem 299/BCMB) [6]
Sabbatical leave
- **Spring 2017** Directed study (Chem299/BCMB299) [6]
Honors (Chem 297) [1]
Polymer Science (Chem 281/381) [5]
Analytical Chemistry (Chem 140) [8]
Thermal analysis (Chem 289/389) [2]
- **Research Mentor**
 - **Doctoral students (6)**
 - Robert Doyle, Ph.D. May 2014. (Defended January 2014)
 - Sean Chen, Ph.D. August 2015 (Defended July 2015)
 - William Wei, Ph.D. January 2016 (Defended September 2016)
 - Lukasz Mendecki, Ph.D. July 2016 (Visiting student, University of Keele)
 - Pramod Mishra (joined group F16)
 - Yuxin Yang (Joined group F17)
 - **Masters students (4)**
 - Justin Conway, M.S. '11
 - Abhijit Srungavarapu, M.S. '13
 - Thanaphorn Suk-In (Joined group F16)
 - Anamika Datta (Joined group F15)
 - **Undergraduate students (38)**

- Justin Conway, B.A. Chemistry '09
- Timothy Hartigan, B.A. Chemistry '10
- Alfonso Renna, B.A. Chemistry '10
- Robert Naughton, B.A. Chemistry '10
- Christopher Quan, B.A. Chemistry '12
- Abhijit Srungavarapu BCMB '12 (Highest honors)
- Phillip Boglisch, B.A. Chemistry '12
- Hunter Gray, B.A. Chemistry '12
- Max Macrae, B.A. Chemistry '12
- William Brown, B.A. Chemistry '12
- Christopher Legacy, B.A. Chemistry '12
- William Trout, B.A. Chemistry '13 (Honors)
- Derek Luong, B.A. Chemistry '13 (High honors)
- Stephanie Pudalov, B.A. Chemistry '13
- Madeleine Debrosse '14 (High honors)
- Laura Migliaccio '14 (Honors)
- Kelli Stockmal '14 (High honors)
- Yisrael Lattke '15
- Matthew George '15
- David Geller-McGrath '15
- Vitaliy Mityushin '15
- Lena Cedrone '15
- Daniel Harris '16
- Spencer Mayotte '16
- Victoria Bergman '16
- Thanaporn Suk-in '16
- Elizabeth Chan '16 (Honors)
- David Powers '16 (High honors)
- Alva Tan '17
- Antony Gruness '17
- Alistair Richardson '17 (Highest Honors)
- Tyler Zirkman '17
- Graham Bell '17
- Jenna Harrison-Peters '18
- Jeremy Abdulla '18
- Eduardo Barbosa (Exchange student, Brazil)

PEER-REVIEWED PUBLICATIONS

Work done at Clark University

* undergraduate student author, #graduate student author

25. Migliaccio, L. *, Stockmal, K. *, Wei., J. #, Radu, A., Granados-Focil S., McGraw, C., **Carbonate selective low-cost ISEs for environmental studies.** *Electroanalysis*. Submitted.
24. Mendecki, L., Granados-Focil, S., Radu, A., **Lumogallion-based fluorescent optical sensor for the determination of aluminium (III) with ultra-low detection limits.**, *Analyst*. Submitted.
23. Yu, X.; Granados-Focil, S.; Tao, M.; Burnham, N., **Time- and composition- dependent evolution of distinctive microstructures in bitumen.** *Energy and Fuels*, submitted.
22. Tyufekchiev, M.; Duan, P.; Schmidt-Rohr, K.; Granados-Focil, S.; Timko, M.T.; Emmert, M., **Cellulase-Mimetic Solid Acids for Cellulose Hydrolysis: Structural Explanations for High Catalytic Activity**, *ACS Catalysis*. In Revision.
21. Doyle, R.P. and Granados-Focil, S. **Carbonate-mediated alkyl functionalization of poly(ethylene imine), an efficient, mild, route towards fully functionalized PEI backbones.** In revision.

20. Fallahi, A., Guldentops, G., Tao, M., Granados-Focil, S., Van Dessel, S., **Review on solid-solid phase change materials for thermal energy storage: Molecular structure and thermal properties.** *Applied Thermal Engineering*, **2017**, 127, 1427-1441.
19. Wei, J.,[#] Trout, W.,* Simon, Y.C., Granados-Focil S., Ring opening metathesis polymerization of triazole-bearing cyclobutenes: **Diblock copolymer synthesis and evaluation of the effect of side group size on polymerization kinetics.** *Journal of Polymer Science, Part A, Polymer Chemistry*, **2017**, 55 (11), 1929-1939.
18. Nguyen, C-T., Deshmukh, P., Chen X.[#], Granados-Focil, S., Kasi, R., **Thermoreversible ion gels from side-chain liquid crystalline brush diblock copolymers**, in *Functional Polymers, Design, Synthesis and Applications*, edited by Raja Shunmugam, CRC press, Taylor and Francis, **2017**, 241-263.
17. Mendecki, L.M., Chen, X., Callan, N., Thompson, D.F., Schazman, B., Granados-Focil, S., Radu, A., **Simple, Robust, and Plasticizer-Free Iodide-Selective Sensor Based on Copolymerized Triazole-Based Ionic Liquid.** *Analytical Chemistry*, **2016**, 88 (8), 4311. **(9 Citations)**
16. Mendecki, L.M., Fayose, T., Stockmal, K.A.* , Wei, J.[#], Granados-Focil, S., McGraw, C.M., Radu, A., **Robust and ultrasensitive polymer membrane-based carbonate selective electrodes.** *Analytical Chemistry*, **2015**, 87 (15) 7515. **(8 Citations)**
15. Granados-Focil, S. **Stimuli-responsive polymers as active layers for sensors**, in *Functional Polymer Coatings: Principles, Methods, and Applications*, First Edition. Edited by Limin Wu and Jamil Baghdachi. John Wiley & Sons, Inc., **2015**. **(13 Citations)**
14. Nguyen, C.T., Zhu, Y., Chen X., Sotzing, G.A., Granados-Focil, S., Kasi, R. M., **Nanostructured ion gels from liquid crystalline block copolymers and gold nanoparticles in ionic liquids: manifestation of mechanical and electrochemical properties.**, *J. Mater. Chem. C.*, **2015**, 3, 399-408. **(7 Citations)**
13. Doyle, R., P. Chen, X., Macrae, M., Srungavarapu, A., and Granados-Focil, S., **Poly(ethyleneimine)-based polymer blends as lithium single-ion conductors.** *Macromolecules*, **2014**, 47, 3401. **(26 citations)**
12. Kokil, A., Renna, A.* , Kumar, J., Granados-Focil, S. **Synthesis and Characterization of Triazolium Iodide Ionic Liquid Electrolyte for Dye Sensitized Solar Cells.** *Journal of Macromolecular Science, part A, polymer chemistry*, **2011**, 48, 1022. **(7 Citations)**
11. Sokolov, A., Atahan-Evrenk, S., Mondal, R., Akkerman, H.B., Sánchez-Carrera, R.S., Granados-Focil, S., Schrier, J., Mannsfeld, S.C.B., Zoombelt, A.P., Bao, Z., and Aspuru-Guzik, A., **From *in silico* to carbon to device: Computational discovery and experimental characterization of a high hole mobility organic crystal.** *Nature Communications*, **2011**, 2, 437. **(189 citations)**
10. Granados-Focil, S., Conway, J.R.* , Meng, Y.[#], Smith, L., **Triazole functionalized sol-gel membranes, effect of crosslink density and heterocycle content on water free proton conduction and membrane mechanical properties**, *Journal of Macromolecular Science, part A, polymer chemistry*, **2010**, 47, 1197. **(3 citations)**

Work done before coming to Clark University

9. Litt, M.; Granados-Focil, S.; Kang, J., Si, K., Wycisk, R., **Rigid Rod Poly(p-Phenylene sulfonic acid) PEMs: High Conductivity at Low Relative Humidity Due to “Frozen-in-Free Volume”**, *ECS Trans.*, **2010**, 33, 695-710. **(6 Citations)**
8. Litt, M.; Granados-Focil, S.; Kang, J., **Rigid Rod Polyelectrolytes with Frozen-In Free Volume: High Conductivity at Low RH.** In *Fuel Cell Chemistry and Operation*, American Chemical Society: **2010**; Vol. 1040, pp 49-63. **(10 citations)**
7. Akbey, U., Granados-Focil, S., Coughlin E.B., Graf, R., Spiess, H.W., **¹H Solid-State NMR Investigation of Structure and Dynamics of Anhydrous Proton Conducting Triazole-Functionalized Siloxane Polymers.** *J.Phys. Chem. B.*, **2009**, 113, 9151-9160. **(38 citations)**
6. Litt, Morton H., Granados-Focil, Sergio, **Liquid Crystal (polyphenylene sulfonic acids), U.S. Pat # 7375,176, 2008**, 45 pp. **(7 citations)**
5. Granados-Focil, S., Woudenberg, R.C., Yavuzcetin, O., Tuominen, M.T., Coughlin, E.B., **Water-free proton conducting polysiloxanes: A study on the effect of heterocycle structure**, *Macromolecules*, **2007**, 40, 8708-8713. **(54 citations)**

4. Marwiset, S., Woudenberg, R.C., Granados-Focil, S., Yavuzcetin, O., Tuominen, M.T., Coughlin, E.B., **Intrinsically conducting polymers and copolymers containing triazole moieties**, *Solid State Ionics*, **2007**, *178*, 23-24, 1398-1403. **(59 citations)**
3. Likhatchev D., Granados-Focil S., Barrientos-Gutierrez S. **Novel procedure for the synthesis of fluorescent fused heterocyclic dyes and its application to vinylic polymers**. MEX patent, pending.
2. Likhatchev D., Granados-Focil S., Gaviño R., Canseco M., y Alexandrova L., *High Performance Polymers*, **1999**, *11* (4), 1-11. **(6 Citations)**
1. Barrios, F; Granados, S; Talanquer, Vincente. **How do crystals form?** *Educacion Quimica (Chemical Education)*, **1998**, *9*(3), 129-135.

CONFERENCE ABSTRACTS AND PRESENTATIONS

Work done at Clark University

* undergraduate student author, #graduate student author

1. Granados-Focil, S., Chen, X., Datta, A., **Nanostructured, solution processible, polyethyleneimine single-ion polymer electrolytes for lithium ion batteries**. 21st International Congress on Solid State Ionics. Padua, Italy, 2017.
2. De Porcellinis, D., Mecheri, B., D'Epifanio, A., Licoccia, S., Granados-Focil, S., Aziz, M., **Sulfonated PEEK membranes as separators for alkaline redox flow batteries: Insights from cell performance and membrane stability tests**. 21st International Congress on Solid State Ionics. Padua, Italy, 2017.
3. Tyufekchiev, Maksim V.; Duan, Pu; Timko, Michael T.; Emmert, Marion; Schmidt-Rohr, Klaus; Granados-Focil, Sergio. **Spatially resolved EDS and Raman characterization of crosslinked polymeric catalysts biomass hydrolysis**. Abstracts of Papers, 25rd ACS National Meeting & Exposition, San Francisco, CA, United States, August 2-6, 2017 PMSE-98.
4. Timko, Michael T.; Emmert, Marion; Granados Focil, Sergio; Schmidt-Rohr, Klaus. **Limitations of top-down approaches to synthesize amorphous polymer catalysts for biomass hydrolysis**. Abstracts of Papers, 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017, CATL-108.
5. Wong Andrew, De Porcellinis, Diana, Granados-Focil, Sergio, Eisenach, Louise, Fujimoto, Cy, Aziz, Michael. **Alternative membranes for aqueous organic flow batteries**. MRS Fall Meeting 2016. ES2. 1. 04, November 28th 2016.
6. Chen, Xiaorui[#]; Luong, Derek^{*}; Smith, Luis; Granados Focil, Sergio. **Diblock and triblock lithium conducting polymers from strongly incompatible PEGMA and PAAMPSA segments, effect of interdomain surface area on morphology and ionic transport**. Abstracts of Papers, 250th ACS National Meeting & Exposition, Boston, MA, United States, August 16-20, 2015 PMSE-143.
7. Wei, J.[#], Trout, W. ^{*}, Granados-Focil, S., **Controlled ROMP of cyclobutenes by tuning the steric bulk of the monomer pendant chains: An efficient route towards well-defined cyclobutene-based diblock copolymers**. Abstracts of Papers, 250th ACS National Meeting & Exposition, Boston, MA, United States, August 16-20, 2015, PagesPOLY-480.
8. Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and thermal regulation**. Chinese Chemical Society Congress, 2015.
9. Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and thermal regulation**. Defense Innovation Summit, 2015.
10. Chen, X. [#], Luong, D. ^{*}, Stockmal, K.A. ^{*}, Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and thermal regulation**. Gordon Research Conference on Polymers, 2015.
11. Wei, J. [#], Trout, W. ^{*}, Granados-Focil, S. **Block copolymer synthesis of triazole-bearing cyclobutene derivatives**. Gordon Research Conference on Polymers, 2015.

12. Stockmal, Kelli A. *; Granados Focil, Sergio. **Polyalkylmethacrylate-functionalized inorganic nanoparticles as solid-solid phase change materials: Effect of spacer length, molecular weight and graft density on heat storage capacity.** 249th ACS National Meeting, 2015.
13. Cedrone, Lena; * George, Matthew; * Mityushin, Vitaliy; * Holmes, William; Bellin, Robert; Granados Focil, Sergio. **Gene-delivering non-viral systems from PEI-g-PEG and PEI-functionalized telechelic PEG: Effect of polymer architecture on gene transfection efficiency and cytotoxicity.** 249th ACS National Meeting, 2015.
14. Granados Focil, Sergio; Mendecki, Lukasz; Stockmal, Kelli A. *; Radu, Aleksandar
15. **1000-fold sensitivity increase on solid-contact ion-selective electrodes by controlling the ionophore/polymer interface.** 249th ACS National Meeting, 2015.
16. Xiaorui Chen[#], Derek Luong¹, Manesh Gopinadhan², Chinedum Osuji², Sergio Granados-Focil¹ **Lithium conducting diblock and triblock copolymers, effect of sulfonated domain size on ionic transport.** XXIII international materials research congress. August 2014.
17. Robert P. Doyle, [#] Xiaorui Chen[#], Max Macrae[#], Abhijit Srungavarapu¹, Luis Smith¹, Manesh Gopinadhan², Chinedum Osuji², Sergio Granados-Focil¹. **Efficient single-ion lithium conductors from poly(ethyleneimine)-based polymer blends, effect of polymer structure on ion-pair dissociation.** XXIII international materials research congress. August 2014.
18. Kelli A. Stockmal, Sergio Granados-Focil **Solid-solid phase change materials from paraffin-bearing polymethacrylates and polymethacrylamides.** XXIII international materials research congress. August 2014.
19. Jia Wei, [#] William Trout and Sergio Granados-Focil¹. **Diblock copolymer synthesis via ring opening metathesis polymerization of triazole-bearing cyclobutenes.** XXIII international materials research congress. August 2014.
20. Granados-Focil, Sergio; Doyle, Robert P. [#]; Chen, Xiaorui; [#] Wei, Jia, [#] **Effect of polymer matrix dielectric constant on water-free proton transport: Towards efficient high temperature operation,** 248th ACS National Meeting, 2014 (2014), POLY-671.
21. Wei, Jia, [#] Trout, William; * Granados-Focil, Sergio, **Block copolymer synthesis of triazole-bearing cyclobutenes by ring opening methathesis polymerization,** 248th ACS National Meeting, 2014 (2014), POLY-599.
22. Stockmal, Kelli A. *; Granados-Focil, Sergio, **Olefin-bearing polymethacrylates and polymethacrylamides as solid-solid phase change materials: Effect of spacer length on heat storage capacity,** 248th ACS National Meeting, 2014 (2014), POLY-462.
23. Chen, Xiaorui, [#] Luong, Derek M. *; Granados-Focil, Sergio, **PEGMA-b-PAAMPSA lithium conducting polymers: Effect of sulfonated domain size on ionic transport,** 248th ACS National Meeting (2014), POLY-295.
24. Chen, X. [#], Luong, D. *, Granados-Focil, S., **Synthesis of ion conducting diblock copolymers for alternative energy applications.** 3rd NanoWorcester Symposium.
25. Lattke, Y. *, Bayless-Hall, L. *, Chen, X. [#], Boyer, M., Granados-Focil S. **PEGMA/PAAMPSA Diblock copolymer micelles as templates for metallic nanoparticle synthesis.** 3rd NanoWorcester Symposium.
26. Stockmal, K. *, Trout, W. *, Granados-Focil, S., **Polymeric phase-change materials for temperature regulation.** 3rd NanoWorcester Symposium.
27. Doyle, R.P. [#], Chen X. [#], Granados-Focil S., **Post-Polymerization Modification of PEI for lithium-ion conduction.** 3rd NanoWorcester Symposium.
28. Doyle, R.P. [#], Granados-Focil, S., **Synthesis of triazole-bearing polyethylene imine copolymers as water-free proton conducting membranes for PEM fuel cells.** 245th ACS National Meeting 2013. ENFL 640
29. Chen, X. [#], Luong, D. *, Granados-Focil, S., **Synthesis of ion conducting diblock copolymers for polymer electrolyte membrane fuel cells via ATRP and click chemistry.** 245th ACS National Meeting 2013. ENFL 639
30. Wei, J. [#], Trout, W. *, Granados-Focil, S., **Synthesis via ROMP of Triazole Bearing Polycyclobutene Diblock copolymers as Water-Free Proton Conducting Membranes for PEM Fuel Cells.** 245th ACS National Meeting 2013. ENFL 644

31. Luong D.*, Chen, X.#, Granados-Focil, S., **PAAMPSA and PEGMA dihydrophilic block copolymers as model self-assembled nanoreactors**. 245th ACS National Meeting 2013. POLY-11.
32. Granados-Focil S., Chen, X.#, Doyle, R.#, Wei, J.#, **Ion transport through polymers: New Insights into the design of polymer films as ion transporting membranes for renewable energy applications**. 245th ACS National Meeting 2013. PMSE-16
33. Chen, X.#, Luong, D.*, Granados-Focil, S., **Synthesis of ion conducting diblock copolymers via ATRP and click Chemistry**, IUPAC World Polymer Congress, Blacksburg, VA, June 2012.
34. Doyle, R. P.#, Granados-Focil, S., **Microwave assisted synthesis of Triazole Functionalized Polyethylene Imine as water-free Proton Conducting Membranes for PEM Fuel Cells**, IUPAC World Polymer Congress, Blacksburg, VA, June 2012.
35. Srungavarapu, S.#, Doyle R., P.#, Granados-Focil, S., **Gene delivery via functionalized Poly(ethylene imine)-DNA poly-plexes**, IUPAC World Polymer Congress, Blacksburg, VA., June 2012.
36. Wei, J.#, Trout, W.*, Granados-Focil, S., **Synthesis via ROMP of Triazole Bearing Polycyclobutene Diblock copolymers as Water-Free Proton Conducting Membranes for PEM Fuel Cells**, IUPAC World Polymer Congress, Blacksburg, VA., June 2012.
37. Granados-Focil, S. **Ion Transport Through Polymer Matrices: Triazole bearing sol-gel and polymer membranes as ion transporting membranes for renewable energy applications**. An NNIN/C Conference: Synergy Between Experiment and Computation in Energy – Looking to 2030. Center for Nanoscale Systems, Harvard University, January 2012.
38. Doyle, R.P.#, Granados-Focil, S. **Effect of backbone polarity on water-free proton conductivity of triazole containing polymers**, 5th International Conference on Polymer Batteries and Fuel Cells, ANL, Aug. 2011.
39. Granados-Focil, S., Conway, J.R.*, Renna A., Hartigan T., Quan, C., Meng, Y., Smith, L. **Triazole functionalized sol-gel membranes as proton, iodide or lithium conductors, effect of crosslink density and heterocycle content on ion conduction and membrane mechanical properties**, PacificChem congress 2010. Honolulu, HI, Dec. 2010.
40. Granados-Focil, S., Quan, C.*, Kokil, A., Kumar, J., **Triazole functionalized sol-gel membranes and linear polysiloxanes as iodide conductors, development of efficient solid state electrolytes for Dye Sensitized Solar Cells**. 10th Sukant Tripathy memorial symposium. Umass-Lowell, Dec. 12th 2010.
41. Granados-Focil, S., Conway, J.R.*, Meng, Y.#, Smith L.J., **Design of triazole bearing sol-gel membranes as water free proton exchange membranes for hydrogen fuel cells, effect of crosslink density, and heterocycle content on membrane performance**. Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2010), 55(2)
42. Conway, J.R.*, Doyle R.P.#, Meng, Y.#, Smith, L., Granados-Focil S., **Triazole functionalized polymers as proton conducting membranes for hydrogen fuel cells, effect of polymer architecture and backbone polarity**. Gordon Research Conference on Polymer Chemistry, 2009
43. Granados-Focil, S.; Conway, J. R.*; Thorn, M.; Versek, C.; Tuominen, M. T. “ **Triazole bearing sol-gel membranes as water free proton exchange membranes for hydrogen fuel cells**” Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2009), 54(1), 82-84.
44. Granados-Focil S., Doyle R.P.#, Conway, J.R.*, Higami, M., Coughlin E.B., “**Effect of backbone structure on the water-free transport ability of triazole containing polymers**.” **1st US-Mexico Symposium on Advances in Polymer Science**. 2008, 158.

Work done before coming to Clark University

45. Morton Litt, Sergio Granados-Focil, Junwon Kang, Kun Si, and Ryszard Wycisk, **Rigid Rod Poly(p-Phenylene Sulfonic Acid) PEMs: High Conductivity at Low Relative Humidity Due to "Frozen-In-Free Volume"**, ECS Transactions, 33, 695 (2010).
46. White, S. M., Granados-Focil, S., Woudenberg, R.C., Yavuzcetin, O., Tuominen, M.T., Coughlin, E.B. **Proton conducting nanocomposite membranes for high temperature polymer electrolyte**

- membrane fuel cells**, Preprints of Symposia - American Chemical Society, Division of Polymer Chemistry, 2008; Vol. 49(1), p 1145-1146.
47. Granados-Focil, S.; Woudenberg, R. C.; Yavuzcetin, O.; Tuominen, M. T.; Coughlin, E. B. **Water-free proton conducting polysiloxanes: combining mobile polymer matrices and weakly basic heterocycles**. Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2007), 52(2), 263-264
 48. Higami, Makoto; Woudenberg, Richard C.; Granados-Focil, Sergio; Yavuzcetin, Ozgur; Tuominen, Mark T.; Coughlin, E. Bryan. **Synthesis and characterization of triazole tethered polyphosphazene for fuel cell application**. PMSE Preprints, American Chemical Society, (2007), 97 551-552.
 49. Martwiset, Surangkha; Woudenberg, Richard C.; Granados-Focil, Sergio; Yavuzcetin, Ozgur; Tuominen, Mark T.; Coughlin, E. Bryan. **Anhydrous proton conduction: effect of heterocycle nature and backbone mobility**. PMSE Preprints, American Chemical Society, (2007), 97 639-640.
 50. Litt, Morton; Granados-Focil, Sergio. **Poly(p-phenylene sulfonic acid) graft copolymers: washing, temperature and relative humidity, effect on conductivity**. PMSE Preprints, American Chemical Society, (2006), 95 138-139.
 51. Renock, Devon; Zhang, Pu; Ma, Junqing; Lei, Hanwei; Peiter, Charlie; Litt, Morton; Granados-Focil, Sergio. **Improving the power density of PEM fuel cells**. Society of Automotive Engineers, [Special Publication] SP (2005), SP-1965 (Applications of Fuel Cells in Vehicles), 69-71.
 52. Granados-Focil, Sergio, Litt, Morton H. **A new class of polyelectrolytes, polyphenylene sulfonic acid and its copolymers, as proton exchange membranes for PEMFC's**. Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2004), 49(2), 528-529.
 53. Litt, Morton H., Granados-Focil, Sergio, Zhang, Yue, Young, Thomas. **Molecular design of rigid rod polyelectrolytes: Effect of structure on water retention and conductivity**. Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry (2004), 49(2), 594-595.
 54. Granados-Focil, Sergio, Litt, Morton H. **Novel highly conductive poly(phenylene sulfonic acid)s and its evaluation as proton exchange membranes for fuel cells**. Polymeric Materials Science and Engineering (2003), 89, 438-439.
 55. Granados-Focil, S., Litt, M.H., **Novel ionically conductive Poly(phenylene sulfonic acid)s and its evaluation as proton exchange membranes for Fuel cells**. *Gordon Research Conference on Ion-containing polymers*, July 2003.
 56. Granados-Focil, S., Martinez-Sanchez, E., Garcia-Hipolito, M., Ramos-Brito, F., Likhatchev, D., Falcony, D., **Chemical Insertion of Heterocyclic Luminescent Chromophores to Polystyrene via Free Radical Copolymerization** “Congreso Nacional de la Sociedad Mexicana de Ciencia de Superficies y Vacío”(National meeting of the Mexican society on Surface and vacuum sciences) Mazatlán, Sinaloa, 2001.
 57. Granados-Focil, S., Likhatchev, D., **“Nuevos Enfoques Sintéticos para la Obtención de Poliimidazopirrolonas y Poliperimidinas” VII Simposio Latinoamericano de Polimeros** (VII Latin American Polymer Symposium), November 2000.
 58. Likhatchev, D.; Granados-Focil, S.; Guzman-Lucero, D.; Ruiz-Rojas, B. L. **Polyimides starting from bis(o-amino)phenols or aromatic tetraamines: synthesis and transformation chemistry**. Annual Technical Conference - Society of Plastics Engineers (2000)
 59. Likhatchev, D., Granados-Focil, S., Guzman-Lucero, D., and Ruiz-Rojas, B.L., **“Chemical Reactions of Polyamic Acids with Electron Donating Groups in the Diamine Moiety: Model Compounds Study”**, “Concepts and Needs for Low Dielectric Constant Interconnect Materials: Now and the next millennium”. November 1999.

Invited talks

1. Selective polymer-assisted transport: diblock copolymer as solid polymer electrolytes and injectable tissue scaffolds. **Universita Campus Biomedico di Roma, June 28th, 2017.**

2. Harnessing ion transport through polymer matrices: New materials for batteries, sensors and sustainable, energy efficient, buildings. **Chemistry and Biochemistry Department, WPI, April 19th, 2017.**
3. Harnessing ion transport through polymer matrices: New materials for batteries and sensors. **IBM Thomas J. Watson Research Center, April 26th, 2016.**
4. Polymer mediated selective transport: New materials for gene delivery and alternative energy applications. **Chemistry Department, Merrimack College, November 19th, 2015.**
5. Transport through polymer matrices: New Materials for alternative energy and thermal regulation. **Suzhou University, October 2015.**
6. Transport through polymer matrices: New Materials for alternative energy and thermal regulation. **Zhejiang University, October 2015.**
7. Polymer mediated selective transport: New materials for gene delivery and alternative energy applications. **Chemistry Department, Bridgewater State University, February 14th, 2014.**
8. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Chemistry department, University of Connecticut, November 13th, 2013**
9. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Adolphe Merkle Institute. Fribourg, Switzerland, May 23rd, 2013.**
10. Moving Charges Through Polymeric Materials: A Pathway Toward More Efficient Renewable Energy Alternatives. **Chemistry Department, Keene State University, November 14th, 2012.**
11. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Chemistry Department, Southern Connecticut State University, November 2nd, 2012.**
12. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Institute of Materials Science, University of Connecticut, October 26th, 2012.**
13. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Chemistry Department, Harverford College, September 28th, 2012.**
14. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **Materials Science and Engineering department, Harvard University, May 10th, 2012.**
15. Ion Transport Through Polymer Matrices: Triazole bearing sol-gel and polymer membranes as ion transporting membranes for renewable energy applications. **Polymer Science colloquium, Chemistry Department, University of Massachusetts Lowell. March 3rd 2011.**
16. Ion Transport Through Polymer Matrices. **First Annual Nanoworcester symposium, Massachusetts, College of Pharmacy, February 12th, 2011**
17. Ion Transport Through Polymer Matrices: A Systematic Study to Disentangle the Influence of Polymer Backbone Structure, Morphology and Nanoconfinement On Ionic Conductivity. **General Electric Global Research Center. Niskayuna, NY. December 10th 2010.**
18. Design of triazole bearing sol-gel and polymer membranes as ion transporting membranes for renewable energy applications. **Polymer Physics seminar series, Materials Science Department, Penn State University, November 9th 2010.**
19. Design of triazole bearing sol-gel and polymer membranes as ion transporting membranes for renewable energy applications. **Physical Chemistry seminar series, Chemistry Department, University of New Hampshire, April 8th 2010.**
20. Triazole functionalized sol-gel membranes, effect of crosslink density and heterocycle content on water free proton conduction and membrane mechanical properties. **Sukant Tripathy Memorial symposium, University of Massachusetts, Lowell, December 4th 2009.**

Presentations at internal Clark University Events

1. Stockmal, K., Granados-Focil, S., **Polymeric phase change materials for temperature regulation.** Fall Fest 2013.
2. Lattke, Y., Luong, D., Chen, X., Smith, L., Granados-Focil, S., **Synthesis of copper nanoparticles using dihydrophilic block copolymer templates.** Academic spree day 2013.
3. Stockmal, K., Granados-Focil, S., **Effect of backbone polarity on proton-conducting ability of triazole conducting polysiloxanes.** Academic spree day 2013.
4. Stockmal, K., Granados-Focil, S., **Effect of backbone polarity on proton-conducting ability of triazole conducting polysiloxanes.** 24th Harry C. Allen Symposium, 2013.
5. Lattke, Y., Luong, D., Chen, X., Smith, L., Granados-Focil, S., **Synthesis of copper nanoparticles using dihydrophilic block copolymer templates.** 23th Harry C. Allen Symposium, 2013.
6. **Award winner, Best poster competition.**
7. Dewberry, A., Smith, L., Granados-Focil, S., **Optimization of catalytic activity of copper (II) oxide nanocubes,** Academic spree day 2012
8. Gray, H., Granados-Focil, S., **Synthesis of new monomers to produce face-segregated ion-conducting polymers.** Academic spree day 2012.
9. Legacy, C., Granados-Focil, S., **Development of hydroxide-conducting membranes for anionic exchange membrane fuel cells.** Academic spree day 2012.
10. Luong, D., Chen X., Granados-Focil, S., **Synthesis of proton conducting triazole functionalized polymethylacrylates via ATRP.** Academic spree day 2012.
11. Pudalov, S., Granados-Focil, S., **Synthesis and characterization of triazolium iodide ionic liquid electrolytes for dye-sensitized solar cells.** Academic spree day 2012.
12. Trout, W., Wei, J., Granados-Focil, S., **Synthesis of triazole containing cyclobutenes for non-humidified PEM fuel cells.** Academic spree day 2012.
13. Legacy, C., Granados-Focil, S., **Development of hydroxide-conducting membranes for anionic exchange membrane fuel cells.** 23rd Harry C. Allen Symposium, 2012.
14. Luong, D., Chen X., Granados-Focil, S., **Synthesis of proton conducting triazole functionalized polymethylacrylates via ATRP.** 23rd Harry C. Allen Symposium, 2012.
15. Srungavarapu, A., Doyle, R.P., Larochele, D., Thurlow, D., Granados-Focil, S., **Gene delivery via functionalized Poly(ethyleneimine)-DNA poly-plexes.** 23rd Harry C. Allen Symposium, 2012.
Award winner, Best poster competition.
16. Boglisch, P., Granados-Focil, S., **Synthesis of quaternized 4,4'-dibromobiphenyl 2,2'-bisamine derivatives as monomers for copper catalyzed polymerization.** Fall Fest 2011.
17. Legacy, C., Granados-Focil, S., **Synthesis of ammonium functionalized polyphenylenes as anion exchange membranes.** Fall Fest 2011.
18. Srungavarapu, A., Doyle, R. P., Granados-Focil, S., **Gene delivery via functionalized Poly(ethyene imine)-DNA polyplexes.** Fall Fest 2011.
19. Luong, D., Chen X., Granados-Focil, S., **Synthesis of proton conducting triazole functionalized polymethylacrylates via Atom Transfer Radical Polymerization.** Fall Fest 2011
20. Stockmal, K., Granados-Focil, S., **Effect of backbone polarity on the proton conducting ability of proton conducting polysiloxanes.** Fall Fest 2011.
21. Gray, H., Granados-Focil, S., **Synthesis of new monomers to produce face-segregated ion-conducting polymers.** Fall Fest 2011.
22. Trout W., Quan, C., Kokil, A., Kumar, J., Granados-Focil, S., **Iodide conducting polysiloxanes as electrolytes for dye sensitized solar cells.** Academic spree day 2011.
23. Srungavarapu, A., Granados-Focil, S., **Ion transport through polymeric matrices: Towards more efficient rechargeable lithium-ion batteries.** Fall Fest 2010.
24. Quan, C., Granados-Focil, S., **Iodide conducting polysiloxanes for dye-sensitized solar cells.** Fall Fest 2010.
25. Renna, A.J., Granados-Focil, S., **Synthesis and characterization of iodide conducting sol-gel membranes for dye-sensitized solar cells.** Academic spree day 2010.
26. Quan, C., Conway, J., Meng, R., Smith., L., Granados-Focil, S., **Sol-gel threaded proton "shuttles" as proton exchange membranes for hydrogen fuel cells.** Fall Fest 2009.

27. Srungavarapu, A., Meng, R., Smith, L., Granados-Focil, S., **Model compound study of lithium transport through polymeric matrices: Towards better lithium-ion batteries.** Fall Fest 2009.
28. Conway, J., Meng, R., Smith, L., Granados-Focil, S., **Sol-Gel supported proton shuttles as proton exchange membranes for hydrogen fuel cells.** Academic Spree day .
29. Conway, J., Granados-Focil, S., **Sol-Gel supported proton shuttles as proton exchange membranes for hydrogen fuel cells.** Fall Fest 2008.