SERGIO GRANADOS-FOCIL

Gustaf H. Carlson School of Chemistry
Clark University.
(508) 793 7375

950 Main street
Worcester, MA 01610
Email: sgranadosfocil@clarku.edu
Webpage: http://www.clarku.edu/faculty/sgranados/Home.html

CURRENT AND PAST APPOINTMENTS

- Affiliate Associate Professor, Department of Chemistry and Biochemistry, Worcester Polytechnic Institute.
  July 2018-present.
- Research Associate, School of Engineering and Applied Sciences, Harvard University
  2016-present.
- Associate Professor, Gustaf H. Carlson School of Chemistry and Biochemistry, Clark University
  September 2014-present
- Assistant Professor, Gustaf H. Carlson School of Chemistry and Biochemistry, 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

Distinguished Service as Chair, Division of Polymeric Science and Engineering, American Chemical Society. August 2016.

Fellow of the American Chemical Society. August 2017.

RESEARCH FUNDING

2020

1. **U.S. Department of Defense**,STTR: ThermoPylon: Thermal battery systems for garments. (02/01/20-07/31/20) **Funds awarded. $48,999 (SGF, subcontractor)**

2019

2. REU-Supplement**, National Science Foundation**, CBET-Energy for Sustainability: An integrated study of ion dynamics and population distributions to understand the molecular underpinnings of charge transport through self-assembled solid polymer electrolytes. **Funds requested $10,400, SGF, P.I.**
3. REU-Supplement**, National Science Foundation**, CMMI. Collaborative Research: Adaptive Building Enclosure Systems Using Cellular Solid-Solid Phase Change Materials with Variable Transparency. Funds requested, **$16,000, SGF, PI.**

2018

4. **National Science Foundation**, CBET-Energy for Sustainability: An integrated study of ion dynamics and population distributions to understand the molecular underpinnings of charge transport through self-assembled solid polymer electrolytes. **$418,594, SGF, PI.**

2017

5. **National Science Foundation**, CMMI. Collaborative Research: Adaptive Building Enclosure Systems Using Cellular Solid-Solid Phase Change Materials with Variable Transparency. **$198,936, SGF, PI.**
6. Faculty development grant, **Clark University**. Ion selective sensors. **$2,000.**
7. Research agreement, **Abbvie Labs**. Development of Ion Selective Sensors for health care. **$8,926, SGF, PI.**

2014

8. **OneSun Solar**, "Development of Cuprous oxide for photovoltaic applications" **$25,000, SGF, PI.**

2012

9. Marie Curie IRSES. Network for Sensor Knowledge Transfer, funded by the **European commission**. Granted, Travel funds at Stipend for 12 months of visiting graduate student **$70,000, SGF, co-PI.**
10. Center for Functional Nanomaterials, **Brookhaven National Laboratory**. Request for Instrument time. Granted. **SGF, PI**.
11. Faculty development grant, **Clark University**. PEI Mediated Gene Delivery Systems. **$1000.**

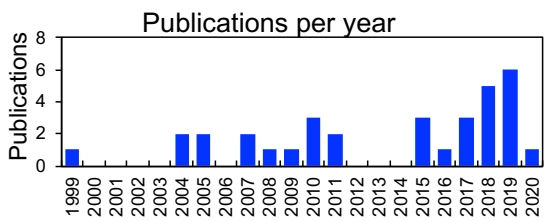
2009

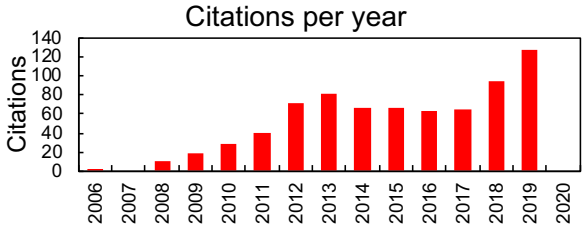
12. Faculty development grant, **Clark University**. Synthesis of Ion Conducting Block Copolymers, **$1,261**

PEER-REVIEWED BOOK CHAPTERS

1. 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**.
2. 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.
3. Van Dessel, S., Tao, M., Granados-Focil, S., **"Bio-inspired building envelopes"**, *Bio-inspired design*. Cambridge University Press, **2019**, *Forthcoming.*

PEER-REVIEWED PUBLICATIONS





	All	Since 2014
Citations	747	487
h-index	12	10
i10-index	16	11

Work done at Clark University
* undergraduate student author, #graduate student author, underlined names indicate the corresponding author(s).

Submitted or in revision.

32. Chen X.#, Datta A.#, Smith, L.J., Granados-Focil S., **Challenging the block copolymer design conventions for ion transport: Diblock copolymers using ionic interactions as a mechanically reinforcing mechanism**. *Solid State Ionics*, In revision.
31. Doyle, R.P.#, Yang Y., and Granados-Focil, S. **Carbonate-mediated alkyl functionalization of poly(ethylene imine), an efficient, mild, route towards fully functionalized PEI backbones**. In revision.

Accepted for publication after promotion to associate professor.

30. Mishra, P.,K., Stockmal, K.A., Ardito, G., Tao, M., Van Dessel, S., Granados-Focil, S., **Thermo-optically responsive phase change materials for passive temperature regulation.** *Accepted, Solar Energy, **2020*** (JIF percentile, 77%).
29. Dillingham, P.W., Alsedi, B.S.O., Granados-Focil S., Radu, A., McGraw, C., **Establishing meaningful limits of detection for ion-selective electrodes and other non-linear sensors.** Accepted*, ACS Sensors*. **2019**, (JIF percentile, 86%).
28. Mendecki, L.#, Granados-Focil, S., Radu, A., **Lumogallion-based fluorescent optical sensor for the determination of aluminium (III) with ultra-low detection limits.**, Accepted, *Analytica Chimica Acta,* **2019**, (JIF percentile, 89%).
27. Crespilho, F.N., Sedenho, G.C.#, De Porcellinis, D., Kerr, E., Granados-Focil, S., Gordon, R.G., Aziz, M.J., **Non-corrosive, Low toxicity, Gel-based Microbattery from Organic an Organometallic Molecules**, *Journal of Materials Chemistry A,* **2019***,* 7, 24784. (JIF percentile, 93%).
26. Yu, X.#; Burnham, N., Granados-Focil, S.; Tao, M.; **Bitumen's microstructures are correlated with its bulk thermal and rheological properties.** *Fuel,* **2019**, 254, 115509. (JIF percentile, 86%).
25. Van Dessel, S., Tao, M., Granados-Focil, S., **Thermal storage system**. U.S. Pat app. **2019** 16/197,698.
24. Granados-Focil, A.A.#, Granados-Focil, S., Conde-Sotelo, V.M., Grimm, R.L., Gonzalez, F., Rojas-Santiago, E., Santolalla-Vargas, C.E., Vera, M.A., De los Reyes, J.A., **Development of bifunctional hydrodeoxygenation catalyst Rh-HY for the generation of biomass-derived high energy density fuels.** *Energy Technology,* **2019***,*1801112. (JIF percentile, 53%).

23. Zhang, M. #, Zhao, M. #, Zhang, G., Sietnis, J. M., Granados-Focil, S., Pepi, M. S., Xu, Y., Tao, M., **Reaction kinetics of red mud-fly ash based geoplymers: Effects of curing temperature on chemical bonding, porosity, and mechanical strength.** *Cement and Concrete Composites*, **2018**, 93, 175-185. ***(5 Citations)*** (JIF percentile, 91%).
22. De Porcellinis, D., Mecheri, B., D'Epifanio, A., Licoccia, S., Granados-Focil, S., Aziz, M.J. **Sulfonated Poly (ether ether ketone) as cation exchange membrane for alkaline redox flow batteries,** *Journal of the Electrochemical Society*, **2018**, 165 (5), A1137-A1139. ***(6 Citations)*** (JIF percentile, 71%).
21. Guldentops, G.#, Ardito, G.#, Tao, M., Granados-Focil, S., Van Dessel, S., **A numerical study of adaptive building enclosure systems using solid-solid phase change materials with variable transparency**. *Energy and Buildings*, **2018**, 167, 240-252. ***(6 Citations)*** (JIF percentile, 87%).
20. 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*, **2018,** 8, 1464-1468**.** ***(13 Citations)*** (JIF percentile, 93%).
19. Yu, X.#; Granados-Focil, S.; Tao, M.; Burnham, N., **Time- and composition- dependent evolution of distinctive microstructures in bitumen**. *Energy and Fuels,* **2018**, 32, 67-80. (***10 Citations)*** (JIF percentile, 59%).
18. 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. ***(53 Citations)*** (JIF percentile, 85%).
17. Wei, J.,# Trout, W.,* Simon, Y.C., Granados-Focil S., Ring opening metathesis polymerization of triazole-bearing cyclobutenes: Di**block 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. ***(4 Citations)*** (JIF percentile, 66%).
16. 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. (***19 Citations)*** (JIF percentile, 92%).
15. 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. ***(21 Citations)*** (JIF percentile, 92%).
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. ***(13 Citations)*** (JIF percentile, 86%).

Accepted for publication prior to promotion to associate professor.

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. ***(45 citations)*** (JIF percentile, 95%).
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)*** (JIF percentile, 25%).
11. Sokolov, A., Atahan-Evrenk, S., Mondal, R., Akkerman, H.B., Sanchéz-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. ***(272 citations)*** (JIF percentile 93%).

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 chemistr*y, **2010**, 47, 1197. ***(3 citations)*** (JIF percentile, 25%).

Work done before moving 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. ***(9 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. ***(11 citations)***
7. Akbey, U., Granados-Focil, S., Coughlin E.B., Graf, R., Spiess, H.W., **^{1}H Solid-State NMR Investigation of Structure and Dynamics of Anhydrous Proton Conducting Triazole-Functionalized Siloxane Polymers**. *J.Phys. Chem. B.,* **2009**, *113*, 9151-9160. ***(47 citations)*** (JIF percentile, 54%).
6. Litt, Morton H., Granados-Focil, Sergio**, Liquid Crystal (polyphenylene sulfonic acids),** *U.S. Pat # 7375,176,* **2008**, 45 pp. ***(10 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. ***(66 citations)*** (JIF percentile, 95%).
4. Marwiset, S., Woudenberg, R.C., Granados-Focil, S., Yavuzcetin, O., Tuominen, M.T., Coughlin, E.B., **Intrinsically conducting polymers and copolymers containing triazole moietie**s, *Solid State Ionics*, **2007**, *178, 23-24,* 1398-1403. ***(68 citations)*** (JIF percentile, 59%).
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-Fócil S., Gaviño R., Canseco M., Alexandrova L., *High Perfomance Polymers,* **1999,** *11 (4),* 1-11. ***(6 Citations)*** (JIF percentile, 40%).
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. Mishra, P., Ardito, G., Tao, M., Van Dessel, S., Granados-Focil, S., **Thermo-optically responsive solid-solid phase change materials as passive temperature-controlling building enclosures**. 24th International Conference on Advanced Materials and Nanotechnology. Rome Italy, October 2019.
2. Yang, Y., Gutierrez-Venegas, V., Nason, W., Smith, L.J., Granados-Focil, S., **Hybrid Mesoporous silica-polymer composites as solid electrolytes for lithium-ion batteries**. 24th International Conference on Advanced Materials and Nanotechnology. Rome Italy, October 2019.
3. Yang, Y., Gutierrez-Venegas, V., Castro-Narro, E., Smith, L.J., Granados-Focil, S., **Solid electrolytes for lithium-ion batteries from blends of hybrid mesoporous sulfonated silica particles functionalized polyethyleneimine.** 12th Meeting of the Mexican Section of the Electrochemical Society. Queretaro, Mexico, June 2019.
4. Mishra, P., Tao, M., Van Dessel, S., Granados-Focil, S., **Stimuli-responsive foams for energy-efficient building enclosure systems.** Abstracts of Papers, 257th ACS National Meeting & Exposition, Orlando, FL, United States, April 2019, PMSE 452
5. Granados-Focil, S., Mishra, P., Stockmal, K.A., Ardito, G., Tao, M., Van Dessel, S., **Phase-Change Coatings with Thermoresponsive Transparency for Building Temperature Regulation**. Waterborne Symposium, New Orleans, LA, February 2019.

6. Tyufekchiev, M., Finzel, J., Pu, D., Schimdt-Rohr, K., Granados-Focil, S., Emmert, M., Timko, M., **Implications of homogeneous acids on interpretation of solid acid activity for cellulose hydrolysis.** Abstracts of Papers, 256th ACS National Meeting & Exposition, Boston, MA, United States, August, 2018 ENVR-25.
7. Conway, J.R.*, Doyle R.P. #, Meng, Y. #, Smith, L., Granados-Focil S., **Teaching old polymers new tricks, pathways towards multifunctional separations for lithium-ion and redox flow batteries and stimuli responsive change materials.** Gordon Research Conference on Membranes: Materials and Processes, July 2018
8. Smith, L., Granados-Focil, S. **Ion dynamics in solid polymer blend electrolytes via inversion of the Laplace transform**. Abstracts of Papers, 255th ACS National Meeting & Exposition, New Orleans, LA, United States, March 20, 2018 POLY-323.
9. Smith, L., Granados-Focil, S. **Probing ion dynamics in solid polymer blend electrolytes via T_1-T_2 correlation NMR and inversion of the Laplace transform**. APS March meeting, Session R43, March 8, 2018, Los Angeles CA.
10. 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.
11. 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.
12. 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, 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017 PMSE-98.
13. 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.
14. 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.
15. 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.
16. 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.
17. Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and thermal regulation.** Chinese Chemical Society Congress, 2015.
18. Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and thermal regulation.** Defense Innovation Summit, 2015.
19. Chen, X. #, Luong, D. *, Stockmal, K.A. *, Granados-Focil, S., **Transport through polymer matrices: New Materials for alternative energy and termal regulation.** Gordon Research Conference on Polymers, 2015.
20. Wei, J. #, Trout, W. *, Granados-Focil, S. **Block copolymer synthesis of triazole-bearing cyclobutene derivatives.** Gordon Research Conference on Polymers, 2015.
21. 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.

22. 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.
23. Granados Focil, Sergio; Mendecki, Lukasz; Stockmal, Kelli A. *; Radu, Aleksandar
24. **1000-fold sensitivity increase on solid-contact ion-selective electrodes by controlling the ionophore/polymer interface.** 249th ACS National Meeting, 2015.
25. Xiaorui Chen#, Derek Luong[1], Manesh Gopinadhan[2], Chinedum Osuji[2], Sergio Granados-Focil[1] **Lithium conducting diblock and triblock copolymers, effect of sulfonated domain size on ionic transport.** XXIII international materials research congress. August 2014.
26. Robert P. Doyle, # Xiaorui Chen#, Max Macrae#, Abhijit Srungavarapu[1], Luis Smith[1], Manesh Gopinadhan[2], Chinedum Osuji[2], Sergio Granados-Focil[1]. **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.
27. Kelli A. Stockmal, Sergio Granados-Focil **Solid-solid phase change materials from paraffin-bearing polymethacrylates and polymethacrylamides.** XXIII international materials research congress. August 2014.
28. Jia Wei, # William Trout and Sergio Granados-Focil[1]. **Diblock copolymer synthesis via ring opening metathesis polymerization of triazole-bearing cyclobutenes.** XXIII international materials research congress. August 2014.
29. 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.
30. 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.
31. 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.
32. 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.
33. Chen, X.#, Luong, D.*, Granados-Focil, S., **Synthesis of ion conducting diblock copolymers for alternative energy applications.** 3rd NanoWorcester Symposium.
34. 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.
35. Stockmal, K.,* Trout, W.,* Granados-Focil, S., **Polymeric phase-change materials for temperature regulation.** 3rd NanoWorcester Symposium.
36. Doyle. R.P.,# Chen X.,# Granados-Focil S., **Post-Polymerization Modification of PEI for lithium-ion conduction.** 3rd NanoWorcester Symposium.
37. 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
38. 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
39. 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
40. 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.
41. 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

42. 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.
43. 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.
44. 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.
45. 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.
46. 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.
47. 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.
48. 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,** PacifiChem congress 2010. Honolulu, HI, Dec. 2010.
49. 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.
50. 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)
51. 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
52. 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.
53. 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

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63. 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.
64. 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.
65. 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 Vacio"(National meeting of the Mexican society on Surface and vacuum sciences)* Mazatlán, Sinaloa, 2001.
66. Granados-Focil, S., Likhatchev, D., **"Nuevos Enfoques Sintéticos para la Obtención de Poliimidazopirrolonas y Poliperimidinas"** *VII Simposio Latinoamericano de Polimeros* (VII Latin American Polymer Simposium), November 2000.
67. 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)
68. Likhatchev, D., Granados-Fócil, 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. Granados-Focil, S., Stockmal, K.A., Mishra, P., Ardito, G., Tao, M., Van Dessel, S., Thermo-optically responsive solid-solid phase change materials as passive temperature-controlling building enclosures. **Workshop on Next Generation Smart Materials, Polymer Chemistry Division, Savannah, GA, December 2019.**
2. Yang, Y., Gutierrez-Venegas, Nason, W., Smith, L.J., Granados-Focil, S., Sulfonated hybrid mesoporous silica-polymer particles solid electrolytes for lithium-ion batteries. **Forum of Revolutions in Renewable Energy in 21st Century. Rome, Italy, October 2019.**

3. De Porcellinis, D., Aziz, M.A., Granados-Focil, S., Sulfonated poly(biphenyl alkylene)s as ion exchange membranes of alkaline redox flow batteries, moving beyond perfluorinated polymers. **Forum of Revolutions in Renewable Energy in 21st Century. Rome, Italy, October 2019.**
4. Selective polymer-assisted transport: diblock copolymer as solid polymer electrolytes and nanoparticle templates. **Rhode Island College, September 28th, 2018.**
5. Selective polymer-assisted transport: diblock copolymer as solid polymer electrolytes and injectable tissue scaffolds. **Universita Campus Biomedico di Roma, June 28th, 2017.**
6. Harnessing ion transport through polymer matrices: New materials for batteries, sensors and sustainable, energy efficient, buildings. **Polymer Science and Engineering Department, University of Massachusetts, Amherst, May 17th, 2017.**
7. Harnessing ion transport through polymer matrices: New materials for batteries, sensors and sustainable, energy efficient, buildings. **Chemistry and Biochemistry Department, WPI, April 19th, 2017.**
8. Harnessing ion transport through polymer matrices: New materials for batteries and sensors. **IBM Thomas J. Watson Research Center, April 26th, 2016.**
9. Polymer mediated selective transport: New materials for gene delivery and alternative energy applications. **Chemistry Department, Merrimack College, November 19th, 2015.**
10. Transport through polymer matrices: New Materials for alternative energy and thermal regulation. **Suzhou University, October 2015.**
11. Transport through polymer matrices: New Materials for alternative energy and thermal regulation. **Zhejiang University, October 2015.**
12. Polymer mediated selective transport: New materials for gene delivery and alternative energy applications. **Chemistry Department, Bridgewater State University, February 14th, 2014.**
13. 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**
14. 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.**
15. Moving Charges Through Polymeric Materials: A Pathway Toward More Efficient Renewable Energy Alternatives. **Chemistry Department, Keene State University, November 14th, 2012**.
16. 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.**
17. 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.**
18. 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.**
19. Ion Transport Through Polymer Matrices: New insights into the design of polymer films as ion conducting membranes for renewable energy applications. **School of Engineering and Applied Sciences, Harvard University, May 10th, 2012.**
20. 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.**
21. Ion Transport Through Polymer Matrices. **First Annual Nanoworcester symposium, Massachusetts, College of Pharmacy, February 12th, 2011**
22. 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.**

23. 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.**
24. 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.**
25. 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.**

ACADEMIC SERVICE/RESPONSIBILITIES

Service outside Clark University.
After promotion and tenure

- *Tenure promotion case reviewer for WPI (2016 and 2017)*
- *Grant application reviewer for the NSF-DMR polymer division*.
  Fall 2009-present.
- *Grant application reviewer for the ACS PRF.*
  Fall 2010-present.
- *Blind reviewer* for peer-reviewed journals:
  - The Journal of Applied Polymer science,
  - The Journal of Membrane Science,
  - The Journal of Physical Chemistry C,
  - The Journal of Macromolecular Science –part A,
  - ACS Macroletters,
  - Reactive functional polymers,
  - Macromolecules,
  - Journal of Polymer Science, Part A, Polymer Chemistry,
  - Industrial & Engineering Chemical Research,
  - Energy and Fuels,
  - Energy and Buildings,
  - Cement and Concrete Composites.

  Spring 2009-present.
- *Team leader, website content committee, Polymeric Materials Science and Engineering Division of the American Chemical Society.*
  August 2018-Present
- *Past Chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society (Technical division of the American Chemical Society with approximately more than 3500 active members, an operating budget of more than $250K/yr and a more than $1.2M in endowed funds)*.
  January 2016-December 2016
- *Chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society. (Technical division of the American Chemical Society with approximately more than 3500 active members, an operating budget of more than $250K/yr and a more than $1.2M in endowed funds)*
  January 2015-December 2015
- *Chair-elect for the Polymeric Materials Science and Engineering Division of the American Chemical Society. (Technical division of the American Chemical Society with approximately more than 3500 active members, an operating budget of more than $250K/yr and a more than $1.2M in endowed funds)*
  January 2014-December 2014.

Prior to promotion and tenure

- *Co-Organizer of the NanoWorcester symposium*.
  2013, 2015.

- *Vice chair for the Polymeric Materials Science and Engineering Division of the American Chemical Society*. (*Technical division of the American Chemical Society with approximately more than 3500 active members, an operating budget of more than $250K/yr and a more than $1.2M in endowed funds)*
  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. (Technical division of the American Chemical Society with approximately more than 3500 active members, an operating budget of more than $250K/yr and a more than $1.2M in endowed funds)*
  January 2011-December 2012.

Service within Clark University.

After promotion and tenure
University-wide service

- *Admissions committee*
  2019-2022
- *Election candidate for PBR.*
  Spring 2019, (Justin Thackeray was elected)
- *Member of FRC.*
  2018-2019
- *Volunteer to serve in the admissions committee*
  2018-2019, Not selected.
- *Election candidate for PBR (Patrick Derr was elected)*
  Fall 2018, Not Elected.
- *Nominee for candidacy, PBR, not selected*
  Spring 2018.
- *Election candidate for Faculty Secretary. (Mark Miller was elected)*
  Spring 2018.
- *Election candidate for COP (Li Han was elected)*
  Spring 2017.
- *Election candidate for Faculty Vice-Chair (Doug Little was elected)*
  Spring 2015.
- *Member of the Working Committee on scheduled salary increases.*
  Spring 2015
- *Member of College Board.*
  Spring 2015.

Departmental service

- *Promotion evaluation case preparer* for Prof. Noel Lazo.
  Spring 2019.
- *Graduate program coordinator for the Chemistry department.*
  Fall 2017-Present
- *Tenure evaluation case preparer* for Prof. Charles Jakobsche.
  Fall 2017.
- *Self-study preparer (scholarship and graduate education sections)*
  Fall 2016.
- *Presenter for the Accepted Students open house*.
  Spring 2015, 2018, 2019
- *Pre-tenure evaluation case preparer* for Prof. Charles Jakobsche.
  Fall 2014.

- *LEEP mentor*.
  Summer 2014, 2015.
- *Preventive Maintenance, Training and repair coordination of Departmental Analytical Instrumentation*
  a. Differential scanning calorimeters (2 instruments),
  b. Thermogravimetric Analyzer (1 instrument),
  c. Fourier Transform Infrared Spectrometers (2 instruments),
  d. Gel Permeation chromatograph (1 instrument),
  e. Gas Chromatograph-Mass Spectrometer (1 instrument), became responsible for instrument in 2013.
  f. Scanning Electron Microscope (1 out of 2 instruments), became responsible for instrument in 2013
  g. Inductively Coupled Plasma Atomic Emission Spectrometer (1 instrument), became responsible for instrument in 2017.

  Fall 2008-Present.

Prior to promotion and tenure

- *Faculty mentor for the chemistry club.*
  Fall 2009-2015.
- *Co-Organizer of the Annual Harry Allen Symposium*.
  Spring 2009, Spring 2014.
- *Election candidate for UAB.*
  Spring 2013.
- *LEEP mentor*.
  Summer 2013.
- *Presenter for the Accepted Students open house*.
  Spring 2010, 2011, 2013.
- *Member of the Chemistry Department Faculty search committee*.
  Fall 2010, Fall 2011.
- *Member of the Physics Department Faculty search committee*.
  Fall 2010.
- *First-year Academic advisor*, Clark University.
  Fall 2008-present.
- *Speaker for the Science preview day*.
  Spring 2009.
- *Host for the Alumni weekend*.
  Spring 2010.
- *Member of the Undergraduate Judicial Board*.
  Fall 2009.

OUTREACH TO THE SURROUNDING COMMUNITY.

- Hosted and mentored High school student Neelasha Batchartajee from Shrewsbury High School who developed a cooking lipid thermal stability study to be used as her 9th grade science project in the Worcester regional science fair.
- 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**
  - **Fall 2008**. Polymer Science (Chem 281/381)
  - **Spring 2009**. Organic Chemistry I (Chem 131)
    Thermal analysis (Chem 289/389)
    Directed study (Chem 299)
  - **Fall 2009**. Organic Chemistry II (Chem 132)
    Directed study (Chem 299)
  - **Spring 2010**. Organic Chemistry I (Chem 131)
    Polymeric Biomaterials (Chem 283/383)
    Directed study (Chem 299)
  - **Fall 2010**. Organic Chemistry II (Chem 132)
  - **Spring 2011**. Organic Chemistry I (Chem 131)
    Polymer Science (Chem 281/381)
    Directed study (Chem 299)
  - **Fall 2011**. Organic Chemistry II (Chem 132)
    Advanced Organic Chemistry (Chem 231/331)
    Directed study (Chem 299)
  - **Spring 2012. Pre-tenure sabbatical leave**
  - **Fall 2012**. Organic Chemistry I (Chem 131)
    Polymer Science (Chem 281/381)
    Honors (Chem 297)
  - **Spring 2013**. Organic Chemistry II (Chem 132)
    Honors (Chem 297)
  - **Fall 2013.** Organic Chemistry I (Chem 131)
    Advanced Organic Chemistry (Chem 231/331)
    Honors (Chem 297)
  - **Spring 2014**. Organic Chemistry I (Chem 131) Lab
    Polymeric Biomaterials (Chem 283/383)
    Honors (Chem 297)
  - **Summer 2014.** The Science of Fermentation (CHEM 012), Leir Luxembourg Program
  - **Fall 2014** Organic Chemistry II (Chem 132)
    Organic Chemistry I (Chem 131) Lab
    Directed study (Chem 299/BCMB 299)
  - **Spring 2015** Organic Chemistry I (Chem 131)
    Polymeric Biomaterials (Chem 283/383)
    Directed study (Chem299/BCMB299)
  - **Fall 2015** Advanced Organic Chemistry (Chem 231/331)
    Organic Chemistry I (Chem 131) Lab
    Directed study (Chem 299/BCMB)
  - **Spring 2016** Directed study (Chem299/BCMB299)
    . Sabbatical leave
  - **Fall 2016** Directed study (Chem 299/BCMB)
    Sabbatical leave
  - **Spring 2017** Directed study (Chem299/BCMB299)
    Honors (Chem 297)
    Polymer Science (Chem 281/381)

Analytical Chemistry (Chem 140)
Thermal analysis (Chem 289/389)

- **Fall 2017** Directed study (Chem 299/BCMB 299)
  1 **Course buyout**
- **Spring 2018** Directed study (Chem 299/BCMB)
  Analytical Chemistry (Chem 140)
  Organic Chemistry II (Chem 132) Lab
- **Fall 2018** Polymer Science (Chem 281/381)
  Organic Chemistry I (Chem 131) Lab
  Directed study (Chem 299/BCMB)
- **Spring 2019** Analytical Chemistry (CHEM 140)
  Organic Chemistry II (CHEM 132)
- **Fall 2019** Thermal Analysis (Chem 289/389)
  1 **Course buyout**
- **Spring 2020** Polymer Science (CHEM 281/381)
  1 **Course buyout**

- **Research Mentor**
  - **Doctoral students (8**)
    - Robert Doyle, Ph.D. May 2014. (Defended January 2014)
    - Sean Chen, Ph.D. August 2015 (Defended July 2015)
    - William Wei, Ph.D. January 2017 (Defended September 2016)
    - Lukasz Mendecki, Ph.D. 2016 (Visiting student, University of Keele)
    - Pramod Mishra (joined group F16)
    - Xiaokong Yu Ph.D. 2017 (WPI student, external committee member F15)
    - Yuxin Yang (joined group F17)
    - Valeria Gutierrez (joined group F18)
    - Ahmed Alamoudi (joined group F18)
    - Jihan El-Ouaragli (WPI student, external committee member F18)
    - Mengxuan Zhao (WPI student, external committee member S19)
  - **Masters students (5)**
    - Justin Conway, M.S. ‘11
    - Abhijit Srungavarapu, M.S. ‘13
    - Rachel Rockwell, M.S. ‘13
    - Thanaphorn Suk-In, M.S. ‘17
    - Anamika Datta, M.S. ‘18
  - **Honors theses (9)**
    - Abhijit Srungavarapu BCMB ’12 (Highest honors)
    - William Trout, B.A. Chemistry ’13 (Honors)
    - Derek Luong, B.A. Chemistry ’13 (High honors)
    - Madeleine Debrosse ’14 (High honors)
    - Laura Migliaccio ’14 (Honors)
    - Kelli Stockmal ’14 (High honors)
    - Elizabeth Chan ’16 (Honors)
    - David Powers ’16 (High honors)
    - Alistair Richardson ’17 (Highest Honors)

  - **Undergraduate students (34)**
    - 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
    - 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
- Stephanie Pudalov, B.A. Chemistry ‘13
- 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
- Alva Tan '17
- Antony Gruness '17
- Tyler Zirkman ‘17
- Graham Bell ‘17
- Jenna Harrison-Peters ‘18
- Jeremy Abdulla ‘18
- Kelsey Perry ‘19
- Alma Araujo ‘20
- Jack Han ‘20
- Estri Milluka ‘20
- Konstantin Drallios ‘21
- Amy Chen ‘21
- Thuy-Mi Le ‘22
- Eduardo Barbosa (Exchange student, Brazil)