Dr. Pengfei Cao

Staff Scientist
Chemical Sciences Division
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Position

- **Staff Scientist**
  Soft Materials Group, Chemical Sciences Division, Oak Ridge National Lab 2019 -

- **Postdoctoral Research Associate**
  Soft Materials Group, Chemical Sciences Division, Oak Ridge National Lab 2016 - 2018

Education

- **Ph.D.** of Macromolecular Science and Engineering,
  Department of Macromolecular Science and Engineering,
  Case Western Reserve University, Cleveland, USA Dec. 2015
- **M.S.** of Polymer Chemistry and Physics,
  Department of Chemistry, Tianjin University, Tianjin, China, Jul. 2010
- **B.E.** of Applied Chemistry
  Department of Chemistry, Tianjin University, Tianjin, China, Jul. 2008

Research Expertise

Dr. Pengfei Cao is a polymer chemist with expert in the design and synthesis of polymeric materials with controlled architectures and defined properties for both fundamental studies and application investigation. His current research interest mainly focused on two directions: 1) high performance elastomer, like self-healing elastomer and recyclable elastomers; 2) synthetic polymeric material for battery applications, like polymer binder, polymer electrolyte and polymeric protection layer. He also applied the synthetic polymers for building related applications, like sealant and insulant panel. Till now, he published 48 peer-reviewed journal publications (29 1st/corresponding authored) and 2 two book chapters.

Teaching and Mentoring Experience

Teaching Assistant

- Polymer Chemistry. (Fall semester of 2014 and 2015)
- Polymer Chemistry Lab. (2013.9-2015.5, four semesters)
- Organic Chemistry Lab. (2010.9-2012.5, four semesters)

Research Mentor:

Postdoc, Post-Master and Undergraduate Students at ORNL.

Master and PhD Students at Case.

Research Experience

Staff Scientist in Oak Ridge National Lab

- High-Performance Elastomers
  - Upcycling, High-performance Elastomers.
  - Self-healing, Adhesive Polymer for Building Technology
- Synthetic Polymers for Energy Storage
  - Single Lithium-ion Conducting Polymer Electrolyte for Lithium-ion Battery
  - Synthetic Polymer Binder for Silicon Anode in Lithium-ion Battery
  - Artificial Polymeric SEI layer for Lithium-metal electrode

Graduate Students in Case Western Reserve University and Tianjin University

- Topologically Interesting Polymers,
  - Catenated polymers
  - Knotted polymers
- Dendritic Polymers
  - Amphiphilic Star-like Copolymer as Nanocarrier
  - Light-sensitive Dendritic Polymers
  - Hybrid Polymer-Noble Metal Nanoparticles
  - Electrochemical Active dendritic polymers.
- Others
  - Flow Chemistry for High-efficiency Polymer Synthesis.
  - Multilayer Polymer Film/Microparticle using Melting Co-extrusion
  - Modified Polymers for Oil-Gas Applications, such as Enhanced Oil Recovery (EOR).

Peer Reviewer Experience

Advanced Materials, Physical Review Letters, Advanced Functional Materials, Small, ACS Applied Material and Interface, Macromolecules, Chemistry-A European Journal, Polymer Reviews, Polymer Chemistry, Advanced Material Interface, Reactive and Functional Polymer, Polymer, and Macromolecular Research

Funded Grant

Preinstalled Sealant for Prefab Components, role: Technically Leading PI, Funding Opportunities Announcement (FOA), Building Technology Office (BTO), DOE, DE-FOA-0002099, $1,000,000, 2020-2022.

Surpassing Stiffness-Extensibility Trade-off in Elastomers, role: Leading PI, Director's R&D Fund, Project ID: 9899, $756,000,

2019-2021.

Controlling Reversibility in Next-generation Upcycling Polymers, role: co-PI, Director's R&D Fund, Project ID: 9899, $1,500,000, 2019-2021.

High-Energy Density Hybrid and All-Solid-State Batteries and Manufacturing, role: co-PI, Director's R&D Fund, Project ID: 9798, $1,800,000, 2019-2021.

Deconstruction of plastics into useful fuels using single atom catalysts, role: co-PI, Seed Fund, Project ID: 9940, $ 190,000, 2019-2020

Self-healing barrier films for vacuum insulation panels, role: co-PI, Seed Fund, Project ID: 8520. ORNL SEED. $190,000, 2017-2018.

Self-healing films to improve durability of vacuum insulation panels by in-situ remediation of film defects, role; Co-PI, Lab Open Call, $500,000 for FY2019; $ 300,000 for 2019-2020

Primer-Less Self-Healing Sealants for Building Envelopes, role: Co-PI, DOE Lab Open Call, $250,000 for 2018-2019; $ 20,000 for 2019-2020.

Journal Publications (48 in total, 29 1st/corresponding authored)

1. Shilun Gao, Feiyuan Sun, Alexander Brady, Yiyang Pan, Andrew Erwin, Dandan Yang, Vladimir Tsukruk, Andrew G Stack, Tomonori Saito, Huabin Yang,* and **Peng-Fei Cao,*** Ultra-efficient polymer binder for silicon anode in high-capacity lithium-ion batteries, ***Nano Energy***, In Press
2. **Peng-Fei Cao,*** Bingrui Li, Guang Yang, Sheng Zhao, Jacob Townsend, Kunyue Xing, Zhe Qiang, Konstantinos D. Vogiatzis, Alexei P. Sokolov, Jagjit Nanda, and Tomonori Saito* Elastic Single-ion Conducting Polymer Electrolytes: Towards a Versatile Approach for Intrinsically Stretchable Functional Polymers**,** ***Macromolecules*****,** In Press
3. Yiyang Pan, Sirui Ge, Zahid Rashid, Shilun Gao, Andrew J Erwin, Vladimir V Tsukruk, Konstantinos D Vogiatzis, Alexei P Sokolov, Huabin Yang,* **Peng-Fei Cao,*** Adhesive Polymers as Efficient Binders for High-Capacity Silicon Electrodes, ***ACS Applied Energy Materials*****,** In Press
4. Sirui Ge, Martin Tress, Kunyue Xing, **Pengfei Cao,** Tomonori Saito, and Alexei Sokolov,* Viscoelasticity in associating oligomers and Q2 polymers: experimental test of the bond lifetime renormalization model. ***Soft. Matter.*** 2020, 16, 2, 390-401,
5. **Peng-Fei Cao,*** Guang Yang, Bingrui Li, Yiman Zhang, Sheng Zhao, Shuo Zhang, Andrew Erwin, Zhengcheng Zhang, Alexei P. Sokolov, Jagjit Nanda,* and Tomonori Saito,* Rational Design of Multifunctional Binder for High-Capacity Silicon Based Anodes, ***ACS Energy Letter***, **2019**, 4, 1171-1180 (**DOE-EERE Highlights**).
6. Tao Hong, **Peng-Fei Cao,*** Sheng Zhao, Bingrui Li, Connor Smith, Michelle Lehmann, Andrew J. Erwin, Shannon M. Mahurin, Surendar R. Venna, Alexei P. Sokolov, and Tomonori Saito,* Tailored CO2-philic Gas Separation Membranes *via* One-Pot Thiol-ene Chemistry, ***Macromolecules***, 2019, 52, 15, 5819-5828.
7. Liyuan Geng, Dandan Yang, Shilun Gao, Zhaoxiang Zhang, Feiyuan Sun, Yiyang Pan, Shaoqi Li, Xiaohua Li, **Peng-Fei Cao,* and** Huabin Yang* Facile Fabrication of Porous Si Microspheres from Low-Cost Precursors for High-Capacity Electrode, ***Advanced Material & Interfaces***, 2019, 1901726.
8. Martin Tress,* Kunyue Xing, Sirui Ge, **Pengfei Cao**, Tomonori Saito, and Alexei Sokolov, What dielectric spectroscopy can tell us about supramolecular networks, ***The European Physical Journal E***, 2019, 42,10,133.
9. Yiyang Pan, Shilun Gao, Feiyuan Sun, Huabin Yang,* and **Peng-Fei Cao*** Polymer Binders Constructed through Dynamic

Noncovalent Bonds for High-Capacity Silicon-Based Anodes, ***Chemistry-A European Journal***, 2019, 25, 47, 10976-10994.

10. Qiyi Chen, Jiayu Zhao, Jingbo Ren, Lihan Rong, **Peng-Fei Cao**, Rigoberto C Advincula,* 3D Printed Multifunctional, Hyperelastic Silicone Rubber Foam, ***Advanced Functional Materials***. **2019**, 29, 23, 1900469.
11. Shilun Gao, Dandan Yang, Yiyang Pan, Liyuan Geng, Shaoqi Li, Xiaohua Li, **Peng-Fei Cao,*** Huabin Yang,* From natural material to high-performance silicon based anode: Towards cost-efficient silicon based electrodes in high-performance Li-Ion batteries, ***Electrochimica Acta***, **2019**, 135058
12. Kaushik Biswas,* Dustin Gilmer, Natasha Ghezawi, **Pengfei Cao**, Tomonori Saito,* Demonstration of self-healing barrier films for vacuum insulation panels, ***Vacuum***, **2019**, 164, 132-139.
13. Yun-Hui Yan, Li-Han Rong, Jin Ge, Brylee David B Tiu, **Peng-Fei Cao**, Rigoberto C Advincula,* Mussel-Inspired Hydrogel Composite with Multi‐Stimuli Responsive Behavior, ***Macromolecular Materials and Engineering***, **2019**, 1800720.
14. Guang Yang, Robert L. Sacci, Ilia N. Ivanov, Rose Ruther, Kevin Hays, Yiman Zhang, **Peng-Fei Cao,** Gabriel M. Veith, Nancy J. Dudney, Tomonori Saito, Daniel T. Hallinan, and Jagjit Nanda, Probing Electrolyte Solvents at Solid/Liquid Interface Using Gap-Mode Surface-Enhanced Roman Spectroscopy, ***Journal of The Electrochemical Society*****, 2019,** 166(2) A1-A10.
15. **Peng-Fei Cao,*** Bingrui Li, Tao Hong, Jacob Townsend, Zhe Qiang, Kunyue Xing, Konstantinos D. Vogiatzis,b Yangyang Wang, Alexei P. Sokolov, and Tomonori Saito.* Super-Stretchable, Self-Healing Polymeric Elastomers with Tunable Properties. ***Advanced Functional Materials***. **2018**, 1800741**.** (ORNL highlight, DOE highlight)
16. Kunyue Xing, Martin Tress, **Peng-Fei Cao**,* Fei Fan, Shiwang Cheng, Tomonori Saito, and Alexei Sokolov.* The role of chain-end association life time in segmental and chain dynamics of telechelic polymers. ***Macromolecules***, **2018**, 51, 8561-8573.
17. Piaoran Ye, **Peng-Fei Cao,*** Qiyi Chen, and Rigoberto Advincula.* Continuous Flow Fabrication of Block Copolymer Grafted Silica Micro-particles in Environmentally Friendly Water/Ethanol Media, ***Macromolecular Materials and Engineering*****. 2018,** 1800451.
18. **Peng-Fei Cao,*** Michael Naguib, Zhijia Du, Eric Stacy, Bingrui Li, Tao Hong, Kunyue Xing, Dmitry N. Voylov, Jianlin Li, David L. Wood, III, Alexei P. Sokolov, Jagjit Nanda, and Tomonori Saito,* Effect of Binder Architecture on the Performance of Silicon/Graphite Composite Anodes for Lithium Ion Batteries, ***ACS Appl. Mater. Interfaces,*** **2018**, 10, 3470−3478.
19. Kunyue Xing, Martin Tress, **Pengfei Cao,*** Shiwang Cheng, Tomonori Saito, Vladimir N. Novikov, and Alexei P. Sokolov,* Hydrogen-bond strength changes network dynamics in associating telechelic PDMS, ***Soft Matter***, **2018**, 14, 1235-124.
20. **Peng-Fei Cao**, Al de Leon, Lihan Rong, Ke-Zhen Yin, Eric C. Abenojar, Zhe Su, Brylee Tiu, Agata A. Exner, Eric Baer, Rigoberto C. Advincula* Polymer Nanosheet Containing Star-like Copolymers: a Novel Scalable Controlled Release System, ***Small***, **2018,** 14, 1800115**.**
21. Ana Sousa-Castillo, Leonardo N. Furini, Brylee David B. Tiu, **Peng-Fei Cao**, Begum Topcu, Miguel Comesana-Hermo, Benito Rodriguez-Gonzalez, Walid Baaziz, Ovidiu Ersen, Rigoberto Advincula,* Moises Perez-Lorenzo,* and Miguel A. Correa-Duarte.* Plasmonic Retrofitting of Membrane Materials: Shifting from Self-Regulation to On-Command Control of Fluid Flow, ***Advanced Materials***, **2018**, 1707598.
22. Qiyi Chen, **Pengfei Cao,** and Rigoberto C. Advincula.* Mechanically Robust, Ultra-Elastic Hierarchical Foam with Tunable Properties via 3D Printing, ***Advanced Functional Materials***, **2018,** 28, 1800631.
23. Tao Hong, Sophia Lai, Shannon M. Mahurin, **Peng-Fei Cao**, Dmitry N. Voylov, Harry M. Meyer III, Christopher B. Jocobs, Jan-Michael Y. Carrillo, Alexander Kisliuk, Illia N. Ivanov, De-en Jiang, Brian K. Long, Jimmy W. Mays, Alexei Sokolov, Tomonori Saito* Highly Permeable Oligo(ethylene oxide)-co-poly(dimethylsiloxane) Membranes for Carbon Dioxide Separation, ***Advanced Sustainable Systems***. **2018,** 2, 1700113.

24. Kevin A. Haysa, Rose E. Ruthera, Alexander J. Kukaya, **Pengfei Cao,** Tomonori Saito, David L. Wood III, Jianlin Li.* What makes lithium substituted polyacrylic acid a better binder than polyacrylic acid for silicon-graphite composite anodes? ***Journal of Power Sources***, **2018**, 384, 136-144.
25. **Peng-Fei Cao**,* Bingrui Li, Tao Hong, Kunyue Xing, Dmitry Voylov, Shiwang Cheng, Panchao Yin, Alexander Kisliuk, Shannon Mahurin, Alexei Sokolov, Tomonori Saito.* A Robust and Elastic Polymer Membrane with Tunable Properties for Gas Separation. ***ACS Applied Material & Interfaces***, **2017,** 9(31), 26483-26491.
26. Vera Bocharova,* Zaneta Wojnarowska, **Peng-Fei Cao,*** Yao Fu, Rajeev Kumar, Bingrui Li, Vladimir N Novikov, Sheng Zhao, Alexander M Kisliuk, Tomonori Saito, Jimmy W Mays, Bobby G Sumpter, Alexei P Sokolov*, Influence of Chain Rigidity and Dielectric Constant on the Glass Transition Temperature in Polymerized Ionic Liquids, ***The Journal of Physical Chemistry B***, **2017,** 121 (51), 11511–11519.
27. **Peng-Fei Cao,** Li-Han Rong, Joey Dacula Mangadlao, and Rigoberto Advincula.* Synthesizing a Trefoil Knotted Block Copolymer via Ring-expansion Strategy. ***Macromolecules*, 2017**, 50(4), 1473-1481.
28. **Peng-Fei Cao,*** Zaneta Wojnarowsk, Tao Hong, Bobby Carroll, Bingrui Li, Hongbo Feng, Leo Parsons, Weiyu Wang, Bradley S. Lokitz, Shiwang Cheng, Vera Bocharova, Alexei P. Sokolov, and Tomonori Saito* A star-shaped single lithium-ion conducting copolymer by grafting a POSS nanoparticle, ***Polymer,* 2017,** 124(25), 117-127.
29. Pianran Ye, **Peng-Fei Cao,*** Zhe Su, Rigoberto Advincula,* Highly efficient reversible addition-fragmentation chain-transfer polymerization in ethanol/water *via* flow chemistry. ***Polymer International***, **2017,** 66(9), 1252-1258.
30. Joey Mangadlao, **Pengfei Cao,** Diana Choi, and Rigoberto C. Advincula.* Photoreduction of Graphene Oxide and Photochemical Synthesis of Graphene–Metal Nanoparticle Hybrids by Ketyl Radicals. ***ACS Applied Material & Interfaces***, **2017**, 9(29), 24887-24898.
31. Shiwang Cheng,* Shi-Jie Xie, Jan-Micheal Y. Carrilo, Bobby Carroll, Halie Martin, **Peng-Fei Cao,** Mark D. Dadmun, Bobby G. Sumpter, Vladimir N. Novikov, Kenneth S. Schweizer, and Alexei P. Sokolov.* Big Effect of Small Nanoparticles: A Shift in Paradigm for Polymer Nanocomposites. **ACS Nano**, **2017**, 11(1), 752-759.
32. **Peng-Fei Cao,** Yun-Hui Yan, Joey Mangadlao, Li-Han Rong, and Rigoberto Advincula.* Star-like Copolymers Stabilized Noble-Metal Nanoparticle Powders. ***Nanoscale***, **2016,** 8, 7435-7442. *(cover page story).*
33. Amy M Wen, Karin L. Lee, **Peng-Fei Cao**, Katrina Pangilinan, Bradley L. Carpenter, Patricia Lam, Frank Veliz, Reza A. Ghiladi, Rigoberto C Advincula, and Nicole F Steinmetz.* Utilizing Viral Nanoparticle/Dendron Hybrid Conjugates in Photodynamic Therapy for Drug Delivery to Macrophages and Cancer Cells. ***Bioconjugate Chem***. **2016**, 27(5) 1227-1235.
34. **Peng-Fei Cao**, Joey Mangadlao, and Rigoberto Advincula.* Trefoil Knotted Polymer Produced through Ring-expansion. ***Angewandte Chemie International Edition***, **2015**, 54, 5127-5131.
35. **Peng-Fei Cao,** Li-Han Rong, Al de Leon, Zhe Su, and Rigoberto Advincula.* A Supramolecular Polyethylenimine-cored Carbazole Dendritic Polymer with Dual Applications. ***Macromolecules***, **2015**, 48, 6801-6909.
36. **Peng-Fei Cao,** Zhe Su, Al de Leon, and Rigoberto Advincula.* Photoswitchable Nanocarrier with Reversible Encapsulation Properties. ***ACS Macro Letter***, **2015**, 4, 58-62.
37. **Pengfei Cao**, Joey Mangadlao, and Rigoberto Advincula.* Stimuli-Responsive Polymers and their Potential Applications in Oil-Gas Industry. ***Polymer Reviews*，2015***, 55,* 706-733.
38. **Peng-Fei Cao**, Joey Dacula Mangadlao, Al de Leon, Zhe Su, and Rigoberto Advincula.* Catenated Poly(ε-caprolactone) and Poly(L-lactide) *via* Ring-expansion Strategy. ***Macromolecules***, **2015**, 48, 3825-3833. (Top 5 Most Read Articles in June 2015 of *Macromolecules; Featured in Synfacts*)
39. Ajaykumar Bunha, **Peng-Fei Cao**, Joey Mangadlao, Feimo Shi, Edward Foster, Katrina Pangilian and Rigoberto Advincula.* Polymeric catenanes synthesized *via* "click" chemistry and atom transfer radical coupling, ***Chemical***

Communication, **2015**, 51, 7528-7531.

40. Joey Mangadlao, Al de Leon, Mary Jane Felipe, **Peng-Fei Cao**, Paul Advincula and Rigoberto C. Advincula.* Grafted Carbazole-Assisted Electrodeposition of Graphene Oxide. ***ACS Applied Material & Interfaces,*** **2015***,* 7, 10266-10274.
41. Joey Mangadlao, **Pengfei Cao**, Rigoberto Advincula.* Smart Cements and cement additives for oil gas operations. ***Journal of Petroleum Science and Engineering***, **2015**, 129, 63-76.
42. Ajaykumar Bunha, **Peng-Fei Cao**, Joey Mangadlao and Rigoberto Advincula.* Cyclic poly(vinylcarbazole) *via* ring-expansion polymerization RAFT (REP-RAFT). ***Reactive and Functional polymers,*** **2014**, 80, 33-39.
43. **Peng-Fei Cao**, Mary Jane Felipe and Rigoberto C. Advincula.* On the Formation and Electropolymerization of a Star Copolymer with Peripheral Carbazoles. ***Macromolecular Chemistry and Physics,*** **2013**, 214, 386-395.
44. **Peng-Fei Cao**, Ajaykumar Bunha, Joey Mangadlao, Mary Jane Felipe, Katrina Irene Mongcopa and Rigoberto Advincula.* Supramolecularly Templated Catenane Initiator and a Controlled Ring Expansion Strategy. ***Chemical Communication***, **2012**, 48, 12094-12096.
45. **Peng-Fei Cao**, Rong-Xu Zhao, Lin Li, Wen-Wen Yang, Fa Cheng, Yu Chen,* Cong-Hua Lu, Shi-Chun Jiang.* Covalently stabilizied vesicles derived from amphiphilic multiarm star polymers: Preparation, characterization, and their capability of hosting different polarity of guests. ***Journal of Polymer Science, Part A: Polymer Chemistry***, **2012**, *50*, 227-236.
46. **Peng-Fei Cao**, Rui Xiang, Xun-Yong Liu, Chun-Xiao Zhang, Fa Cheng, Yu Chen.* Modulating the Guest Encapsulation and Release Properties of Multi-Arm Star Polyethylenimine-*block*-Poly (ε-caprolactone). ***Journal of Polymer Science, Part A: Ploymer Chemistry,*** **2009**, 47, 5184-5193.
47. Xing-Long Lou, Fa Cheng, **Peng-Fei Cao**, Qiang Tang, Hua-ji Liu, Yu Chen.* Self-assembled Supramolecular Nanocarrier Hosting Two Kinds of Guests in Site-Isolation State. ***Chemistry-A European Journal,*** **2009**, 15, 11566-11572.
48. Xulong Cao, Zhenquan Li, Xinwang Song, Xiaohong Cui, **Pengfei Cao,** Huaji Liu, Fa Cheng, Yu Chen*. Core-shell type multiarm star poly (ε-caprolactone) with high molecular weight hyperbranched polyethylenimine as core: Synthesis, characterization and encapsulation properties. ***European Polymer Journal*****, 2008**, 44, 1060-1070.

Book Chapters

1. **Peng-Fei Cao**, Edward Foster, Al de Leon, Rigoberto Advincula.* Living Radical Polymerization from Colloidally-templated Nanopatterned Surfaces. ***Controlled Radical Polymerization: Materials.*** January 1, 2015, 169-185.
2. Al Leon, Brylee Tiu, Joey Mangadlao, Katrina Pangilinan, **Pengfei Cao** and Rigoberto Advincula. Application of Fourier Transform Infrared Imaging. ***Handbook of spectroscopy: Second, Enlarged Edition***.

Patent Application

Tomonori Saito, **Pengfei Cao**, Jagjit Nanda, Micheal Naguid Adelmalak, Block Graft Copolymer Binders and their use in silicon-containing anodes of lithium-ion batteries. Pub. No.: US 2019/0229337 A1

Rigoberto Advincula, Eric Baer, **Pengfei Cao,** Polymer Constructs for Controlled Release of Guest Agents, US Patent App. 16/482,157

Tomonori Saito, **Pengfei Cao,** Super-stretchable self-healing polymer, US Patent App. 16/407,873

Tomonori Saito, **Pengfei Cao**, Jagjit Nanda, Crosslinked functional binders and their use in silicon-containing anodes of lithium-ion batteries, US Patent App. 16/032,207, 2019

Selected Conference Presentations

- **Peng-Fei Cao**, Bingrui Li, Tao Hong, Jacob Townsend, Zhe Qiang, Kunyue Xing, Konstantinos D. Vogiatzis, Yangyang Wang, Alexei P. Sokolov, and Tomonori Saito Super-Stretchable Polymeric Elastomers with Healable Property and Recoverable Functionality, Oral Presentation, New Orlean, **Spring 2018**, ACS National Meeting
- **Peng-Fei Cao,** Zaneta Wojnarowska, Tao Hong, Bobby Carroll, Bingrui Li, Vera Bocharova, Bradley S. Lokitz,c Alexei P. Sokolov, and Tomonori Saito, Star-shaped single lithium-ion conducting copolymer by grafting a POSS nanoparticle, PMSE 598, ***Oral Presentation***, Washington DC, **Fall 2017**, ACS National Meeting.
- **Pengfei Cao,** Michael Abdelmalak, Eric Stacy, Bingrui Li, Tao Hong, Jagjit Nand, Alexei Sokolova, and Tomonori Saito, Multi-grafting Lithium Polyacrylate as High-performance Polymer Binder for Lithium-ion Battery, POLY237, ***Oral presentation***, San Francisco, **Spring 2017**, ACS National Meeting.
- Pengfei Cao, Michael Abdelmalak, Eric Stacyc, Bingrui Li, Tao Hong,c Alexei Sokolov and Tomonori Saito, Architecture Effect of the Multi-grafting Block Copolymer as the Polymer Binder for Lithium-ion Battery, ***Poster*****, June 11-16, 2017**, Gordon Research Conference, Synthetic and Biologically-Derived Polymers.
- **Pengfei Cao,** Lihan Rong, Joey Mangadlao and Rigoberto C. Advincula, Trefoil knotted block copolymer via ring-expansion strategy, POLY640, ***Oral presentation***, San Francisco, **Spring 2017**, ACS National Meeting
- **Pengfei Cao,** Paul A. Advincula and Rigoberto C. Advincula, Synthesis of Catenated poly(ε-caprolactone) *via* Ring-expansion Strategy. ***Oral Presentation***, Indianapolis, **Fall 2013**, ACS National Meeting.
- **Pengfei Cao** and Rigoberto C. Advincula**,** Trefoil knotted polymer *via* ring-expansion strategy. ***Oral presentation***, New Orleans, **Spring 2013**, ACS National Meeting.