

Xue-Hui Dong

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Education

The University of Akron, Akron, OH, 08/2008-12/2013, **Ph.D.** (Polymer Science)
University of Science and Technology of China (USTC), Hefei, China, 9/2004-7/2008, **B.S.** (Polymer Chemistry)

Research Appointments

- **South China University of Technology, Guangzhou, Guangdong Province**
South China Advanced Institute for Soft Matter Science and Technology
Professor Jan. 2017-
- **Massachusetts Institute of Technology, Cambridge, MA**
Lab of Prof. Bradley D. Olsen, Department of Chemical Engineering
Postdoctoral Research Associate Dec. 2013-Dec. 2016
- **University of Akron, Akron, OH**
Lab of Prof. Stephen Z.D. Cheng, Department of Polymer Science
Research Assistant Aug. 2008-Dec. 2013
- **University of Science and Technology of China, Hefei, Anhui Province**
Lab of Prof. Cai-Yuan Pan, Department of Polymer Science and Polymer Engineering
Research Assistant Aug. 2007-Jun. 2008
- **Chinese Academy of Sciences (ICCAS), Beijing, China**
Lab of Prof. Du-Jin Wang, State Key Lab. of Polymer Physics and Chemistry
Research Assistant Jun. 2007-Aug. 2008

Honors

- Youth Thousand Talents Program (2017)
- Department of Polymer Science Travel Award, University of Akron (2012)
- Ronald Eby Graduate Student Award, University of Akron (2009)
- Outstanding Student Scholarship, USTC (2004, 2005, 2007)

Publication List

1. Liu, Z.; Kong, D.; Dong, X.-H.* Two-Dimensional Assembly of Giant Molecules. *Sci. China Chem.* **2018**, doi:10.1007/s11426-017-9136-x

Prior to SCUT

2. Hsu, C.-H.; Yue, K.; Wang, J.; Dong, X.-H.; Xia, Y.; Jiang, Z.; Thomas, E. L.; Cheng, S. Z. D. Thickness-dependent Order-to-order Transitions of Bolaform-like Giant Surfactant in Thin Films. *Macromolecules*, **2017**, DOI: 10.1021/acs.macromol.7b01598
3. Li, Y.; Dong, X.-H.; Zou, Y.; Wang, Z.; Yue, K.; Huang, M.; Liu, H.; Feng, X.; Lin, Z.; Zhang, W.; Zhang, W.-B.; Cheng, S. Z. D. Polyhedral Oligomeric Silsesquioxane Meets "Click" Chemistry: Rational Design and Facile Preparation of Functional Hybrid Materials. *Polymer* **2017**, 125,303-329.
4. Wang, Z.; Huang, Z.; Zhou, N.; Dong, X.-H.; Zhu, X.; Zhang, Z. Quantitatively Monitoring Polymer Chain Growth and Topology Formation based on Monodisperse Polymers. *Polym. Chem.* **2017**, 8, 2346-2352.
5. Dong, X.-H., Obermeyer, A.; Olsen, B. D. Three-Dimensional Ordered Antibody Arrays Through Self-Assembly of Antibody-Polymer Conjugates. *Angew. Chem. Int. Ed.* **2017**, 56, 1273-1277.
6. Milles, C. E.; Obermeyer, A.; Dong, X.-H.; Walker, J.; Olsen, B. D. Complex Coacervate Core Micelles for the Dispersion and Stabilization of Organophosphate Hydrolase in Organic Solvents. *Langmuir*, **2016**, 32, 13367-13376.
7. Obermeyer, A.; Mills, C. E.; Dong, X.-H.; Flores, R.; Olsen, B. D. Complex Coacervation of Supercharged Proteins with Polyelectrolytes. *Soft Matter* **2016**, 12, 3570-3581.
8. Tang, S.; Puryear, W. B.; Seifried, B. M.; Dong, X.-H.; Runstadler, J. A.; Ribbeck, K.; Olsen, B. D. Antiviral Agents from Multivalent Presentation of Sialyl Oligosaccharides on Brush Polymers. *ACS Macro Lett.* **2016**, 5, 413-418.
9. Hsu, C.-H.[†]; Dong, X.-H.[†]; Lin, Z.; Ni, B.; Lu, P.; Jiang, Z.; Tian, D.; Shi, A.-C.; Thomas, E. L.; Cheng, S. Z. D. Tunable Affinity and Molecular Architecture lead to Diverse Self-Assembled Supramolecular Structures in Thin Films. *ACS Nano* **2016**, 10, 919-929. (†Equally Contributed)
10. Zhang, W.; Huang, M.; Su, H.; Zhang, S.; Yue, K.; Dong, X.-H.; Li, X.; Liu, H.; Zhang, S.; Wesdemiotis, C.; Lotz, B.; Zhang, W.-B.; Li, Y.; Cheng, S. Z. D. Toward Controlled Hierarchical Heterogeneities in Giant Molecules with Precisely Arranged Nano-Building Blocks. *ACS Cent. Sci.* **2016**, 2, 48-54.
11. Dong, X.-H.; Hsu, C.-H.; Li, Y.; Liu, H.; Wang, J.; Huang, M.; Yue, K.; Sun, H.-J.; Wang, C.-L.; Yu, X.; Zhang, W.-B.; Lotz, B.; Cheng, S. Z. D. Supramolecular Crystals and Crystallization with Nano-size Motifs of Giant Molecules. *Adv. Polym. Sci.* **2016**, 276, 183-213.
12. Dong, X.-H.; Ni, B.; Huang, M.; Hsu, C.-H.; Bai, R.; Zhang, W.-B.; Shi, A.-C.; Cheng, S. Z. D. Molecular Curvature Induced Spontaneous Formation of Curved and Concentric Lamellae *via* Nucleation. *Angew. Chem. Int. Ed.* **2016**, 55, 2459-2463.
13. Dong, X.-H.; Ni, B.; Huang, M.; Hsu, C.-H.; Chen, Z.; Lin, Z.; Zhang, W.-B.; Shi, A.-C.; Cheng, S. Z. D. Chain-Overcrowding Induced Phase Separation and Hierarchical Structure Formation in Fluorinated Polyhedral Oligomeric Silsesquioxane (FPOSS)-Based Giant Surfactants. *Macromolecules* **2015**, 48, 7172-7179.

14. Lin, Z.; Lu, P.; Hsu, C.-H.; Sun, J.; Zhou, Y.; Huang, M.; Yue, K.; Ni, B.; [Dong, X.-H.](#); Li, X.; Zhang, W.-B.; Yu, X.; Cheng, S. Z. D. Hydrogen Bonding Induced Nanophase Separation in Giant Surfactants Consisted of Hydrophilic Fullerene Tethered on Block Copolymers at Different Locations. *Macromolecules*, **2015**, *48*, 5496-5503.
15. Huang, M.; Hsu, C.-H.; Wang, J.; Mei, S.; [Dong, X.-H.](#); Li, Y.; Li, M.; Liu, H.; Zhang, W.; Aida, T.; Zhang, W.-B.; Yue, K.; Cheng, S. Z. D. Selective Assemblies of Giant Tetrahedra *via* Precisely Controlled Positional Interactions. *Science* **2015**, *348*, 424-428.
16. Ni, B.; Huang, M.; Chen, Z.; Chen, Y.; Hsu, C.-H.; Li, Y.; Pochan, D. J.; Zhang, W.-B.*; Cheng, S. Z. D.*; [Dong, X.-H.*](#) Pathway towards Large Two-Dimensional Hexagonally Patterned Colloidal Nanosheets in Solution. *J. Am. Chem. Soc.* **2015**, *137*, 1392-1395. (*Corresponding author)
17. Yu, X.; Li, Y.; [Dong, X.-H.](#); Yue, K.; Lin, Z.; Feng, X.; Huang, M.; Zhang, W.-B.; Cheng, S. Z. D. Giant Surfactants Based on Molecular Nanoparticles: Precise Synthesis and Solution Self-Assembly. *J. Polym. Sci. Polym. Phys.*, **2014**, *52*, 1309-1325. (Invited Review)
18. Lin, Z.; Lu, P.; Hsu, C.-H.; Yue, K.; [Dong, X.-H.](#); Liu, H.; Guo, K.; Wesdemiotis, C.; Zhang, W.-B.; Yu, X.; Cheng, S. Z. D. Self-Assembly of Fullerene-Based Janus Particles in Solution: Effect of Molecular Architecture and Solvent. *Chem. Eur. J.*, **2014**, *10*, 11630-11635.
19. Xie, T.; Liao, S.-Y.; Guo, K.; Lu, X.; [Dong, X.-H.](#); Huang, M.; Moorefield, C. N.; Cheng, S. Z. D.; Liu, X.; Wesdemiotis, C.; Newkome, G. R. Construction of a Highly Symmetric Nanosphere via a One-Pot Reaction of a Tris(terpyridine) Ligand with Ru(II). *J. Am. Chem. Soc.*, **2014**, *136*, 8165-8168.
20. Su, H.; Li, Y.; Yue, K.; Wang, Z.; Lu, P.; Feng, X.; [Dong, X.-H.](#); Zhang, S.; Cheng, S. Z. D.; Zhang, W.-B. Macromolecular Structure Evolution toward Giant Molecules of Complex Structure: Tandem Synthesis of Asymmetric Giant Gemini Surfactants. *Polym. Chem.*, **2014**, *5*, 3697-3706.
21. Zhang, W.-B.; Yu, X.; Wang, C.-L.; Sun, H.-J.; Hsieh, I.-F.; Li, Y.; [Dong, X.-H.](#); Yue, K.; van Horn, R. M.; Cheng, S. Z. D. Molecular Nanoparticles Are Unique Elements for Macromolecular Science: From “Nanoatoms” to Giant Molecules. *Macromolecules*, **2014**, *47*, 1221-1239. (Invited Perspective)
22. Ni, B.; [Dong, X.-H.*](#); Chen, Z.; Lin, Z.; Li, Y.; Huang, M.; Fu, Q.; Cheng, S. Z. D.*; Zhang, W.-B.* “Clicking” Fluorinated Polyhedral Oligomeric Silsesquioxane onto Polymers: A Modular Approach toward Shape Amphiphiles with Fluorous Molecular Clusters. *Polym. Chem.* **2014**, *5*, 3588-3597. (*Corresponding author)
23. [Dong, X.-H.](#); Lu, X.; Ni, B.; Chen, Z.; Yue, K.; Li, Y.; Rong, L.; Koga, T.; Hsiao, B.; Newkome, G. R.; Shi, A.-C.; Zhang, W.-B.; Cheng, S. Z. D. Molecular Geometrical Effect Study on the Self-Assembly of Linear Polymer-Dendron Giant Conjugates in the Condensed State. *Soft Matter*, **2014**, *10*, 3200-3208.
24. Su, H.; Zheng, J.; Wang, Z.; Lin, F.; Feng, X.; [Dong, X.-H.](#); Becker, M. L.; Cheng, S. Z. D.; Zhang, W.-B.; Li, Y. Sequential Triple Click Approach toward Polyhedral Oligomeric Silsesquioxane-Based Multi-Headed and Multi-Tailed Giant Surfactants. *ACS Macro Lett.* **2013**, *2*, 645-650.
25. [Dong, X.-H.](#); Horn, R. V.; Chen, Z.; Ni, B.; Yu, X.; Wurm, A.; Schick, C.; Lotz, B.; Zhang, W.-B.; Cheng, S. Z. D. Exactly Defined Half-Stemmed Polymer Lamellar Crystals with Precisely Controlled Defects' Locations. *J. Phys. Chem. Lett.*, **2013**, *4*, 2356-2360.
26. Yu, X.; Yue, K.; Hsieh, I.-F.; Li, Y.; [Dong, X.-H.](#); Liu, C.; Xin, Y.; Wang, H.-F.; Shi, A.-C.; Newkome, G. R.; Ho, R.-M.; Chen, E.; Zhang, W.-B.; Cheng, S. Z. D. Giant Surfactants Provide a Versatile Platform for Sub-10-nm Nanostructure Engineering. *Proc. Natl. Acad. Sci.* **2013**, *110*, 10078-10083.

27. Wang, Z.; Li, Y.; [Dong, X.-H.](#); Yu, X.; Guo, K.; Su, H.; Yue, K.; Wesdemiotis, C.; Cheng, S. Z. D.; Zhang, W.-B. Giant Gemini Surfactants Based on Polystyrene–Hydrophilic Polyhedral Oligomeric Silsesquioxane Shape Amphiphiles: Sequential “Click” Chemistry and Solution Self-Assembly. *Chem. Sci.* **2013**, *4*, 1345-1352.
28. Yue, K.; Liu, C.; Guo, K.; Wu, K.; [Dong, X.-H.](#); Liu, H.; Huang, M. J.; Wesdemiotis, C.; Cheng, S. Z. D.; Zhang, W.-B. Exploring Shape Amphiphiles beyond Giant Surfactants: Molecular Design and Click Synthesis. *Polym. Chem.* **2013**, *4*, 1056-1067.
29. Yue, K.; He, J.; Liu, C.; Huang, M. J.; [Dong, X.-H.](#); Guo, K.; Ni, P.; Wesdemiotis, C.; Quirk, R. P.; Cheng, S. Z. D.; Zhang, W.-B. Anionic Synthesis of a “Clickable” Middle-chain Azidefunctionalized Polystyrene and Its Application in Shape Amphiphiles. *Chin. J. Polym. Sci.* **2013**, *31*, 71-82.
30. [Dong, X.-H.](#); Zhang, W.-B.; Li, Y.; Zhang, S.; Huang, M.; Cheng, S. Z. D. Synthesis of Fullerene-Containing Poly(ethylene oxide)-*block*-Polystyrene as Model Shape Amphiphiles with Variable Composition, Diverse Architecture, and High Fullerene Functionality. *Polym. Chem.* **2012**, *3*, 124-134.
31. Li, Y.; [Dong, X.-H.](#); Guo, K.; Wang, Z.; Chen, Z.; Wesdemiotis, C.; Quirk, R. P.; Zhang, W.-B.; Cheng, S. Z. D. Synthesis of Shape Amphiphiles Based on POSS Tethered with Two Symmetric/Asymmetric Polymer Tails *via* Sequential “Grafting-from” and Thiol–Ene “Click” Chemistry. *ACS Macro Lett.* **2012**, 834-839.
32. Rao, T.; [Dong, X.-H.](#); Katzenmeyer, B. C.; Wesdemiotis, C.; Cheng, S. Z. D.; Becker, M. L. High-Fidelity Fabrication of Au–Polymer Janus Nanoparticles Using a Solution Template Approach. *Soft Matter* **2012**, *8*, 2965.
33. Zhang, W.-B.; He, J.; [Dong, X.-H.](#); Wang, C.-L.; Li, H.; Teng, F.; Li, X.; Wesdemiotis, C.; Quirk, R. P.; Cheng, S. Z. D. Improved Synthesis of Fullerynes by Fisher Esterification for Modular and Efficient Construction of Fullerene Polymers with High Fullerene Functionality. *Polymer* **2011**, *52*, 4221-4226.
34. Li, Y.; Zhang, W.-B.; Janoski, J. E.; Li, X.; [Dong, X.-H.](#); Wesdemiotis, C.; Quirk, R. P.; Cheng, S. Z. D. Anionic Synthesis of Mono- and Heterotelechelic Polystyrenes *via* Thiol–Ene “Click” Chemistry and Hydrosilylation. *Macromolecules* **2011**, *44*, 3328-3337.
35. Zhang, W.-B.; Li, Y.; Li, X.; [Dong, X.-H.](#); Yu, X.; Wang, C.-L.; Wesdemiotis, C.; Quirk, R. P.; Cheng, S. Z. D. Synthesis of Shape Amphiphiles Based on Functional Polyhedral Oligomeric Silsesquioxane End-Capped Poly(*l*-Lactide) with Diverse Head Surface Chemistry. *Macromolecules* **2011**, *44*, 2589-2596.
36. Van Horn, R. M.; Zheng, J. X.; Sun, H.-J.; Hsiao, M.-S.; Zhang, W.-B.; [Dong, X.-H.](#); Xu, J.; Thomas, E. L.; Lotz, B.; Cheng, S. Z. D. Solution Crystallization Behavior of Crystalline–Crystalline Diblock Copolymers of Poly(ethylene oxide)-*block*-poly(ϵ -caprolactone). *Macromolecules* **2010**, *43*, 6113-6119.
37. Yang, L.-P.; [Dong, X.-H.](#); Pan, C.-Y. Synthesis of Inverse Star Block Copolymer by Combination of ATRP, Ring Opening Polymerization, and “Click Chemistry”. *J. Polym. Sci. A Polym. Chem.* **2008**, *46*, 7757-7772.
38. Zhang, Y.-Y.; Chen, J.-F.; Zheng, X.-S.; [Dong, X.-H.](#) Preparation of Manganese-doped ZnSe Precursor Nanoribbon Bundles and Investigation of Its Magneto-optical Properties, *Chin. J. Chem. Phys.* **2007**, *20*, 607.

Books and Book Chapters

1. Dong, X.-H.; Huang, A.; Obermeyer, A. C.; Olsen, B. D. (2018) *Self-Assembly of Protein-Polymer Conjugates*. In R. Nagarajan (Ed.), *Self-Assembled Nanomaterials* (pp. xx-xx)
2. Dong, X.-H.; Li, Y.; Lin, Z.; Yu, X.; Yue, K.; Liu, H.; Huang, M.; Zhang, W.-B.; Cheng, S. Z. D. *Solution Self-Assembly of Giant Surfactants: An Exploration on Molecular Architectures*. In R. Nagarajan (Ed.), *Self-Assembled Nanomaterials* (pp. xx-xx)

Patent List

3. Dong, X.-H.; Zhang, W.-B.; Cheng, S. Z. D.; Quirk, R. P. *Process and Method for the Efficient Preparation of Fullerenes*. (2015) US 9,156,696.
4. Mills, C. E.; Obermeyer, A. C.; Dong, X.-H.; Olsen, B. D. Block Copolymer Complex Coacervate Core Micelles for Enzymatic Catalysis in Organic Solvent. (2014) US 62/050823.

Conference Proceedings & Presentations

1. Dong, X.-H.; Zhang, W.-B.; Lu, X.; Li, Y.; Yu, X.; Yue, K.; Cheng, S. Z. D. *Self-assembly of Linear-Dendron Shape Amphiphiles*. MRS Fall Meeting, Boston, MA, **2011**.
2. Dong, X.-H.; Horn, R. V.; Wurm, A.; Schick, C.; Lotz, B.; Zhang, W.-B.; Cheng, S. Z. D. *Exploring Beyond Integral and Non-integral Folding in Polymer Lamellar Crystals: Exactly Defined Half-Folds with Precisely Controlled Defect Locations*. APS Meeting, Baltimore, MD, **2013**.
3. Dong, X.-H.; Ni, B.; Li, Y.; Huang, M.; Zhang, W.-B.; Cheng, S. Z. D. Fluorinated Polyhedral Oligosilsesquioxanes (POSS) based Giant Surfactants. APS Meeting, Denver, CO, **2014**.
4. Dong, X.-H.; Obermeyer, A. C.; Olsen, B. D. Three-Dimensional Ordered Antibody Arrays. APS Meeting, Baltimore, MD, **2016**.
5. Dong, X.-H. Giant Surfactants: Supramolecular Crystals and Crystallization with Nanosized Motifs. Fudan University, **2016**.
6. **Invited Speaker**, *Giant Surfactants: Shape Effect Leads to Diverse Nanostructures*. Outstanding Young Scholar Symposium, South China University of Technology, Guangzhou, **2016**.
7. **Invited Speaker**, *Three Dimensional Ordered Antibody Arrays*. CALM talk: The Second Young Scholar Symposium, Donghua University, Shanghai, **2016**.
8. Invited Speaker, *Giant Surfactants: Shape Effect Leads to Diverse Nanostructures*. Soochow University, Suzhou, **2016**.
9. Invited Speaker, *Giant Surfactants: Shape Effect Leads to Diverse Nanostructures*. Beijing University of Chemical Technology, Beijing, **2016**.
10. Invited Speaker, *Giant Surfactants: Shape Effect Leads to Diverse Nanostructures*. Peking University, Beijing, **2016**.
11. Invited Speaker, *Giant Surfactants: Shape Effect Leads to Diverse Nanostructures*. 2017 International Symposium on Silsesquioxanes-based Functional Materials, Shandong University, Jinan, **2017**.

Synergistic Activities

- Member of the American Physical Society since 2012
- Member of the American Chemical Society since 2013
- Reviewer for internationally renowned journals such as *Macromolecules*, *Polymer Chemistry*, *Polymer*

Technical Products

Fullerynes: Commercialized through *Akron Polymer System* for facile and reliable functionalization with fullerene under mild conditions. The Products include Fulleryne01, Fulleryne02, and Fulleryne03.

See also http://www.akronpolysys.com/store/index_full.php?CategoryID=14&MenuID=29.

Working Experience

Intern, Lubrizol Advanced Materials, Inc., Lubrizol Corporation, Brecksville, OH 2011-2012