Resume

Shiwang Cheng
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Current position:

- Post-doc Oak Ridge National Laboratory, TN Jan. 2014-present

Education:

- PhD Polymer Science (Aug. 2009 – Dec. 2013), The University of Akron, Akron, OH
- B.E Macromolecular Science and Engineering (Sep. 2005~ July 2009), University of Science and Technology of China

Awards:

- Travel Award (Department of Polymer Science, UA) 2013
- Travel Award (Society of Rheology, AIP) 2013
- Padden Award Finalist (American Physical Society) 2014

Research Interest:

I am current working on the segmental and chain dynamics of polymer nanocomposites with a combination of different techniques including Broadband dielectric spectroscopy, Rheology, Brillouin light scattering, Raman scattering, small angle x-ray scattering and inelastic neutron scattering.

Publications: (Google Scholar: https://scholar.google.com/citations?user=QNi6D4MAAAAJ&hl=en)

1. Shi-Qing Wang and ***Shiwang Cheng***, Experiments-inspired molecular modeling of yielding and failure of polymer glasses under large deformation. *Chapter 16 in Polymer Glasses*,edited by C.B. Roth, (Taylor & Francis, **2016**), In press**.**
2. ***Cheng, S.***; Holt, A. P.; Wang, H.; Fan, F.; Bocharova, V.; Martin, H.; Etampawala, T.; White, B. T.; Saito, T.; Kang, N.-G.; Dadmun, M. D.; Mays, J. W.; Sokolov, A. P., Unexpected molecular weight effect in polymer nanocomposites. *Physical Review Letters*, **2016,** *116* (3), 038302.
3. ***Cheng, S***.; Mirigian, S.; Carrillo, J.-M.; Bocharova, V.; Sumpter, B. G.; Schweizer, K. S.; Sokolov, A. P., Revealing spatially heterogeneous relaxation in a model nanocomposite. *Journal of Chemical Physics*, **2015,** *143* (19), 194704.
4. Hong, T.; Niu, Z.; Hu, X.; Gmernicki, K.; ***Cheng, S.***; Fan, F.; Johnson, J. C.; Hong, E.; Mahurin, S.; Jiang, D.-e.; Long, B.; Mays, J.; Sokolov, A.; Saito, T., Effect of Cross-Link Density on Carbon Dioxide Separation in Polydimethylsiloxane-Norbornene Membranes. *ChemSusChem*, **2015**, *8* (21), 3595-3604. ***(Front cover)***.
5. Liu, J.; Lin, P.; ***Cheng, S.***; Wang, W.; Mays, J. W.; Wang, S.-Q., Polystyrene Glasses under Compression: Ductile and Brittle Responses. *ACS Macro Letters*, **2015**, *4* (10), 1072-1076.
6. Carrillo, J.-M. Y.; ***Cheng, S.***; Kumar, R.; Goswami, M.; Sokolov, A. P.; Sumpter, B. G., Untangling the Effects of Chain Rigidity on the Structure and Dynamics of Strongly Adsorbed Polymer Melts. *Macromolecules*, **2015,** *48* (12), 4207-4219.
7. Bocharova, V.; Sharp, D.; Jones, A.; ***Cheng, S.***; Griffin, P. J.; Agapov, A. L.; Voylov, D.;

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Wang, Y.; Kisliuk, A.; Melman, A.; Sokolov, A. P., Enzyme Induced Formation of Monodisperse Hydrogel Nanoparticles Tunable in Size. *Chemistry Materials*, **2015,** *27* (7), 2557-2565.

8. Scavuzzo, J.; Tomita, S.; ***Cheng, S.***; Liu, H.; Gao, M.; Kennedy, J. P.; Sakurai, S.; Cheng, S. Z. D.; Jia, L., Supramolecular Elastomers: Self-Assembling Star–Blocks of Soft Polyisobutylene and Hard Oligo(β-alanine) Segments. *Macromolecules*, **2015,** *48* (4), 1077-1086.
9. Wang, S.-Q.; Liu, G.; ***Cheng, S.***; Boukany, P. E.; Wang, Y.; Li, X., Letter to the Editor: Sufficiently entangled polymers do show shear strain localization at high enough Weissenberg numbers. *Journal of Rheology*, **2014,** *58* (4), 1059-1069.
10. Wang, S. Q.; ***Cheng, S.***; Lin, P.; Li, X., "A phenomenological molecular model for yielding and brittle-ductile transition of polymer glasses". *Journal of Chemical Physics*, **2014,** *141* (9), 094905.
11. Lin, P.; ***Cheng, S.*** and S.-Q Wang, "Strain hardening during uniaxial compression of polymer glasses." *ACS Macro Letters*, **2014**, 784-787.
12. ***Cheng, S.*** and S.-Q. Wang. "Elastic yielding after cold drawing of ductile polymer glasses", *Macromolecules*, **2014**, *47* (11), 3661-3671**.**
13. ***Cheng, S.*** and S.-Q. Wang "Elastic yielding of cold drawn polymer glasses well below glass transition temperature", *Physical Review Letters*, **2013**, *110* (6): 065506
14. Liu, G.; ***Cheng, S.***; Lee, H.; Ma, H.; Xu, H.; Chang, T.; Quirk, R. P.; Wang, S.-Q. "Strain Hardening in Startup Shear of Long-Chain Branched Polymer Solutions", *Physical Review Letters*, **2013**, *111* (6), 068302
15. ***Cheng, S.***; L. Johnson and S.-Q. Wang "Crazing and strain localization of polycarbonate glass in creep", *Polymer*, **2013**, *54* (13), 3363-3369
16. Wang, S.-Q.; Wang, Y.; ***Cheng, S.***; Li, X.; Zhu, X.; Sun, H., "New experiments for improved theoretical description of nonlinear rheology of entangled polymers", *Macromolecules***, 2013**, *46* (8), 3147-3159 (2013).
17. Liu, G.; Ma, H.; Lee, H.; Xu, H.; ***Cheng, S.***; Sun, H.; Chang, T.; Quirk, R. P.; Wang, S. Q., Long-chain branched polymers to prolong homogeneous stretching and to resist melt breakup. *Polymer*, **2013**, *54* (24), 6608-6616.
18. ***Cheng, S.*** and S.-Q. Wang., "Is shear banding a metastable property of well-entangled polymer solutions?" *Journal of Rheology*, **2012**, *56* (6): 1413-1428.
19. Zartman, G. D.; ***S. Cheng***; X. Li; F. Lin; M. Becker and S.Q Wang**.,** "How melt-stretching affects mechanical behavior of polymer glasses." *Macromolecules*, **2012**, *45* (16): 6719-6732.
20. Wang, Y.; ***S. Cheng*** and S.-Q Wang. "Basic characteristics of uniaxial extension rheology: Comparing monodisperse and bidisperse polymer melts." *Journal of Rheology*, **2011**, *55* (6): 1247-1270**.**
21. Yan, T.; B. Zhao; Y. Cong; Y. Fang; ***S. Cheng***; L, Li; G. Pan; Z. Wang; X. Li and F. Bian "Critical strain for Shish-Kebab Formation" *Macromolecules*, **2009**, *43* (2): 602-605**.**

Presentations at National Meetings:

- The Society of Rheology: 81st Annual Meeting, Oct 2009, Madison, Wisconsin

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Poster: Further examination of elastic driven failure of entangled melts after step uniaxial extension, ***Shiwang Cheng***, Yangyang Wang and Shi-Qing Wang

- The Society of Rheology: 82nd Annual Meeting, Oct 2010 Santa Fe, New Mexico
  Oral presentation: Lack of unique state in steady state shear of entangled polymer solution, ***Shiwang Cheng*** and Shi-Qing Wang
- The Society of Rheology: 83rd Annual Meeting, Oct 2011 Cleveland, OH
  Oral Presentation: Finite cohesion and elastic yielding - basic elements in a future theory: from shear to extension, ***Shiwang Cheng***, Yangyang Wang, Xin Li, Xiangyang Zhu and Shi-Qing Wang
- The Society of Rheology: 84th Annual Meeting, Feb 2013, Pasadena, CA
  Poster Presentation: Elastic yielding in cold drawn polymer glasses well below glass transition temperature, ***Shiwang Cheng*** and Shi-Qing Wang
- The American Physical Society Meeting March Meeting 2013, Baltimore, MD
  Oral Presentation: How melt-stretching affects the brittle-ductile transition temperature of polymer glasses, ***Shiwang Cheng*** and Shi-Qing Wang
- The American Physical Society Meeting March Meeting 2014, Denver, CO
  Oral Presentation: Exploring conditions for craze initiation and for absence of crazing in polymer glasses ***Shiwang Cheng,*** Panpan Lin and Shi-Qing Wang
  Oral Presentation: Exploring chain tension in cold drawing of polymer glasses ***Shiwang Cheng***, Panpan Lin, Mesfin Tsige and Shi-Qing Wang
- The American Physical Society Meeting March Meeting 2015, San Antonio, TX
  Oral Presentation: Dynamics of Poly(2-vinylpyridine)/Silica Nanocomposites from Brillouin and Raman Light scattering. ***Shiwang Cheng,*** Alexander Kisliuk, Vladimir Novikov, Adam P. Holt and Alexei P. Sokolov