CURRICULUM VITAE

HONGGANG CUI

221 Maryland Hall, 3400 North Charles Street, Baltimore, MD 21218, U.S.A.
(410) 516-6878 (O), (302) 562-6796 (M), E-mail: **hcui6@jhu.edu**

EDUCATION

Ph.D.

Jul. 2002 – Mar. 2007	University of Delaware, Newark, DE Department of Materials Science and Engineering Advisor: Professor Darrin J. Pochan

M.E.

Sep. 1999 – Jun. 2002	Tsinghua University, Beijing, China Department of Chemical Engineering

B.S.

Sep. 1995 – Jul. 1999	Beijing University of Chemical Technology, Beijing, China Department of Polymer

PROFESSIONAL APPOINTMENTS

Aug. 2010 – Present	Assistant Professor, Johns Hopkins University, Baltimore, MD Department of Chemical and Biomolecular Engineering
May 2007 – Jul. 2010	Postdoctoral Research Fellow, Northwestern University, Evanston, IL Department of Materials Science and Engineering Institute for BioNanotechnology in Medicine Supervisor: Professor Samuel I. Stupp

HONORS/AWARDS:

2013 – NSF CAREER Award
2012 – W. W. Smith Charitable Trust Basic Medical Research Grant in Cancer
2007 – Finalist for the Frank J. Padden Jr. Award (American Physics Society)
2005 – Teaching Fellow, College of Engineering, University of Delaware
2000 – Scholarship for Excellence in Internship, Tsinghua University
1998 – BASF Scholarship
1997 – Zhanhong Scholarship for Outstanding Academic Performance
1996 – Dow Chemical Scholarship
1995 – First prize in the Competition of Inorganic Chemistry Experimental Skills

PROFESSIONAL ACTIVITIES

- Reviewer for *Macromolecules*, *Journal of the American Chemical Society*, *Chemical Science*, *ACS Nano, Journal of Physical Chemistry B*, *Soft Matter, Langmuir*, *Biomacromolecules, Biomaterials, Chemical Communications, Journal of Colloid and Interface Science, Biopolymers, ACS Macro Letters, Journal of Materials Chemistry B, Macromolecular Bioscience, Nanoscale, Chemistry-An Asian Journal, Analytical Chemistry, Journal of the Royal Society Interface, Physical Chemistry Chemical Physics, Wiley Interdisciplinary Reviews: Nanomedicine, Molecular Imaging, Innate Immunity, Review in Chemical Engineering, and Applied Surface Science*
- Memberships of American Institute of Chemical Engineers (AIChE), Materials Research Society (MRS), American Chemical Society (ACS), American Physical Society (APS), and American Peptide Society (APS), Sigma Xi.

PEER-REVIEWED PUBLICATIONS:

Publications at Johns Hopkins University

1. Yan, J.; Pan, Y.; Cheetham, A. G.; Lin, Y. -A., **Cui, H.,** Liu, C. -J., One-step fabrication of self-assembled peptide thin films with highly dispersed noble metal nanoparticles, *Langmuir*, **2013**, *ASAP*, **DOI:** 10.1021/la4036908.
2. Shi, P.; Lin, Y.-A.; Pastuszka, M., **Cui, H.**; MacKay, J. A., Triggered sorting and co-assembly of genetically engineered protein microdomains in the cytoplasm, *Advanced Materials*, **2013**, *Early View,* **DOI:** 10.1002/adma.201303356.
3. Mohd Janib, S.; Pastuszka, M.; Aluri S.; Folchman-Wagner Z.; Hsueh, P-Y; Liu, S.; Li, Z.; Shi, P.; Lin, Y.-A.; **Cui, H.**; Conti, P.; MacKay, J. A., A recipe for controlling protein polymer nanoparticle size, critical micelle temperature, and bulk phase transition temperature, *Polymer Chemistry*, **2013**, *Advance Article,* **DOI:** 10.1039/C3PY00537B..
4. Lock, L. L.; LaComb, M.; Schwarz, K.; Cheetham, A. G.; Lin, Y.-A.; Zhang, P.; **Cui, H.**, Self-assembly of natural and synthetic drug amphiphiles into discrete supramolecular nanostructures, *Faraday Discussions*, **2013**, *Advance Article*, **DOI:** 10.1039/C3FD00099K.
5. Lin, Y.-A.; Ou, Y. C.; Cheetham, A. G.; **Cui, H.**,Supramolecular polymers formed by ABC miktoarm star peptides, *ACS Macro Letters*, 2013, 2, 1088-1094.
6. Shi, P.; Aluri, S.; Lin, Y.-A.; Edman-Woolcot, M.; Dhandhukia, J.; **Cui, H.**; MacKay, J. A., Protein polymer nanoparticles loaded with drug at their core and corona, *Journal of Controlled Release*, **2013**, 171 (3), 330-338.
7. Zhang, P.; Cheetham, A. G.; Lin, Y.–A.; Lock, L. L.; **Cui, H.,** Self-assembled Tat nanofibers as effective drug carrier and transporter, *ACS Nano*, **2013**, 7 (7), 5965-5977.
8. Lock, L.L.; Cheetham, A. G.; Zhang, P.; **Cui, H.,** Design and construction of supramolecular nano-beacons for enzyme detection, *ACS Nano*, **2013**, 7 (6), 4924-4932.
9. Lin, R.; Cheetham, A. G.; Zhang, P.; Lin, Y.-A.; **Cui, H.**, Supramolecular filaments containing a fixed 41% paclitaxel loading, *Chemical Communications*, **2013**, 49 (43), 4968-4970.
10. Zhang, P.; Cheetham, A. G.; Lock, L. L.; **Cui, H.,** Cellular uptake and cytotoxicity of drug-peptide conjugates regulated by conjugation site, *Bioconjugate Chemistry*, **2013,** 24 (4), 604-613.
11. Cheetham, A. G.; Zhang, P.; Lin, Y.-L.; Lock, L. L.; **Cui, H.,** Supramolecular nanostructures formed by anticancer drugs assembly*, Journal of the American Chemical Society,* **2013**, 135 (8), 2907-2910.
12. Mohd Janib, S.; Liu, S.; Park, R.; Pastuszka, M.; Shi, P.; Lin, Y-A.; **Cui, H.;** Conti P.; Li, Z.; MacKay, J. A., Kinetic quantification of protein polymer nanoparticles using non-invasive imaging, *Integrative Biology*, **2013**, 5(1), 183-194.
13. Jiang, X.; Qu, W.; Pan, D.; Ren, Y.; Williford, J. M.; **Cui, H.**; Luijten, E.; Mao, H. Q., Plasmid-templated shape control of condensed DNA–block copolymer nanoparticles, *Advanced Materials*, **2013,** 25 (2), 227-232.
14. Sun, G.; **Cui, H.**; Lin, L. Y.; Lee, N.; Yang, C.; Neumann, W.; Freskos, J.; Shieh, J.; Dorshow, R.; Wooley, K. L., Functionalized, cross-linked multicompartment nanostructures with tunable photo-physical properties. *Journal of the American Chemical Society,* **2011**, 133 (22), 8534-8543.

Postdoctoral Work at Northwestern University

15. Stupp, S. I.; Zha, R. H.; Palmer, L. C.; **Cui, H.**; Bitton, R., Self-assembly of biomolecular soft matter, *Faraday Discussions*, **2013**, *Advance Article*, **DOI**: 10.1039/C3FD00120B.
16. Moyer, T.; **Cui, H.;** Stupp, S. I., Tuning nanostructure dimensions with supramolecular twisting, *The Journal of Physical Chemistry **B***, **2013**,117 (16), 4604-4610.
17. Lehrman, J. A.; **Cui, H.**; Tsai, W-W.; Moyer, T.; Stupp, S. I., Supramolecular control of self-assembling terthiophene-peptide conjugates through the amino acid side chain, *Chemical Communications*, **2012**, 48 (78), 9711-9713.
18. Sargeant, T. D.; Aparicio, C.; Goldberger, J. E.; **Cui, H.;** Stupp, S. I., Mineralization of peptide amphiphile nanofibers and its effect on the differentiation of human mesenchymal stem cells, *ACTA Biomaterialia*, **2012**, 8 (7), 2456-2465

19. Tsai, W. W.; Tevis, I. D.; Tayi, A. S.; **Cui, H.**; Stupp, S. I., Semiconducting nanowires from hairpin shaped self-assembling sexithiophenes. *Journal of Physical Chemistry B*, **2010**, 114 (45), 14778-14786.
20. Pashuck, E. T.; **Cui, H.**; Stupp, S. I., Tuning supramolecular rigidity of peptide fibers through molecular structure. *Journal of the American Chemical Society* **2010,** 132 (17), 6041-6046.
21. **Cui, H.**; Pashuck, E. T.; Velichko, Y. S.; Weigand, S. J.; Cheetham, A. G.; Newcomb, C. J.; Stupp, S. I., Spontaneous and X-ray triggered crystallization at long range in self-assembling filament networks. *Science* **2010,** 327, (5965), 555-559.
22. **Cui, H.**; Webber, M. J.; Stupp, S. I., Self-assembly of peptide amphiphiles: from molecules to nanostructures to biomaterials. *Biopolymers (Peptide Science)* **2010,** 94 (1), 1-18. (Highlighted in cover)
23. Muraoka, T.; Koh, C. Y.; **Cui, H.**; Stupp, S. I., Light-triggered bioactivity in three dimensions. *Angewandte Chemie International Edition* **2009**, 48, (32), 5946-5949.
24. **Cui, H.**; Muraoka, T.; Cheetham, A. G.; Stupp, S. I., Self-assembly of giant peptide nanobelts. *Nano Letters* **2009,** 9, (3), 945-951.
25. Tsai, W. W.; Li, L. S.; **Cui, H.**; Jiang, H. Z.; Stupp, S. I., Self-assembly of amphiphiles with terthiophene and tripeptide segments into helical nanostructures. *Tetrahedron* **2008,** 64, (36), 8504-8514.
26. Muraoka, T.; **Cui, H.**; Stupp, S. I., Quadruple helix formation of a photoresponsive peptide amphiphile and its light-triggered dissociation into single fibers. *Journal of the American Chemical Society* **2008,** 130, (10), 2946-2947.

Graduate Work at University of Delaware

27. **Cui, H.**; Chen, Z. Y.; Wooley, K. L.; Pochan, D. J., Origins of toroidal micelle formation through charged triblock copolymer self-assembly. *Soft Matter* **2009,** 5, (6), 1269-1278.
28. Zhong, S.; **Cui, H.**; Chen, Z. Y.; Wooley, K. L.; Pochan, D. J., Helix self-assembly through the coiling of cylindrical micelles. *Soft Matter* **2008,** 4, (1), 90-93.
29. **Cui, H.**; Chen, Z. Y.; Zhong, S.; Wooley, K. L.; Pochan, D. J., Block copolymer assembly via kinetic control. *Science* **2007,** 317, (5838), 647-650.
30. Li, Z. B.; Chen, Z. Y.; **Cui, H**.; Hales, K.; Wooley, K. L.; Pochan, D. J., Controlled stacking of charged block copolymer micelles. *Langmuir* **2007,** 23, (9), 4689-4694.
31. **Cui, H.**; Hodgdon, T. K.; Kaler, E. W.; Abezgauz, L.; Danino, D.; Lubovsky, M.; Talmon, Y.; Pochan, D. J., Elucidating the assembled structure of amphiphiles in solution via cryogenic transmission electron microscopy. *Soft Matter* **2007,** 3, (8), 945-955. (Highlighted in cover)
32. **Cui, H.**; Chen, Z. Y.; Wooley, K. L.; Pochan, D. J., Controlling micellar structure of amphiphilic charged triblock copolymers in dilute solution via coassembly with organic counterions of different spacer lengths. *Macromolecules* **2006,** 39, (19), 6599-6607.
33. Li, Z. B.; Chen, Z. Y.; **Cui, H.**; Hales, K.; Qi, K.; Wooley, K. L.; Pochan, D. J., Disk morphology and disk-to-cylinder tunability of poly(acrylic acid)-b-poly(methyl acrylate)-b-polystyrene triblock copolymer solution-state assemblies. *Langmuir* **2005,** 21, (16), 7533-7539.
34. **Cui, H.**; Krikorian, V.; Thompson, J.; Nowak, A. P.; Deming, T. J.; Pochan, D. J., Preparation and characterization of synthetic polypeptide single crystals with controlled thickness. *Macromolecules* **2005,** 38, (17), 7371-7377.
35. Chen, Z. Y.; **Cui, H.**; Hales, K.; Li, Z. B.; Qi, K.; Pochan, D. J.; Wooley, K. L., Unique toroidal morphology from composition and sequence control of triblock copolymers. *Journal of the American Chemical Society* **2005,** 127, (24), 8592-8593.
36. Pochan, D. J.; Chen, Z. Y.;[#] **Cui, H.**;[#] Hales, K.;[#] Qi, K.;[#] Wooley, K. L., Toroidal triblock copolymer assemblies. *Science* **2004,** 306, (5693), 94-97. ([#] equal contribution)

Cui Group Awards:

1. 1. Best Undergraduate Poster Presentation in the Physical Sciences, UTSA College of Sciences (COS) Conference, University of Texas at San Antonio (UTSA), San Antonio, TX (October 18, 2013)
   Poster Title: "*Supramolecular Sulfamethazine Nanobelts for Antimicrobial Hydrogel Formation*"

Authors: Claudio Macias, Yi-An Lin & Honggang Cui

2. The Best Poster Award, the Sixth Peptide Engineering Meeting (PEM6), Emory University, Atlanta, GA. (October 2-5, 2012)
   Poster Title: "*Effect of Conjugation Site and Hydrophobic Modification on Tat-Mediated Drug Delivery to Multi-Drug Resistant Cancer Cells*"
   Authors: Pengcheng Zhang, Andrew G. Cheetham, Lye Lin Lock & Honggang Cui
3. The Best Poster Award (ranked 2nd), Nanomedicine and Drug Delivery Symposium (NanoDDS'12), Atlantic City, NJ. (December 6-7, 2012)
   Poster Title: "*Assembly of Anticancer Drugs into Well-Defined Nanostructures*"
   Authors: Andrew G. Cheetham, Pengcheng Zhang, Yi-an Lin, Lye Lin Lock & Honggang Cui

TEACHING

EN.540.628 & EN.540.418 (Fall 2011, Fall 2013)

Supramolecular Materials and Nanomedicine

Course Description: Nanomedicine is a quickly growing area that exploits the novel chemical, physical, and biological properties of nanostructures and nanostructured materials for medical treatments. This course presents the basic design principles of constructing nanomaterials for use in drug delivery, disease diagnosis and imaging, and tissue engineering. Three major topics will be discussed, including 1) nanocarriers for drug delivery that are formed through soft matter assembly (e.g., surfactants, lipids, block copolymers, DNA, polyelectrolytes, peptides), 2) inorganic nanostructures for disease diagnosis and imaging (e.g., nanoparticles of gold and silver, quantum dots and carbon nanotubes), and 3) supramolecular scaffolds for tissue engineering and regenerative medicine. Students can expect to learn the physical, chemical and biological properties of each nanomaterial, the underlying physics and chemistry of fabricating such material, as well as the advantages and potential issues when used for biomedical applications. This course will also provide students opportunities for case studies on commercialized nanomedicine products. Upon completion, students should gain a deeper understanding of the current challenges in translating nanoscience and nanotechnology into medical therapies.

EN. 540.301 (01) (Spring 2012, Spring 2013)

Kinetic Processes

Course Description: In this class, the principles of kinetic processes and reactor design in chemical and biological Processes will be taught, initially focusing on ideal and isothermal reactors: batch, CSTR, PFR and PBR, and continuing with non-isothermal and non-ideal reactors. Additionally, reactors in parallel and in series will be considered and problems in catalysis will be addressed. This course will apply principles in material and energy balances, thermodynamics and transport phenomena to specific problems in reactor design.

EN.540.407 (Spring 2013)

Current Topics in Functional Molecular Assembly

Course Description: This course describes the most recent progress in molecular self-assembly, with a focus on the application aspects of self-assembling materials in medical and energy-related areas. Specifically, the course consists of about twelve lectures covering a broad range of topics, including: principles of static and dynamic molecular assembly, nanomaterials and phase/morphology diagrams of small molecular and macromolecular amphiphiles, self-assembly in biological systems, supramolecular polymers for energy and medicine, key challenges in the fabrication of organic solar cells, and self-healing materials. The class will be taught in a seminar format, with discussions led by graduate students or postdocs.