

# Yumiao ZHANG

## Research Interests

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Biomaterials: design novel polymeric nanoparticles for biomedical applications

Molecular imaging: develop contrast agents for imaging intestine, tumor and bioactivities at the molecule level

Drug delivery: engineer nanobiotechnologies for drug delivery to address unmet clinical needs

## Personal Profile

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Chemical and biomedical engineer in the nano-medicine research field for more than ten years

Expertise areas include polymers, nanotechnology, biotechnology, molecular imaging, drug delivery

Strong interdisciplinary backgrounds in chemistry, chemical engineering and biomedical engineering

## Education

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Postdoc	UC Berkeley, USA	Bioengineering	2016.9-2018.6
Ph.D.	SUNY Buffalo, USA	Chemical and Biological Engineering	2011.8-2016.8
B.E.	Tianjin University, China	Chemical Engineering	2006.9-2010.7
B.S.	Nankai University, China	Chemistry	2006.9-2010.7

## Research Experience

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<b>Professor</b>	<b>School of Chemical Engineering</b>	<b>Tianjin University, China</b>	<b>2018.09-</b>
<b>Postdoctoral Fellow</b>	<b>Advisor: Niren Murthy</b>	<b>University of California, Berkeley, USA</b>	<b>2016-2018</b>
<ul style="list-style-type: none"><li>• Invented a new drug delivery system to reduce toxicity of antibiotics</li><li>• Developed oral delivery vehicle for enzymes by hydrogel</li><li>• Designed delivery carrier for CRISPR-Cas 9 using liposomes</li></ul>			
<b>Graduate Research</b>	<b>Advisor: Jonathan F. Lovell</b>	<b>SUNY Buffalo, NY, USA</b>	<b>2011-2016</b>
<ul style="list-style-type: none"><li>• Published 7 first-author papers in top journals including Nature Nano., Nature Comm., Adv. Mater.</li><li>• Filed one US patent application</li><li>• Research highlight by Nature, Science and hundreds of popular media</li><li>• Invited by international conferences and recognized by several awards</li><li>• Developed the very first contrast agent for intestinal imaging by photoacoustic imaging</li><li>• Led an interdisciplinary research team with 8 members</li><li>• Helped advisor set up the laboratory from the scratch</li></ul>			
<b>Graduate Research</b>	<b>Advisor: David Lou &amp; Hwankyu Lee</b>	<b>Nanyang Technological University</b>	<b>2010-2011</b>
<ul style="list-style-type: none"><li>• Designed nano and hollow structured materials for application in lithium ion batteries</li><li>• Conducted molecular dynamics simulation of interactions of membranes and proteins or polymer</li></ul>			
<b>Undergrad Research</b>	<b>Advisor: Zhongyi Jiang &amp; Wei Li</b>	<b>Tianjin University, China</b>	<b>2007-2010</b>
<ul style="list-style-type: none"><li>• Designed polymorphic drug crystallization oriented by siloxane self-assembled monolayers.</li><li>• Conducted the experiments for chitosan based proton-exchange membranes for direct methanol fuel cells.</li></ul>			

## Publications

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1. D. Moukheiber, U. Chitgupi, K. Carter, D. Luo, B. Sun, G. Shreya, C. Ferreira, J. Engle, D. Wang, J. Geng, **Y. Zhang**, J. Xia, W. Cai, J. F. Lovell. Surfactant stripped pheophytin micelles for multimodal tumor imaging and photodynamic therapy. **ACS Applied Bio Materials** (2018) Online.
2. J. Song, Y. Zhu, J. Zhang, J. Yang, Y. Du, W. Zheng, C. Wen, **Y. Zhang**, L. Zhang. Encapsulation of AgNPs within zwitterionic hydrogel for highly efficient and antifouling catalysis in biological environments. **Langmuir** (2018) Online.
3. X. Yang, J. F. Lovell, **Y. Zhang**. Ingestible Contrast Agents for Gastrointestinal Imaging. **ChemBioChem**. (2018) Online.
4. **Y. Zhang**, J. Roise, K. Lee, J. Li, N. Murthy. Recent developments in intracellular protein delivery. **Current Opinion in Biotechnology**, 52 (2018) 25-31.
5. J. Zhang, SJ Yang, F. Gonzalez, J Yang, **Y. Zhang**, M. He, N. Shastri, N. Murthy. A peptide-based fluorescent probe images ERAAP activity in cells and in high throughput assays. **Chemical Communications**. 54, (2018) 7215-7218.
6. **Y. Zhang**, H. Hong, B. Sun, K. Carter, Y. Qin, W. Wei, D. Wang, M. Jeon, J. Geng, R. J. Nickles, G. Chen, P. N. Prasad, C. Kim, J. Xia, W. Cai, J. Lovell. Surfactant-stripped Naphthalocyanines for Multimodal Tumor Theranostics with Upconversion Guidance Cream. **Nanoscale**. (2017) 3391-3398.
7. **Y. Zhang**, J. F. Lovell. Recent Applications of Phthalocyanines and Naphthalocyanines for Imaging and Therapy. **WIREs: Nanomedicine and Nanobiotechnology**. (2016) DOI: 10.1002/wnan.1420.
8. J. Kim, S. Park, Y. Jung, S. Chang, J. Park, **Y. Zhang**, J. F. Lovell, C. Kim. Programmable Real-time Clinical Photoacoustic and Ultrasound Imaging System. **Scientific Report**. 6 (2016) 35137.
9. **Y. Zhang**, D. Wang, S. Geol, B. Sun, U. Chitgupi, J. Geng, H. Sun, T. Barnhart, W. Cai, J. Xia, J. F. Lovell. *Surfactant stripped Frozen Pheophytin Micelles for Multimodal Gut Imaging*. **Advanced Materials (IF=19.79)**. 28 (2016) 8524-8530.  
**Highlight in Nature Reviews Materials; Selected as the back cover feature.**
10. **Y. Zhang**, W. Song, J. Geng, H. Unsal, J. Federizon., D. Sukumaran, J. Rzayev, P. Alexandridis, J. F. Lovell. *Therapeutic Micelles*. **Nature Communications (IF=12.12)**. 7 (2016) 11649.
11. Y. Zhou, D. Wang, **Y. Zhang**, U. Chitgupi, J. Geng, Y. Wang, Y. Zhang, T. Cook, J. Xia, J. F. Lovell, *A Phosphorus Phthalocyanine Formulation with Absorbance of 1000 at 1000 nm for Deep Optical Imaging*. **Theranostics**. 6 (2016) 668-697.
12. Y. Wang, D. Wang, **Y. Zhang**, J. Geng, J. F. Lovell, J. Xia. *Slit enabled Linear-array Photoacoustic Tomography with Near Isotropic Spatial Resolution in Three Dimensions*. **Optics Letter**. 41 (2016) 127-130.
13. **Y. Zhang**, J. F. Lovell. *Reversible Micro- and Nano-Phase Programming of Anthraquinone Thermochromism Using Blended Block Copolymers*. **Langmuir**. 31 (2015) 13488-13493.
14. C. Lee, J. Kim, **Y. Zhang**, M. Jeon, C. Liu, L. Song, J. Lovell, C. Kim. *Dual-color photoacoustic lymph node imaging using nanoformulated naphthalocyanines*. **Biomaterials**. 73 (2015) 142-148.
15. U. Chitgupi, **Y. Zhang**, C. Lo, W. Song, J. Geng, S. Shao, S. Neelamegham, J. F. Lovell. *Sulfonated-polyethyleneimine for Photosensitizer Conjugation and Targeting*. **Bioconjugation Chemistry**. 26 (2015) 1633-1639.
16. **Y. Zhang**, M. Jeon, L. Rich, H. Hong, J. Geng, Yin. Zhang, S. Shi, T. Barnhart, P. Alexandridis, J. Huizinga, M. Seshadri, W. Cai, C. Kim, J. F. Lovell. *Non-invasive Multimodal Functional Imaging of the Intestine with Frozen Micellar Naphthalocyanines*. **Nature Nanotechnology (IF=38.99)**. 9 (2014) 631-639.
17. **Y. Zhang**, J. F. Lovell. *Porphyrins as Theranostic Agents from Prehistoric to Modern Times*. **Theranostics**. 2 (2012) 905-916. **Selected as cover feature**
18. J. Chen, **Y. Zhang (Co-first author)** X. Lou, *One-pot synthesis of uniform Fe<sub>3</sub>O<sub>4</sub> nanospheres with carbon matrix support for improved lithium storage capabilities*. **ACS Applied Materials & Interfaces**. 3 (2011) 3276-3279.
19. J. Wang, **Y. Zhang**, H. Wu, L. Xiao, Z. Jiang, *Fabrication and performances of solid superacid embedded chitosan hybrid membranes for direct methanol fuel cell*. **Journal of Power Sources**. 195 (2010) 2526-2533.

## Patent

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J. F. Lovell, **Y. Zhang**, W. S Jeon M, C. Kim. *Surfactant-stripped micelle compositions with high cargo to surfactant ratio*, PCT/US2015/039082.

## Teaching Experience

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Teaching Assistant, Graduate Course, CE509, University at Buffalo. Advanced Transport Phenomenon. Fall 2012  
Teaching Assistant, Undergraduate Experiment, CE428, University at Buffalo. Chemical Engineering lab. Spring, 2012

## Research Supervision

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Trained and Mentored 5 master students and 7 undergraduates for their research projects/thesis during PhD and Postdoc

## Honors and Awards

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- 2018 University at Buffalo's 2018-2019 Outstanding PhD Dissertation Award
- 2018 Chinese One Thousand Young Talent Program
- 2018 Nanyang Assistant Professorship Award (S\$ 1 million awarded but declined)
- 2016 Outstanding Chinese Students Overseas Award (500 Awardees Worldwide).
- 2015 First Place, Best Poster, 41th Northeast Bioengineering Conference, Troy, NY
- 2014 Best Poster, Chemical and Biological Eng. Dept. Symposium, SUNY Buffalo
- 2009 Tianjin University Scholarship, Tianjin China
- 2007 Nankai University Scholarship, Tianjin, China

## Presentations

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- 2018 Speaker, Nanyang Technological University, Singapore
- 2017 Invited Speaker, Guanzhou Digestive Tract Disease Week, Guanzhou, China
- 2017 Invited Speaker, Peiyang forum, Tianjin University, Tianjin, China
- 2016 Speaker, NanoEngineering for Medicine and Biology Conference, Houston.
- 2016 Speaker, Chemical and Biological Engineering Department Class CE529.
- 2015 Speaker, Biomedical Engineering Society annual meeting, Tampa, FL.
- 2014 Poster, Chemical and Biological Eng. Dep. Symposium, SUNY Buffalo.
- 2014 Poster, 41<sup>st</sup> Northeast Bioengineering Conference, Troy, NY.
- 2014 Speaker, Biomedical Engineering Department Class, BE 201.

## Journal Review

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*Advanced Materials; Advanced Functional Materials; Advanced Healthcare Materials; Journal of American Chemical Society; ACS Applied Materials & Interfaces; PLoS ONE; Nanomedicine: Nanotechnology, Biology, and Medicine.*