

Lili He

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Department of Food Science
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Education

May 2007 - Dec. 2009 Ph.D. - Food Science University of Missouri-Columbia
Sept. 2004 - June. 2006 Master in Agronomy - Plant Pathology Zhejiang University
Sept. 2000 - June. 2004 Bachelor in Agronomy - Plant Protection Zhejiang University

Positions and Employment

2012- Assistant Professor, Department of Food Science, University of
Massachusetts, Amherst, MA
2009-2012 Postdoc/research associate, Department of Food Science and Nutrition,
University of Minnesota, Saint Paul, MN

Other Experience and services

2014- Faculty advisor for ACS-AGFD international student chapter
2014 NSF SBIR/STTR Phase II ad hoc reviewer
2013- Phi Tau Sigma UMass Chapter President
2013 NSF SBIR/STTR Phase I panel member
2013- Editorial board member for Food Research International
2010 2010 USDA/ARS ad hoc reviewer
2010 IFT food nanoscience advisory panel member
2006- Member, Institute of Food Technologists (IFT), American chemical society
(ACS), American society of microbiology (ASM)

Honors

2012 Young Scientist Award International Union of Food Science and
Technology
2011 Top ten articles in Analyst July 2011 Analyst
2011 No.1 cited paper in Journal of Food Science in 2008 IFT

Grants

Active grants:

USDA-NIFA 01/01/15-01/01/18 Role: PI
Title: Development of a label-free SERS mapping based platform for multi-bacterial
detection in food

USDA-NIFA 01/01/15-01/01/18 Role: PI
Title: Investigate the interactions between silver nanoparticles and leafy vegetables using
surface enhanced Raman spectroscopic mapping

US Department of Homeland Security 07/01/14-06/30/15 Role: PI
Title: Advancing SERS to a field technology for food defense application.

PepsiCo 07/01/13-06/30/15 Role: PI

Investigation of solubility enhancement mechanisms of solid dispersion materials

NASA 7/01/2014-6/30/2018 Role: co-PI
Title: Vitamins B1 and K Degradation in Spaceflight Foods: Establishment of Prediction Models and Prevention Strategies.

Completed grants:

USDA-NIFA 01/01/12-1/14/14 Role: co-PI
Title: Development of Rapid and Versatile Detection Systems for the Detection of Toxins and Chemicals of Fresh Produce and Nuts

US Department of Homeland Security 09/01/10-09/31/13 Role: co-PI
Title: Application of Surface Enhanced Raman Spectroscopy for Detection of Chemical and Biological Terror Agents in Food Matrices II

Invited talks

- 2014 “Advancing SERS to a field technology”. National center for food protection and defense. Webinar.
- 2014 “Applications of SERS for biological and chemical analysis”. Institute of Biotechnology. Shanghai Academy of Agriculture Sciences. Shanghai. China.
- 2014 “Use of SERS For Rapid Detection of Contaminants in Foods”. School of Food Science. Jiangnan University. Wuxi. China.
- 2014 “Profile Analysis of Macromolecules in Cells using Raman Spectroscopy”. DuPont. Shanghai. China.
- 2014 “Development and applications of SERS in food science”. Department of Food Science. Zhejiang University. Hangzhou. China
- 2013 “Use of SERS For Rapid Detection of Contaminants in Foods”. Eastern Analytical Symposium & Exposition. Somerset, New Jersey. US
- 2013 “Development and applications of urface-enhanced Raman spectroscopy in food science”. Strategic Research Alliance (SRA) Meeting. UMass Amherst.
- 2012 “Surface enhanced Raman scattering for foreign protein detection”. Thermo Fisher Scientific webinar (for China).
- 2012 “Use of SERS for rapid detection of contaminants in foods: allergens, bioterror Agents, and pesticides”. 16th World Congress of Food Science and Technology. Iguassu Falls, Brazil.
- 2011 “Applications of the next generation of vibrational spectroscopy in food science”. Thermo Fisher Scientific molecular spectroscopy group. Madison, WI. US
- 2011 “Surface enhanced Raman scattering for foreign protein detection”. Thermo Fisher Scientific webinar (for US and Europe).
- 2011 “Rapid detection of Ricin in milk using SERS immunoassays”. National Center for Food Protection and Defense (NCFPD) showcase webinar.
- 2010 “Rapid detection of Ricin in milk using IMS-SERS”. Chemistry department seminar, Univ. of Minnesota. Minneapolis, MN.US
- 2008 “A new approach to measure melamine and its analogues using surface enhanced Raman spectroscopy”. IFT. New Orleans, US.

Peer-reviewed Publications

1. Guo, Huiyuan; Zhang, Zhiyun; Xing, Baoshan*; Mukherjee, Arnab; Musante, Craig; White, Jason; **He, Lili***. 2015. Analysis of Silver Nanoparticles in Antimicrobial Products Using Surface-Enhanced Raman Spectroscopy (SERS). *Environmental Science & Technology*. Accepted.
2. Shintaro Pang, Changchu Ma, Naijie Zhang, and **Lili He***. 2014 Investigation of the Solubility Enhancement Mechanism of Rebaudioside D using a Solid Dispersion Technique with Potassium Sorbate as a Carrier. *Food chemistry*. 174:564-70
3. Yue Li, Michael Driver, Thunnalin Winuprasith, Jinkai Zheng, David Julian McClements, and **Lili He***. 2014. In situ SERS detection of emulsifiers at lipid interfaces using label-free amphiphilic gold nanoparticles. 2014, 139 (20), 5075 – 5078
4. Thunnalin Winuprasith, Manop Suphantharik, **Lili He** and David Julian McClements *. 2014. Alterations in Nanoparticle Protein Corona by Biological Surfactants: Impact of Bile Salts on β -lactoglobulin-Coated Gold Nanoparticles. *Journal of Colloid And Interface Science*. 15;426:333-40.
5. Michael Driver, Yue Li, Jinkai Zheng, EA Decker, D. J. McClements and **Lili He***. 2014. Fabrication of Lipophilic Gold Nanoparticles for Studying Lipids by Surface Enhanced Raman Spectroscopy (SERS). *Analyst*. 139, 3352-3355
6. Jinkai Zheng, Shintaro Pang, TP Labuza and **Lili He***. 2014. Evaluation of surface-enhanced Raman scattering detection using a handheld and a bench-top Raman spectrometer: a comparative study. *Talanta*. 129, 1, 79-85.
7. Jinkai Zheng, **Lili He***. 2014. Surface-Enhanced Raman Spectroscopy for the Chemical Analysis of Food. *Comprehensive Reviews in Food Science and Food Safety*. 13 (3), 317-328.
8. Wijaya, Wisiani, Shintaro Pang, Theodore P Labuza and **Lili He***. 2014. “Rapid Detection of Acetamiprid in Foods Using Surface-Enhanced Raman Spectroscopy (SERS).” *Journal of Food Science*. 79 (4), T743-T747
9. Pang, Shintaro, Theodore P Labuza and **Lili He***. 2014. “Development of a Single Aptamer-based Surface Enhanced Raman Scattering Method for Rapid Detection of Multiple Pesticides.” *The Analyst*. 139 (8), 1895-1901. DOI:10.1039/C3AN02263C.
10. Yue Li, Micheal Driver, Eric Decker, **Lili He***. 2014 Lipid and lipid oxidation analysis using surface enhanced Raman spectroscopy (SERS) coupled with silver dendrites. *Food Research International*. 58,1-6.
11. Thunnalin Winuprasith, Manop Suphantharik, David Julian McClements and **Lili He***. 2014. Spectroscopic studies of conformational changes of β -lactoglobulin adsorbed on gold nanoparticle surfaces. *Journal of Colloid And Interface Science*. 416, 184–189.
12. Jinkai Zheng, Shintaro Pang, TP Labuza and **Lili He***. 2013. Semi-quantification of Surface-enhanced Raman Scattering using a Handheld Raman Spectrometer: A Feasibility Study. *Analyst*. 138, 7075-7078.
13. Jinkai Zheng , Xiang Fang , Yong Cao, Hang Xiao, and **Lili He***. 2013. Monitoring the Chemical Production of Citrus-Derived Bioactive 5-Demethylnobiletin Using

- Surface-Enhanced Raman Spectroscopy. *Journal of Agricultural and Food Chemistry*. 61 (34), pp 8079–8083.
14. Zheng J, Fang X, Xiao H, **He L***. Rapid Quantification of Nobiletin and Tangeretin in Citrus Peel Extractions by Raman Spectroscopy. *Journal of Food Processing & Beverages*. 2013;1(1): 4.
 15. **Lili He***, Jinkai Zheng, Theodore P Labuza, Hang Xiao. (2013) A Surface Enhanced Raman Spectroscopic Study of Interactions between Casein and Polymethoxyflavones. *Journal of Raman Spectroscopy*. 44,4, 531-535.
 16. **Lili He**, Tuo Chen, Theodore P Labuza. 2013. Recovery and Quantitative Detection of Thiabendazole on Apples using a Surface Swab Capture Method Followed by Surface-Enhanced Raman Spectroscopy. *Food Chemistry*. Volume 148, Pages 42–46.
 17. **Lili He**, Bronwyn Deen, Alyssa Pagel, Francisco Diez-Gonzalez and Theodore P. Labuza*. (2013). Concentration, detection and discrimination of *Bacillus anthracis* spores in orange juice using aptamer based surface enhanced Raman spectroscopy. *Analyst*. 138, 1657-1659.
 18. Qian Wang, **Lili He**, Theodore P. Labuza, Baraem Ismail*. (2013). Structural Characterization of Partially Glycosylated Whey Protein as influenced by pH and Heat using Surface-Enhanced Raman Spectroscopy, *Food Chemistry*, 139(1-4):313-9.
 19. **He, L.**, Lamont, E., Veeregowda, B., Sreevatsan, S., Haynes, C. L., Diez-Gonzalez, F., and Labuza, T. P. (2011) Aptamer-based Surface-Enhanced Raman Scattering Detection of Ricin in Liquid Foods, *Chemical Science* 2, 1579–1582.
 20. Lamont, E., **He, L.**, Warriner, K., Labuza, T. P., and Sreevatsan, S. (2011) A single DNA aptamer functions as a biosensor for ricin. *Analyst* 136, 3884–95.
 21. **He, L.**, Rodda, T., Haynes, C. L., Deschaines, T., Strother, T., Diez-Gonzalez, F., and Labuza, T. P. (2011) Detection of a Foreign Protein in Milk Using Surface-Enhanced Raman Spectroscopy Coupled with Antibody-Modified Silver Dendrites. *Analytical chemistry*. 1;83(5):1510-3. doi: 10.1021/ac1032353.
 22. **He, L.**, Liu, Y., Mustapha, A., and Lin, M. (2011) Antifungal activity of zinc oxide nanoparticles against *Botrytis cinerea* and *Penicillium expansum*. *Microbiological research*, Elsevier GmbH. 166, 207–15.
 23. **He, L.**, Shi, J., Sun, X., Lin, M., Yu, P., and Li, H. (2011) Gold coated zinc oxide nanonecklaces as a SERS substrate. *Journal of nanoscience and nanotechnology* 11, 3509–15.
 24. **He, L.**, Deen, B., Rodda, T., Ronningen, I., Blasius, T., Haynes, C., Diez-Gonzalez, F., and Labuza, T. P. (2011) Rapid detection of ricin in milk using immunomagnetic separation combined with surface-enhanced Raman spectroscopy. *Journal of food science* 76, N49–53.
 25. **He, L.**, Haynes, C. L., Diez-Gonzalez, F., and Labuza, T. P. (2011) Rapid detection of a foreign protein in milk using IMS-SERS, *Journal of Raman Spectroscopy* 42, 1428–1434.
 26. Liu, Y., **He, L.**, Mustapha, a, Li, H., Hu, Z. Q., and Lin, M. (2009) Antibacterial activities of zinc oxide nanoparticles against *Escherichia coli* O157:H7, *Journal of applied microbiology* 107, 1193–201.
 27. **He, L.**, Lin, M., Li, H., and Kim, N.-J. (2009) Surface-enhanced Raman spectroscopy coupled with dendritic silver nanosubstrate for detection of restricted antibiotics, *Journal of Raman Spectroscopy*. Volume 41, Issue 7, pages 739–744.

28. **He, L.**, Liu, Y., Lin, M., Mustapha, A., and Wang, Y. (2008) Detecting single *Bacillus* spores by surface enhanced Raman spectroscopy, *Sensing and Instrumentation for Food Quality and Safety* 2, 247–253.
29. **He, L.**, Liu, Y., Lin, M., Awika, J., Ledoux, D. R., Li, H., and Mustapha, A. (2008) A new approach to measure melamine, cyanuric acid, and melamine cyanurate using surface enhanced Raman spectroscopy coupled with gold nanosubstrates, *Sensing and Instrumentation for Food Quality and Safety* 2, 66–71.
30. Lin, M., **He, L.**, Awika, J., Yang, L., Ledoux, D. R., Li, H., and Mustapha, A. (2008) Detection of melamine in gluten, chicken feed, and processed foods using surface enhanced Raman spectroscopy and HPLC., *Journal of food science* 73, T129–34.
31. **He, L.**, Chen, W.* 2006. Synergetic activity of cell-free supernatant of *Bacillus licheniformis* ZJU12 with nisin against food-borne bacteria. *Food Research International* 39 (8), 905-909.
32. **He, L.**, Chen, W.*, Liu, Y. 2006. Production and partial characterization of bacteriocin-like peptides by *Bacillus licheniformis* ZJU12. *Microbiological Research* 161(4), 321-326.