

Honglan Shi



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Zhengzhou University, China, B.S., Chemistry, 1981
Iowa State University, MS, Biochemistry, 1990
Missouri University of Science and Technology, Ph.D., Analytical Chemistry, 2010

RESEARCH INTERESTS

Diversified research experiences and interests of cutting-edge research in the areas of:

- 1) **Trace emerging pollutants analysis and control in natural and drinking water** - water disinfection by-products (DBPs), pharmaceuticals and personal care products (PPCPs), algal toxins, pesticides, perchlorate, Cr(VI), and more.
- 2) **Development of novel economical and green technologies for water treatment** – use agricultural byproducts, such as rice hulls, soybean hulls, and other agricultural wastes for water treatment.
- 3) **Method development for rapid characterization and quantification of engineered nanomaterials** – Novel single nanoparticle (SP)-ICP-MS methods development and screening study in environmental samples.
- 4) **State-of-the-art instrument development and manufacturing** - Development of novel multi-functional single cell analyzer and high throughput and multifunctional single nanoparticle analysis system.
- 5) **Advanced test kit developments and manufacturing** – Development of plant tissue test kits for assessing environmental and food contaminations, such as explosive compounds, pesticides, and emerging pollutants.
- 6) **Instrumentation analytical method development and applications** - ion chromatography-inductively coupled plasma-mass spectrometry (IC-ICP-MS), liquid chromatography-tandem mass spectrometry (LC-MS/MS), gas chromatography-mass spectrometry (GC-MS), inductively coupled plasma-optical emission

spectrometry (ICP-OES), high performance liquid chromatography (HPLC), gas chromatography (GC), ion chromatography (IC)

- 7) **Life science related research** – small molecule cancer markers and other markers investigation by advanced analytical technologies, bioactive material-biofluid-bioorganism interaction study by advanced analytical technologies.
- 8) **Food nutrition and toxic contaminants** - soybean food, isoflavone, vitamins, toxic chemicals in food products.

The extensive analytical skills and experiences of Dr. Shi provide her broad collaborative research ability with interdisciplinary research teams.

SELECTED RECENT PUBLICATIONS

1. Honglan Shi, Xiaoliang Cheng, Qihua Wu, Ruipu Mu, Yinfa Ma, “Assessment and removal of emerging water contaminants – a Review”, *Journal of Environmental & Analytical Toxicology*, **2013**, in press.
2. Emmitt C. Witt III, David Wronkiewicz, and Honglan Shi, “Preliminary assessment of an economical dust sampler for the collection of bulk samples for geochemical analysis”, *Journal of Environmental Quality*, **2013**, in press, posted 08/23/2012 doi:10.2134/jeq2012.0158.
3. Honglan Shi, Zhimin Qiang, Craig. Adams, “Formation of haloacetic acids, halonitromethanes, bromate and iodate during chlorination and ozonation of seawater and saltwater of marine aquaria systems”, *Chemosphere*, **2013**, in press, posted: <http://www.sciencedirect.com/science/article/pii/S0045653512012143>.
4. Ryan K. Rader, Ruipu Mu, Honglan Shi, William V. Stoecker, “Dermoscopy of black-spot poison ivy”, *Dermatology Online Journal*, **2012**, 18(10):8. http://dermatology.cdlib.org/1810/03_csp/8_12-00160/article.html.
5. Chuan Wang, Honglan Shi, Craig D. Adams, Terry Timmons, Yinfa Ma, “Investigation of removal of N-nitrosamines and their precursors in water treatments using activated carbon nanoparticles”, *International Journal of Environmental Technology and Management*, **2012**, 16:34-49.
6. Qihua Wu, Honglan Shi* (corresponding author), Craig D. Adams, Yinfa Ma, Terry Timmons, “Oxidative removal and identification of degradation products of selected endocrine-disruptor and pharmaceuticals in drinking water treatment systems”, *Science of the Total Environment*, **2012**, 439:18-25.
7. Honglan Shi, Jie Ding, Terry Timmons, and Craig Adams, “pH effects on the adsorption of saxitoxin by powdered activated carbon”, *Harmful Algae*, **2012**, 19: 61-67.
8. A. Karnjanapiboonwong, R. Mu, Y. Yuan, Honglan Shi, Y. Ma, J.G. Burken, “Plant tissue analysis for explosive compounds in phytoremediation and phytoforensics”, *Journal of Environmental Science and Health, Part A*, **2012**, 47: 2219-2229.
9. Alex Luyima, Honglan Shi, and Lifeng Zhang, “Leaching Studies for Metals Recovery from Waste Printed Wiring Boards (PWBs)”, *2012 TMS Annual Meeting & Exhibition Proceedings*, published online May 15, **2012**. DOI: [10.1002/9781118359341.ch29](https://doi.org/10.1002/9781118359341.ch29)
10. Honglan Shi, Craig Adams, “Occurrence and formation of trihalomethane in marine aquaria studied using solid phase microextraction gas chromatography-mass spectrometry”, *Water Environment Research*, **2012**, 84(3): 202-208.

11. Ruipu Mu, Honglan Shi, Yuan Yuan, Adcharee Karnjanapiboonwong, Joel Gerard Burken, and Yinfa Ma, "A fast separation and quantification method for nitroguanidine and 2,4-dinitroanisole by ultra-fast liquid chromatography-tandem mass spectrometry", *Analytical Chemistry*, **2012**, 84: 3427–3432.
12. Evelyn Chamberlain, Honglan Shi, Tongwen Wang, Yinfa Ma, A. Fulmer, and Craig Adams, "Comprehensive Screening Study of Pesticide Degradation via Oxidation and Hydrolysis", *Journal of Agricultural and Food Chemistry*, online published first, December 5, 2011, <http://dx.doi.org/10.1021/jf2033158>. **2012**, 60: 354-363.
13. Sanjeewa Gamagedara, Honglan Shi, Yinfa Ma, "Quantitative Determination of Taurine and Related Biomarkers in Urine by Liquid Chromatography - Tandem Mass Spectrometry", *Analytical and Bioanalytical Chemistry*, **2011**, 402: 763–770.
14. Xiaoliang Cheng, Honglan Shi, Craig Adams, Terry Timmons, and Yinfa Ma, "Removal study of N-nitrosamines by powdered activated carbon in natural and reagent water using SPE-LC/MS/MS", *Global Journal of Analytical Chemistry*, **2011**, 2: 232-240.
15. Tingzhi Su, Honglan Shi, and Jianmin Wang, "Impact of trona-based SO₂ control on the elemental leaching behavior of fly Ash", *Energy and Fuels*, **2011**, 25: 3514–3521.
16. Alex Luyima, Honglan Shi, and Lifeng Zhang, "Leaching studies for metals recovery from waste printed wiring boards", *Journal of Management*, **2011**, 63 (8): 38-41.
17. Craig Adams, Yinfa Ma, Honglan Shi, Evelyn Chamberlain, Tongwen Wang, Chuan Wang, and Xiaoliang Cheng, "Pesticide degradates in water treatment: Oxidative formation and partitioning parameter estimation", report, published by *Water Research Foundation and the American Water Works Association*, **2011**, ISBN 978-1-60573-135-3. Pages 1-122.
18. Chuan Wang, Honglan Shi, Craig Adams, Terry Timmons, and Yinfa Ma, "Investigation of oxidative and PAC removal of selected pharmaceuticals in various oxidation systems using liquid chromatography tandem mass spectrometry", *Global Journal of Analytical Chemistry*, **2011**, 2: 142-151.
19. Chuan Wang, Evelyn Chamberlain, Honglan Shi, Craig Adams, and Yinfa Ma, "Investigation of oxidative degradation of molinate in various oxidation treatment systems by using Liquid Chromatography – Tandem Mass Spectrometry", *Global Journal of Analytical Chemistry*, **2011**, 2 (3): 107-113.
20. Chuan Wang, Honglan Shi, Craig D. Adams, Sanjeewa Gamagedara, Isaac Stayton, Terry Timmons, Yinfa Ma, "Investigation of Pharmaceuticals in Missouri Natural and Drinking water Using High Performance Liquid Chromatography-Tandem Mass Spectrometry", *Water Research*, **2011**, 45: 1818-1828.
21. Tongwen Wang, Evelyn Chamberlain, Honglan Shi, Craig Adams, and Yinfa Ma, "Comprehensive studies of aldicarb degradation in various oxidant systems using high performance liquid chromatography coupled with UV detection and quadruple ion trap mass spectrometry", *International Journal of Environmental Analytical Chemistry*, **2011**, 91(1): 97-111.
22. Xiaoliang Cheng, Honglan Shi, Craig Adams, Terry Timmons, and Yinfa Ma, "LC-MS/MS determination of cyanobacterial toxins in drinking and surface water samples", *Global Journal of Analytical Chemistry*, **2011**, 2: 1-7.
23. Honglan Shi, "Analysis and Occurrence of disinfection by-products in fresh and salt water", a Ph.D. dissertation at Missouri S&T, May **2010**.
24. Tongwen Wang, Evelyn Chamberlain, Honglan Shi, Craig Adams, and Yinfa Ma, "Identification of hydrolytic metabolites of dyfonate in alkaline aqueous solutions by using

- high performance liquid chromatography coupled with quadrupole ion trap mass spectrometry”, *International Journal of Environmental Analytical Chemistry*, **2010**, 90: 948-961.
25. Xiaoliang Cheng, Honglan Shi, Craig Adams, and Yinfa Ma, “Assessment of metal contaminations in drinking water leaching out from recycling plastic bottles”, *Environmental Science and Pollution Research*, **2010**, 17: 1323-1330.
 26. Honglan Shi (also corresponding author), Emitt Witt, Shi Shu, Tingzhi Su, Jianmin Wang, Craig Adams, “Toxic trace element assessment for soils/sediments deposited during Hurricanes Katrina and Rita from southern Louisiana: A sequential extraction analysis”, *Environmental Toxicology and Chemistry*, **2010**, 29: 1419-1428.
 27. Evelyn Chamberlain, Chuan Wang, Honglan Shi, Craig Adams, and Yinfa Ma, “Oxidative removal and kinetics of fipronil in various oxidation systems for drinking water treatment”, *Journal of Agricultural and Food Chemistry*, **2010**, 58: 6895-6899.
 28. Xiaoliang Cheng, Honglan Shi, Craig Adams, Terry Timmons, Yinfa Ma, “Simultaneous screening of herbicide degradation byproducts in water treatment plants using high performance liquid chromatography-tandem mass spectrometry”, *Journal of Agricultural and Food Chemistry*, **2010**, 58: 4588–4593.
 29. Honglan Shi, Paul Ki-souk Nam, and Yinfa Ma. “Comprehensive profiling of isoflavones, tocopherols, phytosterols, minerals, crude protein, lipid, and sugar during soybean (*Glycine max*) germination”. *Journal of Agricultural and Food Chemistry*, **2010**, 58: 4970-4976.
 30. Jie Ding, Honglan Shi, Terry Timmons, and Craig Adams, “Release and removal of microcystins from *Microcystis* during oxidative-, physical- and UV-based disinfection”, *J. Environmental Engineering*. **2010**. 136 (1): 2-11.
 31. Tongwen Wang, Evelyn Chamberlain, Honglan Shi, Craig Adams, and Yinfa Ma, “Analysis of oxidation byproducts of dyfonate in various oxidant systems using high performance liquid chromatography coupled with quadrupole ion trap mass spectrometry”, *Toxicological & Environmental Chemistry*, **2010**. 92 (1): 1–12.