Lihua Wang
Department of Chemistry, Biochemistry, Chemical Engineering, and Applied Biology
Kettering University

Title: Coordination Chemistry and its Roles in Biology and Medicine

Topics:

1. Overview of the principles of coordination chemistry.

2. Overview of the principles of biochemistry.

3. The experimental techniques used in studying coordination compounds.

4. Overview of the biological functions of coordination compounds.

5. Applications of coordination compounds in medicine.

Termin	Dzień tygodnia	Godzina	Miejsce
19.03.2018	poniedziałek	09.15 – 12.00	Minicentrum Konferencyjne (Luwr)
20.03.2018	Wtorek	09.15 – 12.00	Minicentrum Konferencyjne (Luwr)
21.03.2018	Środa	09.15 – 12.00	Minicentrum Konferencyjne (Luwr)
22.03.2018	Czwartek	09.15 – 12.00	Minicentrum Konferencyjne (Luwr)
23.03.2018	Piątek	09.15 – 12.00	Minicentrum Konferencyjne (Luwr)

Curriculum vitae:

Lihua Wang

Department of Chemistry, Biochemistry, Chemical Engineering, and Applied Biology

Kettering University

lwang@kettering.edu

Education:

B.S. Fudan University, China Analytical Chemistry July 1984

Ph.D. Purdue University Inorganic Chemistry December 1991

(Thesis Topic: "Chemistry of Copper Peptide Complexes: Alkoxide Coordination in Copper(II) and Copper(III) Peptide Complexes, and Base Decomposition of Copper(III) Peptide Complexes", Advisor: Dr. Dale Margerum)

Postdoctoral Research Fellow

University of Michigan

(Advisor: Dr. David Ballou) Biochemistry January 1992 –

December 1993

Experiences:

Professor of Chemistry Department of Chemistry,

Biochemistry, Chemical Engineering

Applied Biology

Kettering University July 2017 - present

Associate Professor of Chemistry Kettering University July 1998 – June 2017

Assistant Professor of Chemistry Kettering University July 1994 – June 1998

Visiting Professor of Chemistry Kettering University January 1994 – June

1994

Courses Taught:

• Bioinorganic Chemistry (Lecture and Laboratory)*

• Advanced Inorganic Chemistry (Lecture and Laboratory)*

• General Chemistry I and II (Lecture, Laboratory, and Online)

• Biochemistry I

• Principles of Chemistry (Lecture and Laboratory)

• Human Biology (Lecture and Laboratory)

*Courses developed.

Current Research Interests

• Design and synthesis of novel nano-materials for potential biomedical applications.

• Study the properties and mechanisms of metal complex based anti-cancer agents.

• Study the biological properties of green tea catechins: specifically their interaction with cytochrome c and its biological implications.

• Analysis of antioxidants in plant extracts.

Recent Grants:

PI, "Synthesis and Characterization of Gold Nanoparticles and Hollow Gold Nanosheres Coated with Ru(II)-Mono-Arene Anticancer Complexes for Cellular Uptake and Cytotoxicity Study", 2016 Provost Matching Fund, $1500.

PI, "REU Site: Utilizing Plants for Innovative Research (UPIR)-Cultivating the next generation of scientists and engineers", $279,525, September 15, 2016 – August 31, 2016.

Co-PI, "Identification of Polyphenolics and Other Compounds with Antibacterial and Anticancer Properties", 2015 Faculty Research Fellowship Award, October 2015 – September 2016.

PI, "Synthesis and Cytotoxicity Study of Gold Nanoparticles and Hollow Gold Nanospheres Coated with Ru(II)Mono-Arene Anticancer Complexes Part 1: Synthesis and Characterization of the Nanoparticles and Nanosphere". 2015 Provost Matching Fund, $1500.

Co-PI, "MRI: Acquisition of an Isothermal Titration Calorimeter for the Characterization of

Molecular Interactions to Support Research and Undergraduate Education", National Science Foundation Major Research Instrumentation Grant, 9/2015 – 8/2016, $118,600.

Co-PI, "MRI: Acquisition of an X-Ray Photoelectron Spectrometer (XPS) for Multidisciplinary Research and Undergraduate Education" National Science Foundation Major Research Instrumentation Grant, 9/2014 – 8/2015, $496,000.

Co-PI, "Supercritical fluid extraction and evaluation of antioxidant, antimicrobial, and antiinflammatory agents from grape stems, pomegranate, walnut hulls, and local flora"
Kettering Faculty Fellowship Grant, September 2013 – August 2014, $6,000.

Co-PI, "MRI: Acquisition of an X-Ray Diffractometer for Undergraduate Education and Research in Materials Characterization" , National Science Foundation Major Research Instrumentation Grant, 9/1/2013-8/31/2014, $77,808.

Co-PI, "MRI-Acquisition of a CHNS Elemental Analyzer for Undergraduate Research and Education", NSF Major Research Instrumentation Grant, 9/2012 – 8/2013, $70,000.

Recent Publications:

Miller, A.; Adams, S; Zhang, J. Z.; Wang, L. "Study of the Interaction of Citrate-Capped Hollow Gold Nanospheres with Metal Ions", J. of Nanomedicine and Nanotechnology, 7(2), 2016, http://dx.doi.org/10.4172/2157-7439.1000371.

Wenzel, J.; Samaniego, C.; Wang, L.; Burrows, L.; Tucker, E.; Dwarshuis, N.; Ammerman, M.; Zand, A., "Antioxidant potential of Juglans nigra, Black Walnut, Husks Extracted using Supercritical Carbon Dioxide with an Ethanol Modifier", Food Science & Nutrition, 2016, doi: 10.1002/fsn3.385.

Nartker, S.; Aryan, D.; Wang, L.; Stogsdill, M., "Electrospinning and Characterization of Polyvinyl alcohol Nanofibers with Gold Nanoparticles", Nanoscience and Nanotechnology Letters, 7, 718-722, 2015.

Tackett, R. T., Thakur, J.; Mosher, N.; Perkins-Harbin, E. ; Kumon, R. E.; Wang, L.;

Rablau, C.; Vaishnava. P. P., “A method for measuring the Neel relaxation time in a frozen ferrofluid”, J. of Applied Physic, 118(6), 2015, DOI: 10.1063/1.4928202 • Source: arXiv.

Wenzel, J.; Samaniego, C.; Wang, L. ; Nelson, L.; Ketchum, K; Ammerman, M.; Zand, A., "Superheated Liquid and Supercritical Denatured Ethanol Extraction of Antioxidants from Crimson Red Grape Stems", Food Science and Nutrition, 2015, doi:10.1002/fsn3.246.

Wang, L.; Santos, E.; Schenk, D.; Rabago-Smith, M. “Kinetics and Mechanistic Studies on the Reaction between Cytochrome C and Tea Catechins”, Antioxidants, 2014, 3(3), 559 – 568. Doi:10.3390/antiox 3030559.

Wang, L. “Using Molecular Modeling in Teaching Group Theory Analysis of the Infrared Spectra of Organometallic Compounds”, J. Chem. Educ., 2012, 89(3), 360 – 364.

Rabago-Smith, M; McAllister, R.; Newkirk, K.; Basing, A.; Wang, L. “Development of an Interdisciplinary Experimental Series for the Laboratory Courses of Cell and Molecular Biology and Advanced Inorganic Chemistry”, J. Chem. Educ., 2012, 89(1), 150 – 155.

Preciado-Flores, S.; Wang, D; Wheeler, D.; Newhouse, R.; Hensel, J.; Schwartzberg, A.; Wang, L.; Zhu, J.; Barboza-Flores, M.; Zhang, J. “Highly Reproducible Synthesis of Hollow Gold Nanospheres with Near Infrared Surface Plasmon Absorption Using PVP as Stabilizing Agent", J. Mater. Chem. 2011, 21, 2344-2350.

Note: Names of undergraduate students are in blue.

Recent Presentations:

Ward, E; Topping, K; Gradl, E.; Alzahabi, M.; Samaniego, C.; Ammerman, M.; Wang, L.; Wenzel, J. “Evaluating the antimicrobial and antioxidant profiles of walnut husks extracted by different methods and drying conditions”, 48th American Chemical Society Central regional Meeting, Dearborn, MI, June 10, 2017.

Hillaker, S.; Wang, L.; Samaniego, C., “Exploration of cytotoxicity of Ruthenium(II) Mono-Arene Complexes”, 48th American Chemical Society Central regional Meeting, Dearborn, MI,

June 10, 2017.

Rabago-Smith, M.; Do, D.; Baker, A.; Wang, L.; Moorman, V., “Kinetic study of cytochrome c reduction by various polyphenolic compounds”, 48th American Chemical Society Central regional Meeting, Dearborn, MI, June 10, 2017.

Ragago-Smith, M.; Thomas, M.; Samaniego, C.; Moorman, V.; Wang, L., “Investigation of fluorescently tagged catechins in mouse embryonic fibroblast cells”, 48th American Chemical Society Central regional Meeting, Dearborn, MI, June 10, 2017.

Hillaker, S.; Kaiser, Z,; Wang, L.; Samaniego, S. “Cytotoxicity Study of Ruthenium(II) Monoarene Complexes”, 2017 Conference of Michigan Academy of Science, Arts, and Letters, Kalamazoo, MI, March 10, 2017.

Lemke, K.; Tabrizi, H; Sancraint, C.; Gebissa, H; Moorman, V.; Wang, L. “Study of the Interaction of Ru(II)-Mono-Arene Complexes with Serum Proteins”, 2017 Conference of Michigan Academy of Science, Arts, and Letters, Kalamazoo, MI, March 10, 2017.

Topping, K.; Ward, E.; Alzahaabi, K.; Gradl, A.; Ammerman, M.; Samaniego, C.; Wenzel, J.; Wang, L. “ Influence of extraction conditions on antioxidant and antimicrobial activities of black walnut husk extracts”, 2017 Conference of Michigan Academy of Science, Arts, and Letters, Kalamazoo, MI, March 10, 2017.

Thomas, M.; Rabago-Smith, M.; Moorman, V.; Samaniego, C.; Wang, L. “Kinetic studies between catechins and cytochrome c and the synthesis of fluorescent catechin derivatives for use in vivo tracking studies”, 2017 Conference of Michigan Academy of Science, Arts, and Letters, Kalamazoo, MI, March 10, 2017.

Stuckey, A*.; Windle, N.; Davis, J.*; Ward, E.*; Wang, L.; Ammerman, M.; Samaniego, C.; Wenzel, J. “HPLC-MS, Total Phenolic Content, and Anti-Cancer Properties of Supercritical Extracts of Walnut Husks and Chokeberries”, Annual Conference of Michigan Academy of Science, Arts and Letters, March 4, 2016, Sagnaw Vally State University.

Burrows, L.; Tucker, E.; Gradl, A.; Dwarshiuis, N.; Wang, L.; Ammerman, M.; Samaniego, C.; Wenzel, J. “Extraction of Antioxidants from Walnut Husks Using Supercritical Carbon Dioxide with an Ethanol Modifier”, Annual Conference of Michigan Academy of Science, Arts and Letters, March 4, 2016, Sagnaw Vally State University.

Rabago Smith, M.; Wang, L., “Development of an Interdisciplinary Experimental Series”, Kettering University Center for Excellence in Teaching and Learning Colloquia, March 8, 2016

Wenzel, J.; Dixon, T.; Tucker, E.; Burrows, L, Dwarshuis, N.; Hossink, E.; Wang, L.; Ammerman, M.; Samaniego, C. “Recovery of Bioactive Compounds from Processing By-Products”, the 250th American Chemical Society National Meeting, August 16 – 20, 2015, Boston, MA.

Wenzel, J.; Dixon, T.;,Tucker, E.; Wang, L.; Ammerman, M.; Samaniego, C., “Antioxidant activities of supercritical carbon dioxide and ethanol extracts of Aronia melanocarpa (black chokeberry) pomace”, 249th American Chemical Society National Meeting, March 22 – 26, 2015, Denver, CO.

Nartker, S.; Stogsdill, M.; Wang, L.; Aryan, D., “Electrospinning and Characterization of Polyvinyl Alcohol Nanofibers”, Annual Conference of Michigan Academy of Science, Arts & Letters, March 13, 2015, Andrews University, MI.

Wenzel, J.; Dixon, T.; Tucker, E.; Stuckey, A.;Wang, L.; Ammerman, M.; Samaniego, C. “Extraction of antioxidants from chokeberries using supercritical carbon dioxide with ethanol”, AIChE, November 16-21, 2014, Atlanta, GA.

Samaniego, C; Wang, L.;Wenzel, J.; Ammerman, M.; Nelson, L.; Tibbs, M.; Ketchum, K.; Zand, A., “Determination of antioxidant activities of superheated ethanol extracts of grape stems”, paper # 23540, Agricultural and Food Chemistry Division, 248th American Chemical Society National Meeting, San Francisco, August 10 - 14, 2014.

Samaniego, C; Wang, L.; Wenzel, J.; Ammerman, M.; Nelson, L.; Tibbs, M.; Ketchum, K.;

Zand, A. “Determination of antioxidant activities of superheated ethanol extracts of grape stems”, paper # 23540, SciMix, 248th American Chemical Society National Meeting, San Francisco, August 10 - 14, 2014.

Wang, L.; Wenzel, J.; Ammerman, M.; Samaniego, C.; Zand, A. “Prodiction and Evaluation of Antioxidants from Plants”, Faculty & Student Poster Session, Kettering Homecoming, May 17, 2014.

Perkins-Harbin, E., Mosher, N., Wang, L., Vaishnava, P., Kumon, R. Maagnetic Microbubbles for Biomedical Applications. Kettering University Homecoming. Flint, Michigan. May 17, 2014.

Mosher, N., Perkin-Harbin, E., Gerdung, N., Wang, L., Rablau, C., Vaishnava, P., Kumon, R. Syntesis and Characterization of Biocompatible Magnetic Nanoparticles. Kettering University Homecoming, May 17, 2014.

Shaffer*, A.; Tibbs*, M.; Ammerman, M.; Zand, A.; Samaniego, C.; Wang, L.; Wenzel, J., “Evaluation of antioxidant properties of supercritical fluid extraction products of grape stems” Annual Conference of Michigan Academy of Science, Arts & Letters, February 28, 2014, Oakland University, Michigan.

Wenzel, J.; DeCrane, S.; Wang, L.; Zand, A. Supercritical fluid extraction of polyphenolic compounds from pomegranate peels. AIChE 2013 Annual Meeting, San Francisco. November 3-8, 2013.

DeCrane S.*, Wenzel J., Zand A., Lihua Wang, “Antioxidant properties of extracted phenolic compounds from grape stems using supercritical fluids”, Paper #141, 246th ACS National Meeting in Indianapolis, IN, September 8 – 12, 2013.

Childress*, A; Ellison, N. ; Wang*, L. “Synthesis and characterization of gold-coated iron oxide Nanoparticles”, the chemistry section of the Michigan Academy of Science, Arts, and Letters Annual Conference, Hope College, Holland, Michigan, March 22, 2013.

Ludwigsen, D; Lynch-Caris, T; Wang, L. ; Ethington, E, “Using a Systematic Approach to Build an Institutional Process for Instructional Technology”, 7th International Technology, Education, and Development Conference, Valencia (Spain), 4th – 6th, March, 2013.

L. Wang, “Metals in Medicine”, Distinguished Faculty Speaker Series, Kettering University, November 29, 2012.

Miller, A.; Stubbs, B.; Wang, L., “Study of the Interaction of Citrate-Capped Gold Nanoshells with Metal Ions”, Pub # 185, the 43rd Central Regional Meeting of the American Chemical Society, Dearborn, MI, June 2012.

Oyster, M.; Skop, S.; Basing, A., Wang, L. “Binding Properties of Ruthenium (II) Anti-cancer Complexes with Blood Serum Proteins”, Pub # 162, the 43rd Central Regional Meeting of the American Chemical Society, Dearborn, MI, June 2012.

Rabago-Smith, M.; Santos, E.; White, D.; Easley, R.; Thomas, B.; Maciejewskia, A, “Study of the Kinetics and Mechanisms of the Reaction between Cytochrome c and Tea Catechins”, Pub #167, the 43rd Central Regional Meeting of the American Chemical Society, Dearborn, MI, June 2012.

Wang, L; Rabago-Smith, M; Maciejewski, A.“Kinetic and Mechanistic Study of the Reaction between Tea Catechins and Cytochrome C”, Pub # 46, the 241st National Meeting of the American Chemical Society, Anaheim, CA, March 2011.

Wang, L. “Teaching innovation in an inorganic chemistry class: A term project”, Pub # 1476, the 241st National Meeting of the American Chemical Society, Anaheim, CA, March 2011.

Wang, L. “Using molecular Modeling in Teaching Group Theory: Analysis of the Infrared Spectra of Organometallic Compounds”, Pub # 1459, the 241st National Meeting of the American Chemical Society, Anaheim, CA, March 2011.

Note: Names of undergraduate students are in blue.

Current Departmental and University Services:

• Assessment Leader for the Department of Chemistry and Biochemistry (April 2009 – Present)

• Member of Department Promotion Committee

• Faculty Advisor (2006 – present) for the Eta Beta Chapter of Gamma Sigma Epsilon Chemistry Honor Society

• Member of the advisory board member of the Center for Excellence in Teaching and Learning (Summer 2013 – present).

• Member of the Academic Advisory Sub-Committee to the Information Technology Advisory Committee (Summer 2013 – present).

• Member of the 1st Year Experiences Advisory Committee (Winter 2013 – present).

Professional Services:

• Peer Reviewer, Journal of Chemical Education; Chemistry Education Research and Practice (published by the Royal Society of Chemistry); Sensors; IEEE Transactions on Dielectrics and Electrical Insulation.

• Vice Chair, Chemistry Section, 2014 Conference of Michigan Academy of Science, Arts, and Letters.

• NSF Panel Reviewer for SBIR grants in Educational Applications, Served on six panels from August 2010 to August 2013.

• Reviewer for the 5th Comprehensive Review of the MCAT Exam (MR5)

• Textbook reviewer for “Chemistry”, 4th edition by Martin Silberberg

Awards:

• 2013 Tutt Award for Teaching Innovation

• 2012 Educational Scholar Award

Professional Society:

American Chemical Society