

Yin Jing

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EDUCATION

- **Ph.D. in Chemical Engineering**, University of Illinois at Chicago, Chicago, IL
GPA: 3.87 / 4.0
August 2012 to December 2017
Dissertation: "Mechanistic Study of Electrochemical Processes on A Porous Magnéli Phase Electrode"
 - **Master's in Chemical Engineering**, University of Dayton, Dayton, OH
GPA: 3.83 / 4.0
August 2010 to July 2012
Dissertation: "Computer Simulation of A Plug Flow Reactor for Cobalt Catalyzed Fischer Tropsch Synthesis Using A Microkinetic Model"
 - **Bachelor's in Chemical Engineering**, Shenyang University of Chemical Technology, Shenyang, Liaoning
September 2005 to June 2009
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SKILLS

Electrochemistry

Voltammetry (reaction mechanism, metal deposition, corrosion, and bio-sensor), AC impedance, SECM, photo-electrochemistry (TiO₂), electrode fabrication (micron and nano scales) and polishing (CMP);

Water Treatment

Water chemistry, membrane fabrication and characterization, membrane fouling and mitigation, separation, transport in porous material, contaminant detection, advanced oxidation processes, electrochemical advanced oxidation processes;

Synthesis and Characterization

Inorganic and organic membrane synthesis, inorganic chemistry, organic chemistry, analytical chemistry, solid oxide electrode fabrication and characterization, thin film synthesis and characterization;

Physical Characterization

SEM, XPS, XRD, TGA, HPLC, IC, COD, Mercury intrusion analysis and UV-vis;

Simulation and Data Analysis

Visual Basic, C#, Python, Matlab, and Comsol.

WORK EXPERIENCE

Postdoctoral Researcher, *University of Texas at Austin, Austin, TX*; August 2017 to Present

- Successfully revealed the kinetics of a decarboxylative dimerization reaction, which has not been scientifically reported since the reaction's discovery;
- Thoroughly investigated the Ti valence change on the interface of a substoichiometric TiO₂ thin film;
- Integrally involved in the study of passivating tunneling film growth on a substoichiometric TiO₂ electrode;
- Successfully fabricated an electrochromic sensor for conductivity, glucose and lactate sensing in sweat through collaborative research.

Research Assistant, *University of Illinois at Chicago, Chicago, IL*; May 2014 to August 2017

- Successfully achieved the synthesis of a ceramic TiO₂ ultrafiltration membrane using sol-gel and hard-press methods, and its conversion to a conductive membrane in the thermos reduction process;
- Improved membrane performance with excellent flux recovery and extremely low cost by the development of mathematical model to the filtration process and a chemical free electrochemical regeneration scheme;
- Selected an appropriate probe molecule used for the characterization of electrochemical advanced oxidation processes by various electrochemical methods and numerical simulations;
- Developed a methodology to study the interfacial phenomena at a solid oxide electrode;
- Integrally involved in the project where a carbon nanotube based sensor was developed to detect antibiotics in the wastewater stream.

PATENT

- Chaplin, B. P.; **Jing, Y.**; Guo, L.; Nayak, S. 2016. *Ultrafiltration TiO₂ Magnéli phase reactive electrochemical membranes*. U.S. Patent Application 15/365,252, 2017.

PUBLICATIONS

- **Jing, Y.**; Zhou, M.; Zhang, X.; Bard, A. *Simultaneous Multiple Reactions at an Electrode by Scanning Electrochemical Microscopy (SECM) - The Kolbe Reaction in the Aqueous Solution*. **J. Phys. Chem. C**. In Review.
- **Jing, Y.**; Almassi, S.; LeSuer, R.; Chaplin, B.P. *The roles of oxygen vacancies, electrolyte composition, lattice structure, and doping density on the electrochemical reactivity of Magnéli phase TiO₂ anodes*. **J. Mater. Chem. A**. In Revision.
- **Jing, Y.**; Chaplin, B. P. *A Mechanistic Study of the Validity of Using Hydroxyl Radical Probes to Characterize Electrochemical Advanced Oxidation Processes*. **Environ. Sci. Technol.** 2017, 51 (4), 2355–2365.
- **Jing, Y.**; Guo, L.; Chaplin, B. P. *Electrochemical impedance spectroscopy study of membrane fouling and electrochemical regeneration at a sub-stoichiometric TiO₂ reactive electrochemical membrane*. **J. Memb. Sci.** 2016, 510, 510–523.
- **Jing, Y.**; Chaplin, B. P. *Electrochemical impedance spectroscopy study of membrane fouling characterization at a conductive sub-stoichiometric TiO₂ reactive electrochemical membrane: Transmission line model development*. **J. Memb. Sci.** 2016, 511, 238–249.

- Zhang, X.; **Jing, Y.**; Zhai, Q.; Yu, Y.; Xing, H.; Li, J.; Wang, E. Point-of-Care Diagnoses: Flexible Patterning Technique for Self-Powered Wearable Sensors. **Anal. Chem.** In Revision.
 - Guo, L.; **Jing, Y.**; Chaplin, B. P. Development and Characterization of Ultrafiltration TiO₂ Magnéli Phase Reactive Electrochemical Membranes. **Environ. Sci. Technol.** 2016, 50 (3), 1428–1436.
 - Santos, M. C.; Elabd, Y. A.; **Jing, Y.**; Chaplin, B. P.; Fang, L. Highly porous Ti₄O₇ reactive electrochemical water filtration membranes fabricated via electrospinning/electrospraying. **AIChE J.** 2016, 62 (2), 508–524.
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PRESENTATIONS

- **Y. Jing**, B.P. Chaplin, “Mechanisms of organic compound fouling on a sub-stoichiometric titanium dioxide reactive electrochemical membrane,” Oral Presentation: **2014 ACS 248th National Meeting**, San Francisco, CA, Aug. 10th, 2014;
- **Y. Jing**, L. Guo, B.P. Chaplin, “Electrochemical Impedance Spectroscopy Study of Reactive Electrochemical Membrane Fouling and Development of a New Regeneration Scheme,” Poster Presentation: **2015 North American Membrane Society**, Boston, MA, May 21st, 2015;
- **Y. Jing**, L. Guo, B.P. Chaplin, “Electrochemical Impedance Spectroscopy Study of Membrane Fouling Characterization at a Conductive Sub-Stoichiometric TiO₂ Reactive Electrochemical Membrane,” Oral Presentation: **2016 AIChE Midwest Regional Conference**, Chicago, IL, Mar. 4, 2016;
- **Y. Jing**, L. Guo, B.P. Chaplin, “Electrochemical Impedance Spectroscopy Study of Membrane Fouling Characterization at a Conductive Sub-Stoichiometric TiO₂ Reactive Electrochemical Membrane,” Oral Presentation: **2016 ACS 251st National Meeting**, San Diego, CA, Mar. 17, 2016;
- **Y. Jing**, B.P. Chaplin, “Membrane Fouling and Electrochemical Regeneration at a Sub-Stoichiometric TiO₂ Reactive Electrochemical Membrane,” Oral Presentation: **2016 AIChE Annual Meeting**, San Francisco, CA, Nov. 17, 2016