

Mingmei Wang

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Education

PhD, Chemical Engineering, Iowa State University, Ames, Iowa, 2006~present

Supervisor: Prof. Mark J. Kushner **E-mail:** mjkush@umich.edu

M. E., Applied Chemistry, University of Science and Technology Beijing, Beijing, P.R.China, 2006

B. E., Fine Chemical Engineering, Tianjin University, Tianjin, P. R. China, 2000

Research and Professional Experience

1. PhD. Research (Aug. 2006-present)

Optical and Discharge Physics Lab, Iowa State University, Ames, Iowa

(Currently, Institute for Plasma Science and Engineering, University of Michigan, Ann Arbor, MI)

- ♦ Simulation of plasma etching of high aspect ratio semiconductor features.
- ♦ Chemical and physical mechanisms for surface and bulk interactions in both gas and solid phases.
- ♦ Code development on modeling profile and electric field evolution during etching.
- ♦ Research on eliminating profile twisting (due to charging) and bowing (due to mask effects) during microelectronics fabrication.
- ♦ High energy electron beam effects on elimination of twisting and angle control in nano-scale features.
- ♦ Modeling of mixing layer damage during low-k material etching.
- ♦ Preprocessing of multi-layer or single layer mask to optimize feature profile and etch rate.

2. M. E. Research (Sep. 2003 – Mar. 2006):

*Laboratory of Separation Science and Engineering, State Key Laboratory of Biochemical Engineering,
Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China*

Thesis Title: Study of Stable Foam System for Decontamination and Interface Phenomena

(Research Fellowship: National Natural Science Foundation of China)

- ♦ Testing of foam stability and foamability of surfactants.
- ♦ Influence of active decontaminating substance on foam characteristics.
- ♦ Studies on foam rupture mechanisms and optimization of surfactants.

3. Professional Experience (Aug. 2000 - Aug. 2003):

Research Engineer, Tianjin Power Source Institute, Tianjin, China

- ♦ Design of Li-ion battery with high specific capacity.
- ♦ Monitoring of electric performance of batteries.

Publications

1. Journal Articles:

- M. Wang** and M. J. Kushner. High Energy Electron Beams in Capacitively Coupled Plasmas I: Fundamental Characteristics. In preparation.
- M. Wang** and M. J. Kushner. High Energy Electron Beams in Capacitively Coupled Plasmas II: Effects on Twisting in High Aspect Ratio Etching of Dielectrics. In preparation.
- M. Wang**, Z.D. Chang, H.L. Xi, Y.J. Zuo, H.Z. Liu and W.J. Li. Advances in Measurement Techniques and Influence Factors on Aqueous Foam Stability. *Chemical Industry and Engineering Progress*, 2005, 24 (7): 723-728. (In Chinese).

2. Conference Proceedings and Presentations:

- Mingmei Wang** and Mark J. Kushner. Consequences of Implanting and Surface Mixing During Si and SiO₂ Plasma Etching. **36th ICOPS**. (Oral presentation) San Diego, CA, June 2009.
- Mingmei Wang** and Mark J. Kushner. Aspect Ratio Dependent Twisting and Mask Effects During Plasma Etching of SiO₂ in Fluorocarbon Gas Mixture, **AVS 55th International Symposium and Exhibition**. (Poster) Boston, MA, October 2008.
- Mingmei Wang** and Mark J. Kushner. Effects of Charging and Mask Erosion in SiO₂ High Aspect Ratio Etching in Fluorocarbon Plasmas, **TECHCON 2008**. (Oral and poster presentation) Austin, TX, November 2008.
- Mingmei Wang** and Mark J. Kushner. Numerical Investigations for Eliminating Charging Effects on twisting of High Aspect Ratio Features During SiO₂ Etching in Fluorocarbon Plasmas, **Gordon Research Conference 2008**. (Poster) South Hadley, MA, July 2008.
- Mingmei Wang**, Ankur Agarwal, Yang Yang and Mark J. Kushner. Plasma Etching of Extremely High Aspect Ratio Features: Twisting Effects, **60th Gaseous Electronics Conference** (Oct. 2007). (Poster) Washington, DC, October 2007.
- Yang Yang, **Mingmei Wang** and Mark J. Kushner. "Progress, Opportunities and Challenges in Modeling of Plasma Etching", **11th International Interconnect Technology Conference**, Burlingame, CA, June 2008.
- Mingmei Wang**, Zhidong Chang et al. Effect of the Surfactant on the Production and Stability of Aqueous Decontamination Foams, **International Solvent Extraction Conference 2005 (ISEC2005)**, (Oral presentation) Beijing, China, September 2005.