

# JUSTYNA WIEDEMAIR

Georgia Institute of Technology  
School of Chemistry and Biochemistry  
901 Atlantic Drive NW  
Atlanta, GA 30332

+1-404-385-4430-4#  
justyna@gatech.edu

## RELEVANT EXPERIENCE

### Georgia Institute of Technology (Atlanta, GA)

01/05-present **Doctor of Philosophy (Major: Analytical Chemistry)**  
Graduate Research Assistant (Advisor: Prof. B. Mizaikoff)

- Improved AFM-SECM technology for AFM tip-integrated amperometric biosensors
- Experienced with electroanalytical techniques (amperometry, potentiometry and SECM), surface characterization (SEM, AFM, STM) and surface patterning in cleanroom environment (DC/RF sputtering, (PE)CVD, FIB)
- Worked with cell cultures and enzymes
- Supervised undergraduate students

### Johannes-Kepler-University (Linz, Austria)

10/04-12/04 **Visiting Researcher**  
Institute of Biophysics (Advisor: Prof. P. Hinterdorfer)

- Performed AFM imaging (MAC, AAC and CM) at live biological specimen
- Conducted AFM based force measurements of biological molecules

### Vienna University of Technology (Vienna, Austria)

09/99-07/04 **Master of Science (Major: Analytical Chemistry)**  
Thesis "Investigation of novel immobilization matrices for the integration of electrochemical biosensors into bifunctional AFM tips" (Advisor: Prof B. Mizaikoff)

- Explored AFM imaging at temperature responsive hydrogels during a 6 month research stay at the Georgia Institute of Technology (Atlanta, GA)
- Passed diploma exam with distinction
- Supervised students in undergraduate lab as student teaching assistant
- Conducted undergraduate research utilizing SIMS, AFM and electroanalytical techniques
- Performed several internships during summer semesters:

08/03 **Andritz AG** (Vienna, Austria); Performed quality control

06/02-09/02 **Irish Refining Ltd.** (now: ConocoPhillips Whitegate Refinery) (Whitegate, Ireland); Participated in refinery process control

09/01 **Andritz AG** (Vienna, Austria); Performed quality control

08/01 **OMV AG** (Schwechat, Austria); Performed quality control of gas specimen by GC

## ADDITIONAL INFORMATION

- Fluent in German and English; Basic knowledge of Polish
- Member of the American Chemical Society and the Electrochemical Society
- Won the "Best Presentation Award" at the Georgia Local Section of the ECS: Workshop on Electrochemistry, MEMS and Nanotechnology (09/05, Atlanta, GA, USA)
- Received two "Scholarships for excellent grades" (11/04 and 11/03, Vienna University of Technology, Vienna, Austria)
- Received a "Grant for research stays in foreign countries" (10/03, Vienna University of Technology, Vienna, Austria)

## PUBLICATIONS

C. Kranz, J. Wiedemair

*"Scanning Force Microscopy (SFM) Based Biosensors"* (invited)

Analytical and Bioanalytical Chemistry (accepted)

J. Wiedemair, M. J. Serpe, J. Kim, J.-F. Masson, L. A. Lyon, B. Mizaikoff, C. Kranz

*"In-situ AFM Studies on the Phase Transition Behavior of Single Thermoresponsive Hydrogel Particles"*

Langmuir (2007), 23 (1), 130-137

J. Wiedemair, B. Mizaikoff, C. Kranz

*"Combined scanning probe techniques for in-situ electrochemical imaging at a nanoscale"* (invited bookchapter)

In: Applied Scanning Probe Methods, Volume 6 (Edited by B. Bhushan, H. Fuchs, and S. Kawata)

Springer-Verlag, Heidelberg, 2007

C. Kranz, J. Wiedemair, J.-F. Masson, C. dos Santos Riccardi, B. Mizaikoff

*"Micro- and Nanoelectrochemistry at the AFM-Tip"*

Proceedings of the VIII Linz Winter Workshop, Trauner Verlag Universitaet, Schriftenreihe Biophysik, Band 1, Editors: P. Hinterdorfer, G. Schuetz and P. Pohl, p 51-56 (2006), ISBN 3-85499-163-0, ISBN 978-3-85499-163-2

## CONFERENCE CONTRIBUTIONS (presenting author underlined)

### Oral presentations

J. Wiedemair, J. Moon, H. Shin, B. Mizaikoff and C. Kranz

*"Ion Beam Induced Deposition of Platinum-Carbon Composite Electrodes for Bifunctional AFM-SECM Probes"*

212<sup>th</sup> ECS Meeting, Washington, DC, October 7-12, 2007

C. Kranz, J.-F. Masson, J. Wiedemair, B. Mizaikoff, E. Gauda, B. J. Duke, D. Eaton

*"Micro- and nanosensing at live biological specimen using combined scanning probe techniques"* (invited key note lecture)

Euroanalysis XIV, Antwerpen, Belgium, September 09-14, 2007

J.-S. Moon, J. Wiedemair, J.-F. Masson, B. Mizaikoff, and C. Kranz

*"Atomic Force Scanning Electrochemical Microscopy (AFM-SECM) for Electrochemical Imaging at the Nanoscale"* (invited presentation)

Microscopy and Microanalysis 2007, Fort Lauderdale, FL August 05-09, 2007.

J.-S. Moon, J. Wiedemair, B. Mizaikoff, C. Kranz

*"Combined Atomic Force Scanning Electrochemical Microscopy (AFM-SECM) for High-Resolution Imaging"*

IV LASPM (Latin American Scanning Probe Workshop), Mar del Plata, Argentina, May 02 -05, 2007

C. Kranz, J. Wiedemair, J.-S. Moon, H. Shin, B. Mizaikoff

*"Hyphenated Scanning Probe Techniques: Combined Atomic Force Scanning Electrochemical Microscopy (AFM-SECM)"*

AFM Workshop, Agnes Scott College, Atlanta, GA, April 24, 2007.

J. Wiedemair, J.-F. Masson, B. J. Duke, D. C. Eaton, B. Mizaikoff, C. Kranz

*"AFM tip-integrated biosensors for in-situ investigation of epithelial cell monolayers"*

Montpellier'2006 Scanning Probe Microscopy, Sensors and Nanostructures, Montpellier, France, June 3-6. 2006

J. Wiedemair, H. Shin, B. Mizaikoff, C. Kranz

*"Nano-fabricated bifunctional scanning probes"*

CDC-MIRC Nanotech Day Workshop, Atlanta, GA, USA, April 4, 2006

J. Wiedemair, B. J. Duke, D. C. Eaton, C. Kranz, B. Mizaikoff  
*"Miniaturization of ATP biosensors for the measurement of ATP release at epithelial cell monolayers"*  
231<sup>st</sup> ACS National Meeting, Atlanta, GA, USA, March 26-30, 2006

J.-F. Masson, J. Wiedemair, C. Kranz, E. Gauda, B. Mizaikoff  
*"Optimization of amperometric microbiosensors for ATP measurement at the carotid body"*  
231<sup>st</sup> ACS National Meeting, Atlanta, GA, USA, March 26-30, 2006

C. Kranz, J. Wiedemair, J.-F. Masson, C. dos Santos Riccardi, B. Mizaikoff  
*"Micro- and Nanoelectrochemistry at the AFM-Tip, (invited presentation)"*  
8<sup>th</sup> Annual Linz Winter Workshop on Scanning Probe Microscopy, Linz, Austria, February 3-6, 2006

J. Wiedemair, B. J. Duke, D. C. Eaton, C. Kranz, B. Mizaikoff  
*"Scanning ATP-microbiosensors for the measurement of ATP release at epithelial cell monolayers"*  
Georgia Local Section of the ECS: Workshop on Electrochemistry, MEMS and Nanotechnology,  
Atlanta, GA, USA, September 23, 2005

C. Kranz, J. Wiedemair, B. Mizaikoff  
*"From AFM-SECM to Tip-Integrated Sensors for Biological Applications"*  
1<sup>st</sup> ECHEMS meeting, Electrochemistry in Nanoscience, Venice, Italy, June 30 -July 3, 2005

A. Kueng, J. Wiedemair, B. Mizaikoff, C. Kranz  
*"AFM-Tip Integrated Electrochemical Sensors – From Integrated Amperometric Biosensors to Potentiometric pH-Nanosensors"*  
3<sup>rd</sup> Workshop on Scanning Electrochemical Microscopy, Dublin, Ireland, June 11-12, 2004

### **Poster presentations**

C. Kranz, J. Wiedemair, B. Mizaikoff  
*"FIB-Fabricated AFM-Tip Integrated Nano-Disk Electrodes"*  
Pacifichem Honolulu, Hawaii, USA, December 15-20, 2005

J. Wiedemair, B. J. Duke, D. C. Eaton, B. Mizaikoff, C. Kranz  
*"AFM Tip integrated nanobiosensors: Towards the measurement of ATP released at epithelial cell monolayers"*  
Hands-On NanoBio Fluidic MEMS Workshop, Atlanta, GA, USA, November 14-18, 2005

C. Kranz, J. Wiedemair, D. Rudolph, B. J. Duke, D. C. Eaton, D. Bates, T. DiChristina, B. Mizaikoff  
*"AFM-SECM Imaging at Cell and Microbe Surfaces"*  
Gordon Research Conference, Chemical Sensors and Interfacial Design, Queens College, Oxford, England, August 28-September 2, 2005

A. Glaser, J. Foisner, J. Wiedemair, G. Friedbacher, H. Hoffmann  
*"AFM-Investigation of temperature effects on the deposition of alkylsiloxane submonolayers on silicon"*  
12. Tagung Festkörperanalytik, Vienna, Austria, September 22-24, 2003