

Mary H. Upton

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Education

University of Illinois at Urbana-Champaign

Ph.D. Physics, Summer 2005 (Expected)
Thesis: "Photoemission Studies of Thin Lead Films"
Advisor: Tai-Chang Chiang
M.S. Physics, May 2001

University of Chicago

B.A. Physics, June 1999
with honors in physics and general honors

Publications

M. H. Upton, T. Miller, and T.-C. Chiang, "Reply to Comment on 'Thermal Stability and Electronic Structure of Pb Films on Si(111)'." *Physical Review Letters* **94**, 079702 (2005).

M. H. Upton, T. Miller, and T.-C. Chiang, "Unusual Band Dispersion in Pb Films on Si." *Physical Review B* **71**, 033403 (2005).

M. H. Upton, C. M. Wei, M. Y. Chou, T. Miller, and T.-C. Chiang, "Thermal Stability and Electronic Structure of Pb Films on Si(111)." *Physical Review Letters* **93**, 026802 (2004).

M. H. Upton, T. Miller, and T.-C. Chiang, "Absolute Determination of Film Thickness from Photoemission: Application to Atomically Uniform Films of Pb on Si." *Applied Physics Letters* **85**, 1235 (2004).

M. H. Upton, T. Miller, and T.-C. Chiang, "Electron-Phonon Interaction in Pb Films on Si(111)." In preparation.

Selected Talks

Condensed Matter Physics Seminar "Properties of Atomically Uniform Pb Films on Si." Iowa State University, Ames, IA (March 2005).

"Properties of Atomically Uniform Pb Films on Si." Los Alamos National Laboratory, Los Alamos, NM (February 2005).

Aladdin Lamp Award Talk "Properties of Atomically Uniform Lead Films on Silicon." Synchrotron Radiation Center Users' Meeting, Stoughton, WI (October 2004).

Awards

Aladdin Lamp Award, Fall 2004. Recognizes excellence in synchrotron radiation research performed at Synchrotron Radiation Center in pursuit of a degree.

Teaching Award, Spring 2000. A campus award recognizing superior teaching.

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Skills

Photoemission

- Extensive experience with both valence and core-level photoemission
- Experimented at synchrotron radiation source
- Used multi-channel detector

Ultra high vacuum

- Operation, maintenance, and modification

Molecular beam epitaxy

- Metals

RHEED Reflection high energy electron diffraction

- Used to verify surface reconstruction

Auger spectroscopy

- Used for elemental composition analysis

Data analysis software

- Mathcad, Igor, Sigmaplot

Physical hardware

- Design and construction of supporting lab equipment
- Extensive machining experience

Cryostat

- Operated a closed cycle helium cryostat while performing UHV experiments

Relevant Experience

Graduate Research Assistant

University of Illinois, T.-C. Chiang Research Group, Fall 2000-Present.

- Photoelectron spectroscopy of thin films

Teaching Assistant

University of Illinois Physics 101 *College Physics, Mechanics and Heat*, Fall 1999 and Spring 2000.

- Taught 4 weekly discussion sections of about 25 undergraduates each
- Graded weekly quizzes

Undergraduate Research Assistant

University of Chicago, Granular Physics Group, Fall 1998-Spring 1999.

- Quantified force distribution in granular materials

Physics Tutor

University of Chicago General Education Tutors, Fall 1998.

- Provided supplementary explanations to students in introductory physical science classes

Undergraduate Research Assistant

University of Chicago, KTeV Research Group, Fall 1997-Summer 1998.

- Programming
- Prepared figures for laymen's explanation