

Kate Labelle Klein

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EDUCATION:

Trinity College, Hartford, CT
Bachelor of Science in Engineering, ME concentration
Graduation: May 2003
Cumulative GPA: 3.7, Major GPA: 3.8

University of Tennessee, Knoxville, TN
Currently enrolled for Masters of Science in Materials Science and Engineering

RELEVANT EXPERIENCE:

University of Tennessee MSE Department, Knoxville, TN *September 03-Present*
Research Associate: Performed fundamental growth studies of Vertically Aligned Carbon Nanofibers (VACNFs). Studied the catalytic effects of combinatorial metallic alloys. Grew nanofibers for device integration.

Engineering Department, Trinity College, Hartford, CT *September 02-May 03*
Senior Design Project: Built a high temperature vacuum annealing chamber. Studied the effects of annealing on carbon nanofibers using TEM and diffraction techniques.

Engineering Science and Technology Division, ORNL, TN *June 02-August 02*
DOE ERULF Fellowship: Fabricated and characterized VACNF based membrane devices. Presented results at DOE Nanoscale Science Research Centers Workshop in Washington, D.C. on February 27, 2003.

Center for Integrated Systems, Stanford University, Palo Alto, CA *June 01-August 01*
NSF NNUN Researcher: Upgraded and repaired Scanning Auger Microscope system. Designed an electron beam micro-column to study the electron loss mechanisms of thin film diamond.

Materials Engineering/Microscopy Facility, Trinity College, Hartford, CT *January 00-May 02*
Research Assistant: Characterized the microstructure of silicon nanowires and thin film SBTs using TEM; presented results at MRS and CMOC. Fabricated and characterized thin film aerogels using the AFM and TEM; presented results. Developed new TEM sample preparation techniques for aerogel and silicon specimens.

United Technologies Trinity College Engineering Initiative, Hartford, CT *June 00-May 03*
Research Fellow: First freshman to receive UTCEI Fellowship, used to conduct materials research on aerogels. Introduced high school students to robotics, engineering, materials science, chemistry, and microscopy.
Tutor: Tutored college students in mathematics, physics, chemistry, and engineering.

First Year Student Programs, Trinity College, Hartford, CT *September 01-May 03*
Teaching Assistant: Instructed laboratories for the "Introduction to Engineering: Mobile Robotics" course.
Mentor: Facilitated the "Science and the Consumer" seminar, studying alternative energy.

Engineering Department, Trinity College, Hartford, CT *January 00-January 01*
Robot Team Member: Produced an autonomous fire-fighting robot that competed in International Robotics Contests. Studied walking robotic motion then designed and built a hexapod robot.

SPECIAL SKILLS:

Microfabrication: E-beam PVD of thin film metals, PECVD thin film deposition and VACNF growth, wet chemical processing.

Microscopy Techniques: AFM, SEM, TEM, EDX, digital and photographic image processing.

Computers: Working knowledge of Interactive C, Matlab, FORTRAN, Munro, Mathematica, AutoCAD, LabVIEW, and B²SPICE; Proficient in Windows, MS Word, Excel, PowerPoint, Adobe Photoshop.

Language Fluency in Spanish: Took advanced level language courses; studied abroad in Ecuador (1998–1999).

HONORS AND AWARDS:

ASME Prize, Hartford Section	<i>Fall 02</i>
Bob Harron Board of Fellows Award (Trinity Junior Scholar Athlete of the Year)	<i>Fall 01-Spring 02</i>
Faculty Honors, Trinity College	<i>Spring 00, Spring 02</i>
United Technologies TCEI Achievement Award	<i>Spring 02</i>
Trinity Community Service Award	<i>Spring 02</i>
All-NESCAC Academic Team Athletic Award	<i>Fall 00-Fall 01</i>

ACTIVITIES:

President of the Society of Women Engineers, Trinity College Chapter	<i>Fall 01-Spring 03</i>
Member of ASME, MRS, and the CT Microscopy Society	<i>Fall 00-Present</i>
Varsity Athlete and Captain, Trinity College Track and Cross-Country Teams	<i>Fall 99-Spring 03</i>
President of the Trinity College Equestrian Team	<i>Spring 00-Fall 02</i>

PUBLICATIONS AND PRESENTATIONS:

K.L. Klein, A.H. Lehman, J. Mertens, A.V. Melechko, M.L. Simpson. The Effects of Annealing on Carbon Nanofibers. Trinity College Science Symposium, April 2003.

K.L. Klein, A.V. Melechko, M.A. Guillorn, M.J. Doktycz, L. Zhang, M.L. Simpson, T.E. McKnight, V.I. Merkulov, D.H. Lowndes. Fabrication and Characterization of Vertically-Aligned-Carbon-Nanofiber-Based Membrane Devices. Connecticut Microelectronics and Optoelectronics Consortium, April 2003. <<best poster award>>

K.L. Klein, A.V. Melechko, M.A. Guillorn, M.J. Doktycz, L. Zhang, M.L. Simpson, T.E. McKnight, V.I. Merkulov, D.H. Lowndes. Fabrication and Characterization of Vertically-Aligned-Carbon-Nanofiber-Based Membrane Devices. DOE Nanoscale Science Research Centers Workshop in Washington, D.C., February 2003.

M.J. Doktycz, L. Zhang, A.V. Melechko, **K. Klein**, T.E. McKnight, P.F. Britt, M.A. Guillorn, V.I. Merkulov, D.H. Lowndes, and M.L. Simpson. Nanofiber Structures as Mimics for Cellular Membranes. Nanotech Conference, February 2003.

D.L. Pechkis, C. Caragianis-Broadbridge, A.H. Lehman, **K.L. Klein**, J.P. Han, and T.P. Ma. Thin Film Thickness and Grain Structure Determination of Ferroelectric SrBi₂Ta₂O₉ with Cross-sectional Atomic Force Microscopy. Microsc. Microanal., 8 (Suppl. 2, 774CD), August 2002.

C. Caragianis-Broadbridge, D.L. Pechkis, J.P. Han, A.H. Lehman, **K.L. Klein**, C.J. Xie, W. Tong, K.H. Kim, and T.P. Ma. Impact of Annealing Temperature on the Microstructural and Physical Properties of Ferroelectric-gate Memory Capacitors. Connecticut Microelectronics and Optoelectronics Consortium Symposium, March 2002.

D.L. Pechkis, C. Caragianis-Broadbridge, A.H. Lehman, **K.L. Klein**, J.P. Han, and T.P. Ma. Thin Film Thickness and Grain Structure Determination of Ferroelectric $\text{SrBi}_2\text{Ta}_2\text{O}_9$ with Cross-sectional Atomic Force Microscopy. Connecticut Microelectronics and Optoelectronics Consortium Symposium, March 2002. <<best poster award>>

C. Wyszchen, S. Sinha, C. Caragianis-Broadbridge, **K.L. Klein**, and A.H. Lehman. Studies on the Growth Conditions for Silicon Nanowires. Connecticut Microelectronics and Optoelectronics Consortium Symposium, March 2002.

D.L. Pechkis, C. Caragianis-Broadbridge, J.P. Han, C.M. Xie, W. Tong, K.H. Kim, W. Zhu, Z. Luo, T.P. Ma, **K.L. Klein**, and A.H. Lehman. Impact of Processing Conditions on the Microstructural and Physical Characteristics of Ferroelectric-gate Memory Capacitors. Materials Research Society Meeting, November 2001. <<finalist for best poster>>

C. Caragianis-Broadbridge, A. Hein Lehman, J. R. Miecznikowski and **K. Klein**. Properties of Thin Film Nanoporous Silica as a Function of Processing and Annealing Methods. Microscopy and Microanalysis 2000, Proceedings of the Microscopy Society of America, Vol. 6, August 2000.