

# Jennifer Elizabeth Gerbi

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## **Vita:**

Born December 14, 1971 (U.S. Citizen)

## **Education:**

Ph.D. (Materials Science) University of Illinois, Urbana-Champaign, Illinois. May 2001

M.S. (Physics) University of Virginia, Charlottesville, Virginia. August 1995

B.A. (Physics) Bard College, Annandale-on-Hudson, New York. May 1993

## **Research Experience:**

### **Postdoctoral Research Associate**

June 2001-Present

Argonne National Laboratory, Argonne, Illinois. Dr. John Carlisle, Dr. Mike Pellin, Dr. Dieter Gruen.

Study of Ultra-Nanocrystalline Diamond (UNCD) microwave CVD materials and thin film growth processes, including electronic and structural film properties and design of initial devices. Development of in-situ gas doping process. Work includes development of the first n-type devices realized with any diamond films. Collaboration with the Materials Research Laboratory at the University of Illinois and Dr. Bruce Alphenaar (University of Louisville).

### **Graduate Fellow and Research Assistant**

August 1995-May 2001

University of Illinois at Urbana-Champaign, Urbana, Illinois. Dr. John Abelson.

Study of reactive magnetron sputtered high-quality thin film Si growth at low temperatures. Optimized morphology and structure of various phases of thin film Si via controlled particle bombardment during deposition. Special interest in medium range order of amorphous Si as measured with novel microscopy techniques, and grain structure of polycrystalline Si. Collaboration with Dr. Murray Gibson (Argonne), Dr. Paul Voyles (NEC/Bell Laboratories), Dr. Mike Treacy (NEC).

#### *Additional Responsibilities:*

Computer administrator for entire group (NT, RISC, PC w/LabView). Lab Supervisor.

Guest lectures (1996, 1997). Student recruitment co-organizer (1996, 1997). Training of new students. Representative at NREL contractors meeting (2000). Co-Taught Graduate level Advanced Thin Films Course (2001)

### **Research Assistant and Teaching Assistant**

1994-1995 University of Virginia, Charlottesville, Virginia. Dr. Ken Nelson.

Conducted at the Fermi National Accelerator Laboratory, Batavia, Illinois.

*Topic:* Design of Wire Chamber Detectors for use in Fermilab exp.E871: CP violation through hyperon decay.

1993-1994 University of Virginia, Charlottesville, Virginia, Professor Richard Sealock

*Topic:* Compilation of delta-production data in various nuclei.

### **SERS (Science and Engineering Research Semester) participant**

Spring, 1993 Argonne National Laboratory, Argonne, IL. Dr. Roy Holt

*Topic:* The Optically Pumped Spin Polarized Deuterium Gas Target: Measurement of Nuclear Polarization.

### **REU (Research Experience for Undergraduates) participant**

Summer, 1992 College of William and Mary, Williamsburg, Virginia. Dr. Stan Majewski

Research performed at CEBAF, Newport News, Virginia

*Topic:* Development of resistive Kapton straw wire drift detector with external strip electrode readout.

**Publications:**

J. E. Gerbi and J.R. Abelson, "Microcrystalline Silicon Deposited by Direct Current Reactive Magnetron Sputtering", J. Appl. Phys. 89,1463 (2001)

J.E. Gerbi and J.R. Abelson, "Enhancement of Crystallinity Using Light Particle Bombardment of Silicon Thin Films During Reactive Magnetron Sputter Deposition", in preparation, Dec. 2001

J.E. Gerbi, P.M. Voyles, M.M.J. Treacy, J.M. Gibson, and J.R. Abelson, "Medium Range Order in Amorphous Silicon Films as a Function of Low-Energy Particle Bombardment During Growth", submitted to Phys. Rev. B (2001)

P.M. Voyles, J.E. Gerbi, M.M.J. Treacy, J.M. Gibson, and J.R. Abelson, "Increased Medium-Range Order in Amorphous Silicon with Increased Substrate Temperature", Journ. Non-Cryst. Solids **293**, 45 (2001)

P.M. Voyles, J.E. Gerbi, M.M.J. Treacy, J.M. Gibson, and J.R. Abelson, "Absence of an Abrupt Phase Change From Polycrystalline to Amorphous in Silicon With Deposition Temperature", Phys. Rev. Letts. **86**, 5514 (2001)

Majewski S, Gerbi J, Kross B, Weisenberger A, Baker K. Second coordinate readout in resistive straw drift tubes. Nuclear Instruments & Methods in Physics Research Section A **348**, no.2-3, (1994)

**Conference Proceedings:**

J.E. Gerbi and J.R. Abelson, "Role Of Structure In The Staebler-Wronski Effect: Control Of Medium Range Order In Amorphous Si Via Ion Bombardment", Photovoltaics for the 21st Century , V. K. Kapur, R. D. McConnell, D. Carlson, G. P. Caesar, A. Rohatgi, J. Smith, eds. ECS Spring 2001 Conf. Proc., Washington, DC, 379 (2001)

J.E. Gerbi, P.M. Voyles, M.M.J. Treacy, J.M. Gibson, W. Chen, B.J. Heuser, and J.R. Abelson. "Control of Medium Range Order in Amorphous Silicon via Ion and Neutral Bombardment", To be published, MRS Proc. (2001)

J.E. Gerbi and J.R. Abelson, "Microstructural Control Of Thin Film Si Using Low Energy, High Flux Ions in Reactive Magnetron Sputter Deposition", MRS Proc. **609** (2000)

J. E. Gerbi and J.R. Abelson, "Enhanced Crystallinity of Microcrystalline Silicon using Deuterium in Low Temperature Reactive Magnetron Sputter Deposition", MRS Proc. **507**, 429 (1998)

**Recent Presentations:**

J.E. Gerbi, P.M. Voyles, M.M.J. Treacy, J.M. Gibson, and J.R. Abelson, "Medium Range Order in Amorphous Silicon Films as a Function of Low-Energy Particle Bombardment During Growth", Fall AVS (2000)

J.E. Gerbi and J.R. Abelson, "Microstructural Control Of Thin Film Si Using Low Energy, High Flux Ions in Reactive Magnetron Sputter Deposition", Spring MRS (2000)

-J.R. Abelson, J.E. Gerbi, P.M. Voyles, N. Lakshminarayana , and J.M. Gibson, " Medium-Range Order in Hydrogenated Amorphous Silicon as a Function of Growth and Light Soaking", Spring ECS (2001)

**Honors/Societies:**

2000 Racheff Award (Dept. of Materials Science, UIUC)

2000 AVS Nellie Yeoh Whetten Award

2000 AVS Conference Dorothy M. and Earl S. Hoffman Travel Scholarship Award

2000 MRS Graduate Student Award

1999 AVS Conference Dorothy M. and Earl S. Hoffman Travel Scholarship Award

1998-1999 Frederic T. & Edith F. Mavis Memorial Fellowship (UIUC)

1997-present AVS and MRS member

1995-2000 SURGE Fellow (University of Illinois)

1993-1995 consistently highest student ratings for class sections (University of Virginia)

1989-1992 (Bard Coll.): EEC Fellow, Helena Rubenstein Fellow, Gustave Aufrecht Mem. Sch., Hudson River Area Sch.

**Activities:**

2001 Illinois Junior Academy of Science regional science fair judge

2000 Accepted to SEESP conference at UIUC

2000 Attended Women in Science and Engineering conference at UIUC

1996-2001 Member of UIUC Graduate Chorale

1997 MRS student chapter web page designer/departmental representative

1993 Co-organizer for Women in Science Day at Argonne (>350 local high school students attending)