

EDUCATION

THE COLLEGE OF ENGINEERING <i>Doctor of Philosophy</i>	THE UNIVERSITY OF CALIFORNIA <i>Materials Science and Engineering</i>	Berkeley, CA <i>In progress</i>
THE SCHOOL OF ENGINEERING <i>Master of Science</i> <i>Bachelor of Science</i>	STANFORD UNIVERSITY <i>Materials Science and Engineering</i> <i>Materials Science and Engineering, Electronics Emphasis</i>	Stanford, CA <i>June 2010</i> <i>June 2009</i>

RESEARCH EXPERIENCE

THE MOLECULAR FOUNDRY–LAWRENCE BERKELEY NATIONAL LABORATORY Berkeley, CA
Graduate Researcher (Advisor: Dr. Delia Milliron) 2010–Present

- Synthesized and characterized tin-doped indium oxide (ITO) nanocrystals
- Assisted in creating plasmonic nanocrystal electrochromic devices

SOLEXEL, INC. Milpitas, CA
Laser Engineering Intern Summer 2010

- Operated state-of-the-art picosecond laser tool for solar cell manufacturing process development
- Increased throughput by 20x by developing new laser processes.
- Performed wafer characterization, quality control, and failure analysis

STANFORD DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING Stanford, CA
Undergraduate Researcher (Advisor: Prof. Bruce Clemens) 2007–2008

- Researched Copper-Zinc-Tin-Sulfide thin film photovoltaics and zinc oxide transparent conductors.
- Fabricated semiconducting thin-films and zinc oxide thin films using sputter deposition.
- Designed, built, and operated ultra-high-vacuum systems and deposition tools.

TEACHING

STANFORD DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING Stanford, CA
Course Assistant–Electronic Materials Science Spring 2010

- Managed course website and produced problem set solutions for a class of 30 students
- Held office hours to assist students with their work
- Assisted a new professor teaching their first class at Stanford

STANFORD DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING Stanford, CA
Course Assistant–Quantum Mechanics Winter 2010

- Produced problem sets and solutions for a class of 20 students and graded student work
- Held office hours and produced review packets to supplement students' knowledge of quantum mechanics
- Gave students advice regarding the materials science major and their academic careers

STANFORD DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

Stanford, CA

Course Assistant-Introduction to Materials Science

Winter 2010

- Produced problem sets and solutions for a class of 100+ students and graded student work
- Held office hours and advised students on introductory topics in materials science and the field in general

STANFORD DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

Stanford, CA

Course Assistant-Mechanical Behavior Laboratory

Fall 2009

- Ran laboratory sessions for mechanical testing and materials characterization for a class of 24 students
- Supervised students' lab practices and ensured they gained familiarity with methods and instruments
- Graded laboratory reports and advised students on technical writing practices
- Held office hours and occasionally lectured

STANFORD UNIVERSITY UNDERGRADUATE ADVISING AND RESEARCH

Stanford, CA

Head Peer Academic Coordinator

2008-2009

- Collaborated with other dorm staff members to plan major dorm events and academic advising events.
- Advised students regarding academics, college, and careers.

SKILLS

CHARACTERIZATION TECHNIQUES

Scanning electron microscopy (SEM):	Morphological characterization of thin films, nanocrystals, polymers
X-ray diffraction (XRD):	Powder diffraction, texture analysis, reflectivity
Elemental analysis:	Inductively coupled plasma atomic emission spectroscopy (ICP-AES), X-ray photoelectron spectroscopy (XPS), Energy dispersive spectroscopy (EDS)
Electrical characterization:	Electrochemical impedance spectroscopy (EIS), IV curves
Optical characterization	UV-vis-IR spectroscopy, optical microscopy
Profilometry	optical interferometer, stylus profilometer

MATERIALS SYNTHESIS/PROCESSING

Picosecond pulsed laser processing:	Material ablation and high throughput processing
Physical vapor deposition (PVD):	DC magnetron reactive sputtering, thermal evaporation
Solution processing:	Colloidal nanocrystal synthesis, Schlenk line/air-free techniques spincasting, sparycoating

LABORATORY SKILLS

Clean room experience	
Ultra high vacuum:	Chamber design and assembly, vacuum pumps, vacuum flanges
Chemical and gas handling:	Gloveboxes, Swagelok, chemical hygiene

COMPUTER SKILLS:

MATLAB, Latex, Microsoft Office, Mac OSX, Microsoft Windows

FOREIGN LANGUAGE:

Knowledge of Spanish and French

AWARDS, HONORS, AND PUBLICATIONS

THE CHANCELLOR'S FELLOWSHIP FOR GRADUATE STUDY The University of California, Berkeley 2010-2012

PUBLICATIONS

1) G. Garcia, R. Buonsanti, E. L. Runnerstrom, R. Mendelsberg, A. Llordés, A. Anders, D.J. Milliron, "Dynamically Modulating the Surface Plasmon Resonance of Doped Semiconductor Nanocrystals," *Nano Letters*, **11** (2011), 4415-4420.

POSTER PRESENTATIONS

1) V. Chawla, J. S. King, E. Runnerstrom, S. F. Bent, B. M. Clemens. "Investigation of Inexpensive, Abundant Materials for Thin Film Solar Cell Applications." *Stanford University Global Climate and Energy Project Research Symposium*, 2008.

ACTIVITIES AND INTERESTS

SIGMA PHI EPSILON FRATERNITY:

2007-2009

Vice President of Programming, 2008-2009

- 2nd ranking member of executive leadership and chairman of chapter programming committee.
- Planned and executed chapter events including campus-wide parties, chapter retreats, and community service.

COLORADO SKYE PIPE BAND:

2001-2006

STANFORD MEN'S ULTIMATE FRISBEE TEAM:

2005-2007

INTERESTS: Chess and science tutoring, cooking, building computers, playing the bagpipes