

Duncan McClure

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Background

New professional with a multidisciplinary background and education in materials engineering and nanotechnology, and experience in the processing or characterization of semiconductor devices and advanced materials. Masters in engineering with experience in a research and fabrication environment and expertise in nanomaterials, optoelectronics, and technical leadership, and the adoption of nanotechnologies by industry

Education

- Masters of Science: Nanoscience and Microsystems Engineering Grad GPA: 3.7
University of New Mexico, completed July 2015
- Bachelors of Science in NanoEngineering, Minor in Business Upper Division GPA: 3.5
University of California San Diego, graduated June 2013

Accomplishments and Expertise

- Experience in advanced materials synthesis and characterization, production and qualification, data analysis
- Project experience in thin films, nanomaterials, sensors, optoelectronics, MEMS, product development
- Understanding of vacuum chambers and systems, their components, equipment for etching and deposition
- Experience with sputtering, electron beam deposition, plasma etching techniques, electron microscopy
- Experience assessing a production process, failure mechanisms possible, and creating a qualification tool
- Training in project management, technical leadership, knowledge of quality tools including Lean
- Experience with MATLAB, LabVIEW, finite element modeling of mechanical and optical behavior of materials
- Formed collaborations between academia, industry, nonprofits, Acted as liaison between project teams and client,
- Experience in leadership development, facilitating seminars, educational outreach, technical industry analysis
- Initiated and launched several new programs while a student, which are still in existence

Recent Work Experience

Research Assistant: Nanoscience and Microsystems, UNM Summer 2014-15

Defined optimal fabrication steps and specifications for thin-film photodetectors. Assembled custom tool to qualify device performance. Fabricated devices in a cleanroom using photolithography, vacuum evaporation and plasma etching techniques. Determined failure mechanisms possible at each step, and how to prevent them

Teaching Assistant: Nanoscience and Microsystems, UNM Fall Semester 2014

Facilitated graduate level course on Characterization of Nanostructures by creating course materials and holding reviews. Subject matter stressed fundamental science and technical details of common materials characterization methods SEM, TEM, XRD, XPS, AFM, and near field optics. Established expectations, grades, course material

Project Assistant: Southwest Center for Microsystems Education, UNM 2014-2015

Analyzed and mapped MEMS and nanotechnology enabled industries within the United States to assess technical skill needs. Developed categorizations based on technologies. Work performed in collaboration with community college and university educators, industry professionals and shared widely

Past Projects

Self-Cleaning MEMS Pressure Sensor, 2015

Formulated and designed a self-cleaning MEMS pressure sensor for use in harsh and corrosive environments deep underground. Determined material and performance requirements, fabrication steps and compared against commercially available piezoresistive pressure sensors

EatSafe / ECE Design Competition, 2013

Developed and introduced an integrated sensor devices using Arduino and chemical sensors to detect the freshness of food based on the content of known bacterial gases around it. Team entered design into ECE Design competition at UCSD. Assessed commercialization of technology and improvements needed

Kenya Solar Power Demonstration Project, 2012-2013

Worked as part of student engineering team and coordinated with Engineers Without Borders to prototype a solar power system intended for a rural village in Kenya. Established communication between team and EWB to keep project current with requirements of clients and worked to prototype and document system

Awards and Recognition

Provost Honors, Winter and Spring quarters 2013

(awarded by UCSD)

Gordon Scholar, 2012

(awarded by UCSD)

Silver Project Award, BIOMOD 2012

(awarded by the Wyss Institute)

Eagle Scout, 2008

(awarded by BSA)