Nicholas Graham Herrick
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Education

B.S. Applied Physics
Brigham Young University – August 2012
Electrical and mechanical engineering emphasis

NATIONAL INSTRUMENTS LabVIEW CERTIFIED ASSOCIATE DEVELOPER

Work History

Scientist at Alpha Metals, Inc., South Plainfield, NJ, April 2016 – present
LED packaging scientist and systems engineer responsibilities, see below.
Research Associate – LED Packaging Technologies, Alpha Metals, June 2013 – April 2015
LED packaging research with some systems engineering.
Research Technician – LED Packaging Technologies, Alpha Metals, March 2013 – June 2013
Design LED test methods, assemble LED packages, perform laboratory tests as directed.
Electronics Technician – Duracell, Danbury, CT, September 2012 – March 2013.
Developed LabVIEW test programs and a Matlab data analysis suite.
Extensive laboratory and research experience concurrent with undergraduate education.

Responsibilities

My current position encompasses the roles of an LED scientist and a systems engineer building in-house thermal, optical, electrical, mechanical and chemical test systems for internal customers.

Systems Engineer Responsibilities

Design and build electro/optomechanical instruments for R&D and production environments. These projects have included:

- In-circuit electrical test robot for examining flux residue during PCB assembly
- Accelerated-life impact testing of solder joints using a precision linear motor
- Custom laser soldering system using a 65W infrared laser
- Precision LED thermal, optical and electrical test system
- Optical flux thickness and concentration sensors for industrial environments
- Laboratory-grade water quality sensor suite
- Thermal interface material conductivity measurement system

I have project ownership, including determining customer needs, design, fabrication, LabVIEW programming, characterization, remote deployment (to India, Japan, and UK), training and support.

LED Scientist Responsibilities

Develop test procedures for LED and electronics assembly and test methods; Train technicians and supervise LED assembly, and testing; Scientific data analysis; Write papers and technical presentations for electronics industry conferences.

LabVIEW

Certified LabVIEW Associate Developer (August 17, 2016)
Seven years experience in laboratory use
LabVIEW proficiencies: Robotic automation, vision, data acquisition, CompactDAQ, GPIB, PXIe, 24 VDC control, data management, remote deployment and support

Experimental Research Skills

Rapid resolution of novel instrumentation challenges
Test automation and "idiot-proofing"
Instrument characterization, troubleshooting, and calibration
Managing, equipping, organizing, and maintaining two research labs
Acquiring capital scientific equipment (evaluation of vendors and options, negotiation, and installation)
Writing technical reports, proposals, operation & maintenance manuals, scientific papers and presentations
Scientific data analysis

Software

LabVIEW, Solidworks, Matlab, Minitab, LaTeX, Microsoft Office, HTML, Gerber files

Electronic

Data acquisition and control: Oscilloscopes, function generators, multimeters, source measurement units, multiplexers, 24V industrial systems, safety interlocks
Specialized knowledge of LED packaging and thermal behavior
Industrial electronics assembly: SMD assembly methods, solder paste printers, pick-n-place, flying-probe pin testing, ESEC die bonder, reflow ovens, reflow simulators, wire bonding, x-ray inspection, laser scanning profilometry, measurement microscopes, Tresky

Optical

Laser soldering, integrating spheres, photodiodes, LEDs
Machine vision - LabVIEW vision suite; Choosing appropriate cameras, lenses, and lights
Custom fiber optic sensor systems
Spectroscopy: EUV, UV, VIS, NIR
EUV optics: high harmonic generation, polarimetry, thin-film mirrors
High-intensity infrared lasers

Mechanical

Precision linear motors (LinMot) for high-speed impact tests
Janome 3-axis robots (full LabVIEW automation)
High vacuum systems; Thermocouples; Water and air cooling systems
Specifying external precision machining requirements (Solidworks)
Aluminum machining: operating lathes, knee mills, band saws, hand tools, etc.
Designing test jigs, carrier plates, monolithic optical sensor housings
Fabricating electronics enclosures, wiring, DIN rail mounting, panel feedthroughs, rigid machine vision structures

Academic Publications

Jan Rothhardt, Steffen Hädrich, Henning Carstens, **Nicholas Herrick**, Stefan Demmler, Jens Limpert, and Andreas Tünnermann, "1 MHz repetition rate hollow fiber pulse compression to sub-100-fs duration at 100 W average power," Opt. Lett. 36, 4605-4607 (2011).

Nicole Brimhall, **Nicholas Herrick**, David D. Allred, R. Steven Turley, Michael J. Ware, and Justin Peatross, "Characterization of Optical Constants for Uranium from 10~nm to 47~nm," App. Optics 49, 1581-1585 (2010).

Nicole Brimhall, **Nicholas Herrick**, David D. Allred, R. Steven Turley, Michael J. Ware, and Justin Peatross, "Measured optical constants of copper from 10 nm to 35 nm," Opt. Express 17, 23873-23879 (2009).

Nicole Brimhall, Matthew Turner, **Nicholas Herrick**, David D. Allred, R. Steven Turley, Michael Ware, and Justin Peatross, "Extreme-ultraviolet Polarimeter Utilizing Laser-generated High-order Harmonics," Rev. Sci. Instrum., 79, 103108-1-7 (2008).

Undergraduate Research Experience

High speed 3-D imaging of synthetic vocal folds, mechanical engineering research group of Dr. Tadd Truscott, BYU, Winter/Summer 2012.

Summer research associate at the Friedrich Schiller University Institute of Applied Physics, Jena, Germany, Fiber and Waveguide Lasers Group of Dr. Jens Limpert.

Summer research associate at the Physics Phenomenology Branch, U.S. Army Research Laboratory, Aberdeen Proving Ground, summer 2010.

Invited collaborator with Murnane/Kapteyn Extreme Nonlinear Optics group at UC, Boulder, summer 2009.

NSF REU at BYU, summer 2008.

Summer research, funded by BYU physics department, summer 2007.

Exceptional Undergraduate Classes

Electrostatics and Magnetism (Physics 441 – 3 credits)
Electrical Engineering for non-majors (EcEn 301 - 3 credits)
Mechanical Engineering Instrumentation (ME 373 – 3 credits)

Other Experience

Accomplished choral singer
Hobbies: Astronomy, LEGOs, science fiction
Teaching assistant in astronomy and physical science courses at BYU

References

Available upon request