

L. Forbes and Associates
PO Box 1716
Corvallis, OR 97339-1716
lenforbes@forbes4.com

Besides access to the University of Oregon SuNRise facilities on a pay as you go basis for \$225/day we have some limited basic test facilities of our own. We provide solutions that have seemingly been overlooked by other people to common problems.



Leonard (Len) Forbes, Ph.D Corvallis, OR

Biography

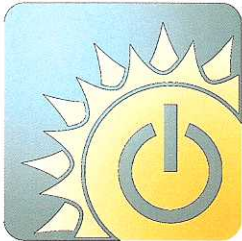
Leonard Forbes was born in Grande Prairie, Alberta, Canada, in 1940 and graduated from the University of Alberta, Edmonton, with distinction in engineering physics and graduated from the University of Illinois, Urbana, with a Ph.D. in electrical engineering in 1970. He has previously taught at the University of California at Davis, University of Arkansas Fayetteville, Portland State University, and was an IBM Visiting Professor at Howard University, Washington D.C., and Visiting Professor at the University of California San Diego in La Jolla, CA. He was previously an ONR Research Fellow, Distinguished Level, at the Navy microelectronics lab in San Diego for five summers and an Adjunct Research Fellow of the Micron Advanced Research Institute, Boise, Idaho for eleven years and twelve summers. Based on this latter work he is listed as inventor or co-inventor of **over 850 US Patents**. He has more recently worked with MagnaChip Advanced Pixel Research Lab. and SiOnyx of Beverly MA on imaging devices and CMOS imagers. Both of the latter were/are venture capital start-ups. Len Forbes has retired as a Professor at Oregon State University. Besides directing groups conducting research on campus he has had a private consulting business since 1973 for work off campus. He has worked with and for many major corporations in the USA.



Michael Y. Louie, M.Sc. Portland, OR

Biography

Michael Y. Louie graduated from Oregon State University in computer engineering in 2000 and again with masters in electrical engineering in December 2009. He worked at Mentor Graphics as software QA on their Physical Verification and Extraction division on Calibre and ICVerify product line as well as Calibre Interactive. He recently worked at and Agilent/Avago (now Aptina) Advance Pixel Research Lab of Corvallis, OR and MagnaChip Advance Pixel Research Lab of Portland, OR, both on imaging devices and CMOS imagers. During his 8 years in industry and time at Oregon State, he conducted research on transient and RTS effects of CMOS imagers. His M.Sc. project report was on solar cells.



SuNRISE

Support Network for Research and Innovation in Solar Energy.

A resource for the solar industry and Oregon universities to advance solar technology.

SuNRISE Laboratories A high-tech extension service

The photovoltaic laboratory is a shared instrumentation facility open to industrial and academic clients on a fee-for-use basis. Facilities are located at the University of Oregon and Oregon State University. In collaboration with the **Center for Advanced Materials Characterization in Oregon (CAMCOR)**, the SuNRISE PV lab is building a comprehensive suite of tools for the characterization of solar cells and solar cell materials. Facilities include:

PV Characterization Facility

- 8" Class AAA Solar Simulator
- Four quadrant IV test station (20V-20A)
- Absolute Cavity Radiometer
- Deep Level Transient Spectrometer
- Microwave Conductivity Station (Early 2010)
- Surface Profilometer
- Ellipsometer
- Drive-Level Capacitance Profiling (DLCP)
- Transient Photocapacitance Spectroscopy (TPC)
- Quantum Efficiency Measurement Station (Early 2010)
- NIR/Vis/UV Absorption/Reflection Spectrometer (Early 2010)

Microanalytical Facility

- Electron Probe Micro Analyzers (EPMA)
- Variable Pressure Environmental Scanning Electron Microscope (FEG-ESEM) with EDS, EBSD, and CL capability

Nanofabrication & Imaging Facility

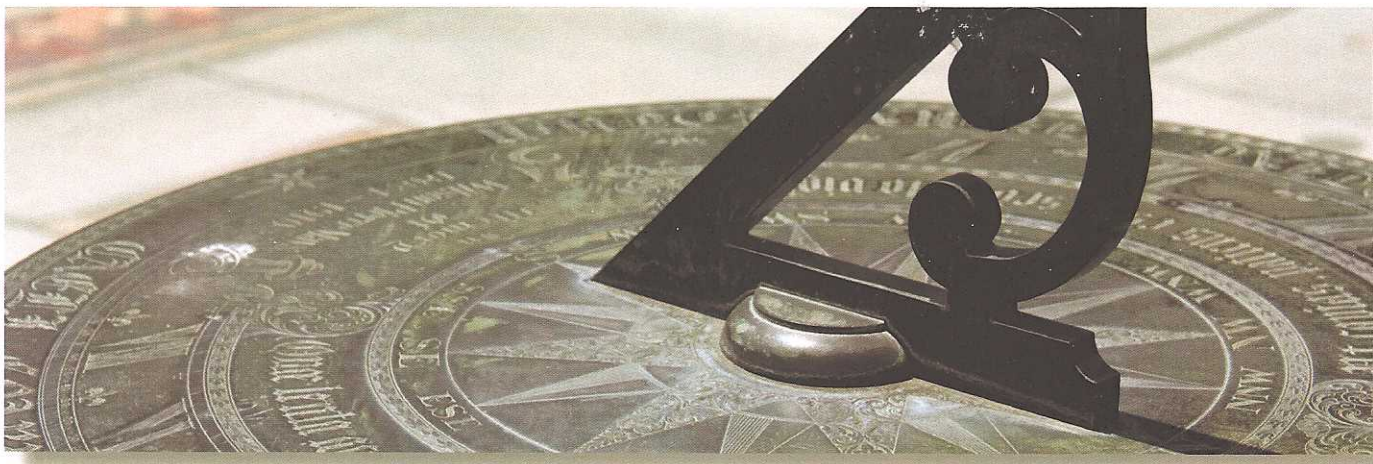
- Thermal Field Emission Scanning Electron Microscope w/ lithography (TFE-SEM)
- Dual Beam Focused Ion Beam (DB-FIB)
- Field Emission Gun Transmission Electron Microscope (FEG-TEM)

Surface Analytical Facility

- Time-of-Flight Secondary Ion Mass Spectrometer (ToF-SIMS)
- X-ray Photoelectron Spectrometer (XPS)
- Scanning Auger Microscope (SAM)
- Scanning Probe Microscope (SPM)

X-ray Facility

- High Brightness X-ray Diffractometers
- Single-Crystal (multiple)
- Powder (multiple)
- Thin Film (multiple)



Solar Radiation Monitoring Laboratory Information for the solar-powered future

For more than 30 years, the SuNRISE solar radiation monitoring laboratory has supplied high-quality, reliable information on the Northwest's solar resources for the purpose of planning, designing, deploying, and operating its solar energy systems. In collaboration with business and government the goal of the lab is to help the region leverage its solar energy potential.

[CAMCOR Home](#)[About / Outreach](#)[Contact Us](#)[Facility Tour](#)[NanoNet Access](#)[Equipment List](#)[Search CAMCOR](#)**High Resolution and Analytical Facility****MicroAnalytical Facility****Nanofabrication and Imaging Facility****NMR Spectroscopy Facility****Photovoltaics Characterization Facility****Polymer Characterization Laboratory****Surface Analytical Facility****X-Ray Diffraction Lab**[Graduate Internship Program](#)[Materials Science Institute](#)[ONAMI](#)[Department of Anthropology](#)[Department of Biology](#)[Department of Chemistry](#)[Department of Geography](#)[Department of Geological Sciences](#)[Department of Physics](#)

CAMCOR is a full-service, comprehensive materials characterization center at the University of Oregon open to outside clients. Benefit from our technical expertise as we work with you to solve your problems and meet your deadlines. Remote access from your office allows you to interface directly with the experts and the instrument in real time.

The CAMCOR facilities provide enabling infrastructure for research in chemistry, geology, archaeology, nanoscience, materials science, bioscience, and optics.

CAMCOR houses capital-intensive equipment for microanalysis, surface analysis, electron microscopy, semiconductor device fabrication, as well as traditional chemical characterization. The staff members who run the facilities are expertly trained and highly experienced in sample preparation, data collection and data analysis. In addition, they periodically offer workshops to provide hands-on training for users of the facility.

Facility Calendars[CAMCOR Schedule](#)[Parking Schedule](#)[Loomis Conference Room](#)**Laboratory Calendars**[Semi-Conductor Lab](#)[Inorganic Prep Lab](#)[Biological Prep Lab](#)[Saw Grinding Lab](#)