

SPECTRORADIOMETRY & PHOTOMETRY TRAINING PROGRAMS

Optronic Laboratories offers a variety of general training in spectroradiometry and photometry theory and practice in a variety of critical application areas, including photobiological measurements with our partners David Sliney Consulting and Rapid Precision Testing Laboratories. Both are recognized authorities in the field. Programs range from single day courses held annually at our factory facility in Orlando, Florida to custom tailored multiple day on-site events. Courses include both theoretical and hands-on components so that the learning can be immediately utilized.



Sample Curriculum: Photobiological Measurements of Lamps—from Sunlamps to LEDs

OPENING REMARKS: The revolution in lighting technology now taking place.

INTRODUCTION TO OPTICAL RADIATION

- Natural Sunlight, Vision and Photobiological Spectral Bands
- Source spectra
- Radiometric and Photometric quantities and units
- Colorimetric Principles
- Reflectance and the Illuminated Surface



PHOTOBIOLOGICAL CONCEPTS

- Action Spectra
- Effective (spectrally weighted) irradiance
- Photodermatology and the action spectrum of erythema
- Optical Radiation Hazard Action Spectra

PHOTOBIOLOGICAL SAFETY CRITERIA

- Optical radiation hazards to the skin and eye
- The importance of Exposure Geometry
- Derivation of Exposure Limits by ACGIH and ICNIRP
- Apparent source size retinal image determination
- Photobiological Safety Standards: from IESNA/ANSI RP27 to CIE S009 and IEC62471
- Special requirements for ophthalmic instruments and ISO 15004-2
- Future changes in standards?

LIGHT MEASUREMENT INSTRUMENTATION

- Double Monochromators, array spectrometers or filter radiometers: what to use?
- Monochromator stray light, broad-band fits, error budget, pitfalls and short-cuts
- Input optics and cosine correction considerations
- Calibration and calibration standards

EMPLOYING INSTRUMENTS AND STANDARDIZED MEASUREMENTS FOR STANDARDS

- Standards for lamps, luminaires and special products
- Certification schemes, test houses, labeling and CE markings
- IEC/EN 62471

MEASUREMENTS TO TEST TO IEC 62471

- GLS/non-GLS Source Measurement Procedures
- Determination of (*apparent*) source size and location (*when necessary*)
- Risk Group Determination
- Hands on session on assessing sources against IEC/EN 62471

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As part of our policy of continuous product improvement, we reserve the right to change specifications at any time.