Mini PL 110

The most compact and lowest cost deep UV (224.3nm or 248.6nm) PL & Raman spectrometer system

Mini PL 110 with optional X-Y motorized stage

Measurement of photoluminescence (PL) spectra from semiconductor materials is an important characterization method and is widely accepted for providing information on carrier doping levels, alloy composition, bandgap and edge effects, etc. The added ability to measure UV Resonance Raman spectra adds specificity and enhanced characterization of materials. These measurements are important both for research, device characterization and process monitoring.

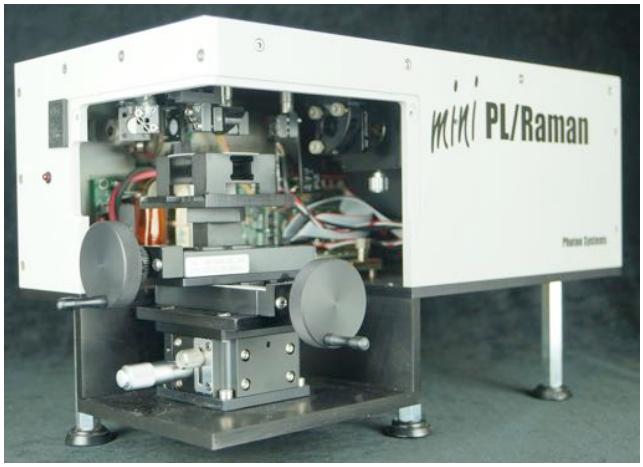
Photon Systems Deep UV (DUV) **Mini PL 110 Spectrometer** provides the most compact and inexpensive instrument available at these wavelengths. Enabling PL and Raman spectra measurement of semiconductor materials with bandgap up to about 5.5 eV corresponding to AlGaN with Al concentrations up over 80%.

Features

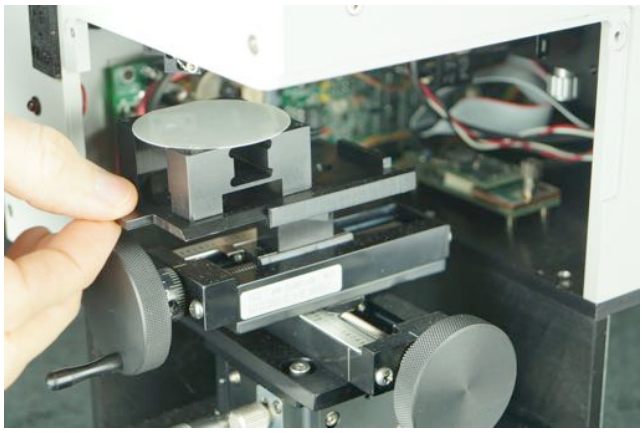
- PL: Ex=5.5(224.3nm) or 5.0 eV(248.6nm)
- Raman: Ex=5.0 eV (248.6 nm) only
- Highly portable 15 x 18 x 36cm, <8kg
- High Resolution down to 0.2nm (multi slits included: 125 µm to 2.4 mm).
- Computer controlled selection and calibration of two (2) gratings selected from following:
  - ✓ 600g/mm optional grating (400nm blaze and 200-850nm spectral range)
  - ✓ 1200g/mm grating standard (240nm blaze and 190-650nm spectral range)
  - ✓ 3600g/mm optional grating for High Res PL or Raman (240nm blaze and 190-500nm spectral range)
- Digital PMT controller with gated box car Integrator & Averager for low noise digital PMT output measurement
- Automatic PL/Raman signal gain control with over seven (7) decades of dynamic range
- < 40Watts (90-240VAC or 24 VDC) input
- Fully integrated, self contained, system
- LabView interface and control of laser, spectrograph, PMT, spectral data
- Spectral display in nm or wavenumber
- Analysis software included, FWHM, Peak, Side lobe identification, spectral subtract, normalize etc.
- Up to 50 mm diameter sample size
- Laser spot size: 35µm, 70µm with cryostage
- X-Y-Z stage manual sample control 50x50x10m standard
- 50x50mm X-Y motorized, 10mm Z manual stage including mapping software optional.
- Helium and liquid nitrogen cryostage options available.
- Control: external laptop or tablet computer via USB
- Safety: Class 3B, DHHS/CDRH, CE, RoHS

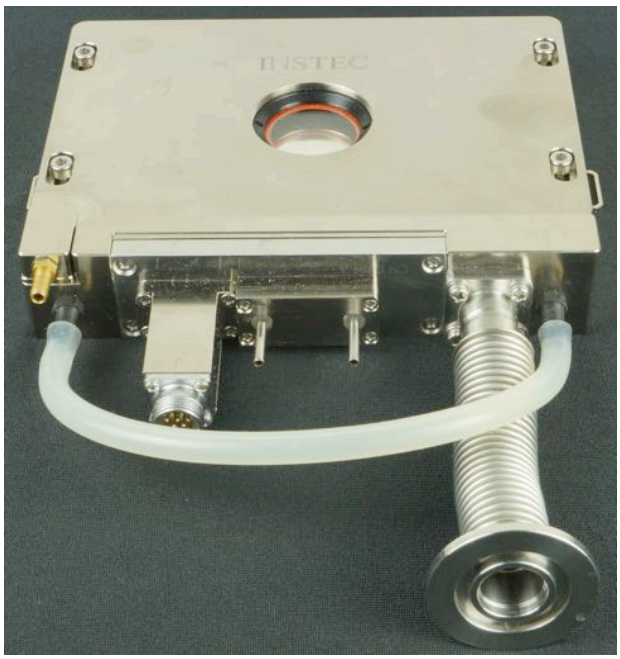
PHOTON SYSTEMS

1512 Industrial Park St., Covina, CA 91722 T: 626 967-6431 F: 626 967-5813 www.photonsystems.com



The Mini PL 110 standard configuration has a high precision manual stage


Loading a wafer onto the manual stage


Optional Cryo Stage

System Configuration

The Photon Systems DUV Mini PL 110 system is a completely integrated digital instrument with self-contained deep UV laser, monochromator, detector, optics and electronics.

Laser: 224nm (5.5 eV) or 248nm (5.0 eV) laser with self-contained laser power supply/controller.

Monochromator: 110mm Czerny-Turner configuration with up to 2 gratings.
Optional: 600g/mm (1.4 nm resolution)
Standard: 1200g/mm (0.7 nm resolution)
Optional: 3600g/mm (0.2 nm or 35cm^{-1} resolution)

Detector: 185nm to 650 nm PMT; 1-10^{6} gain, computer adjustable (185-850nm optional)

Optics: Reflective objective NA>2, laser line filter, injection filter

Data acquisition: Digital control of laser, PMT and spectrometer with digital gated boxcar integrator and averager. Fully calibrated to display detected photons versus wavelength, Wavenumber, photon energy.

Software: LabView 8.2

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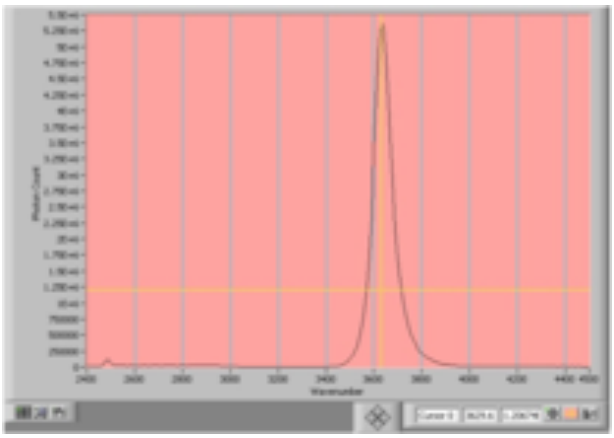


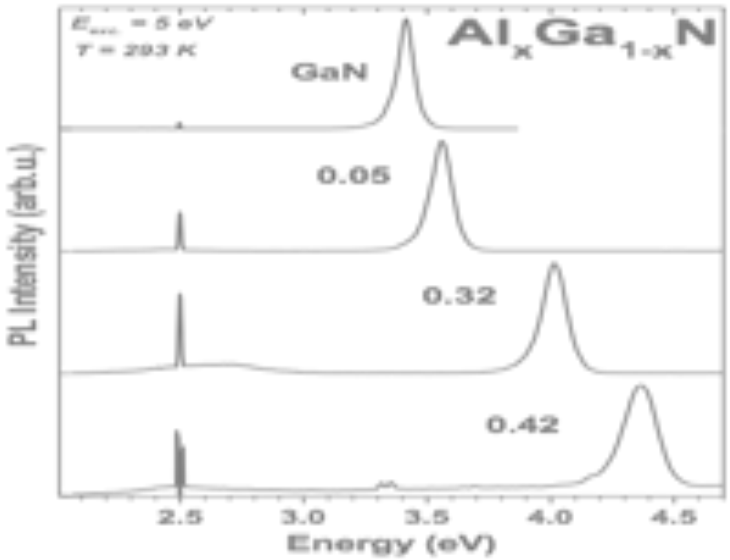
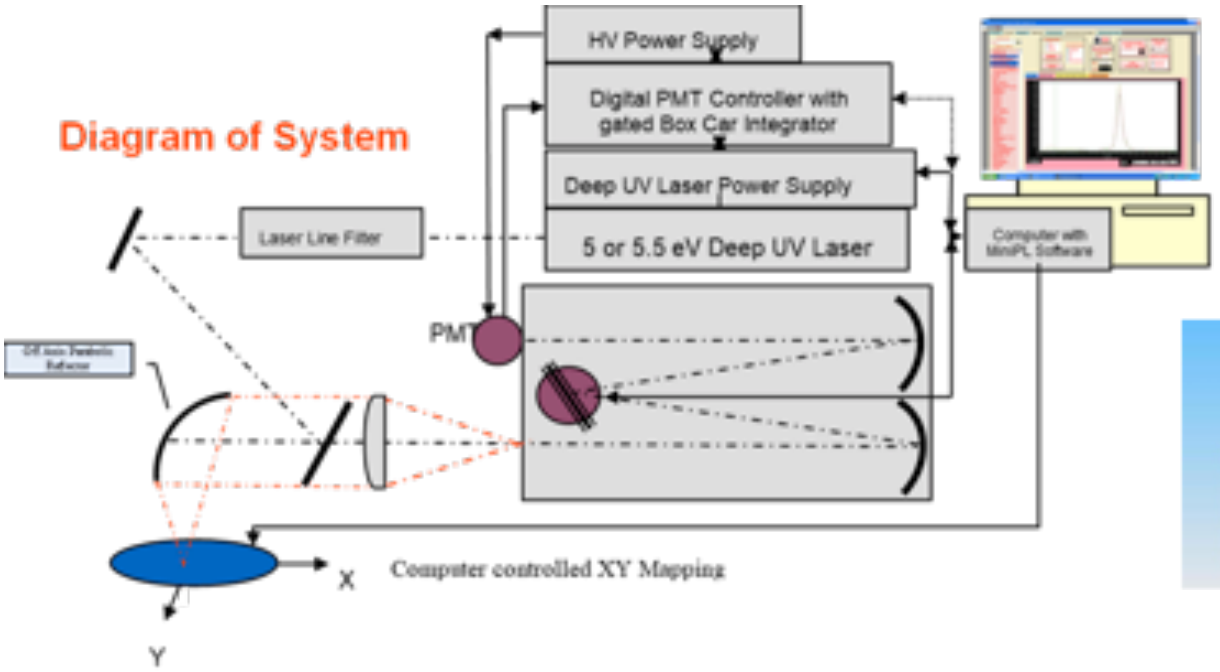
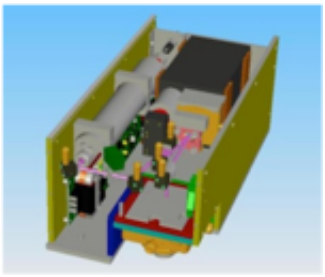
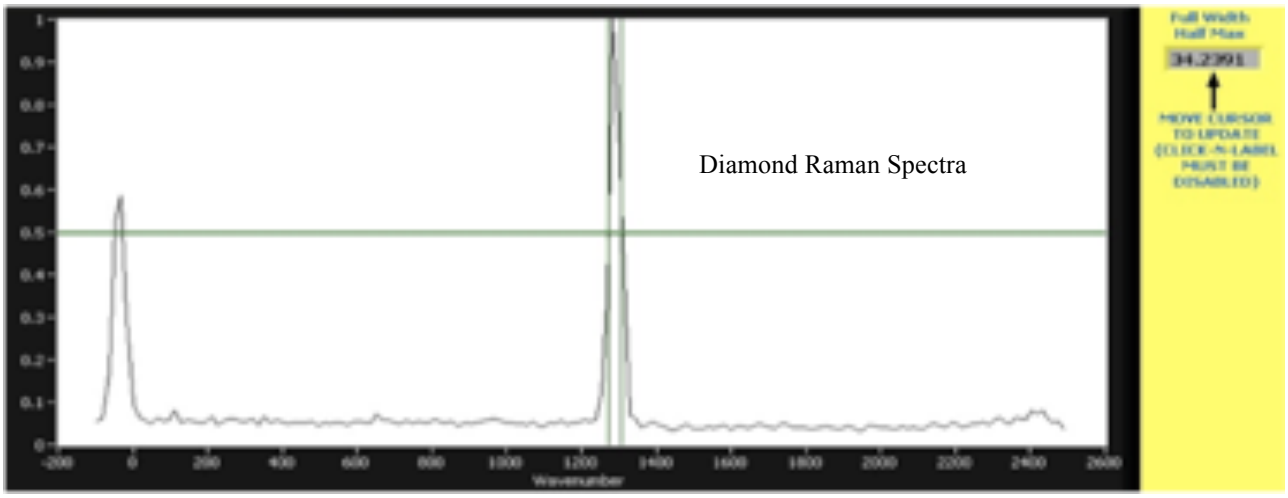


Diagram of System







Diamond Raman Spectra

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