Measurement of: Photoluminescence Mapping

Equipment: Confocal Photoluminescence Mapping System (alpha300M+ spectroscopy function with mapping functionality for 375nm, 980nm and 1550nm excitation wavelengths with accessories, WItec).

Property Measured: 2D and 3D Photoluminescence mapping of selected area of PL emission of luminescent materials.

Photograph (small size)

Basic Principle:

Confocal microscopy is an optical imaging technique used to increase optical resolution and contrast of a micrograph by using point illumination and a spatial pinhole to eliminate out-of-focus light in specimens that are thicker than the focal plane. It enables the reconstruction of three-dimensional structures from the obtained images. The specimen is illuminated with light of a specific wavelength which is absorbed by the fluorophores, causing them to emit light of longer wavelengths (red-shifted). The illumination light is separated from the much weaker emitted fluorescence through the use of a spectral emission filter. The filters and the dichroic are chosen to match the spectral excitation and emission characteristics of the fluorophore used to label the specimen. In this manner, the distribution of a single fluorophor is imaged at a time. Multi-color images of several types of fluorophores must be composed by combining several single-color images.

Capabilities: WITec Confocal microscope system with mapping functionality for 375 nm, 980 nm and 1550 nm excitation wavelengths have following salient features:

- Acquisition of photo luminescence spectra at selected areas
- Large area spectral mapping up to 25 x 25 mm
- 3D confocal spectral imaging capability
- Confocal microscopy in reflection
- Confocal fluorescence measurement capability

Sample Requirement: Solid powder and thin film samples