Near-Field Instrument

NFS-230

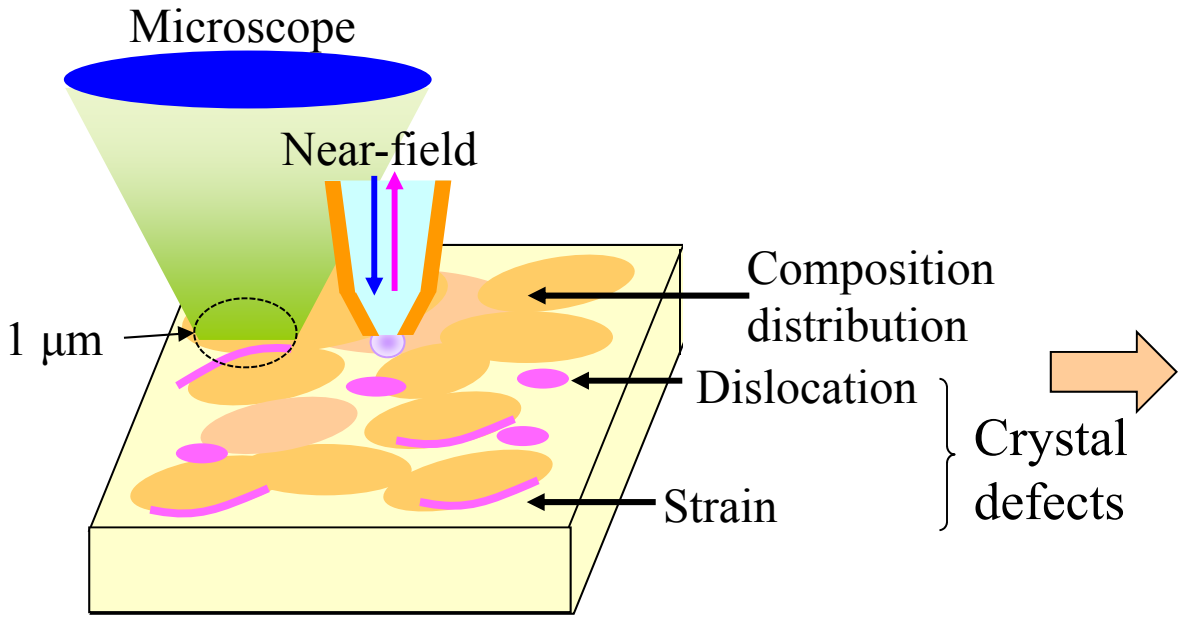
(1) Near-field measurement with 405 nm excitation

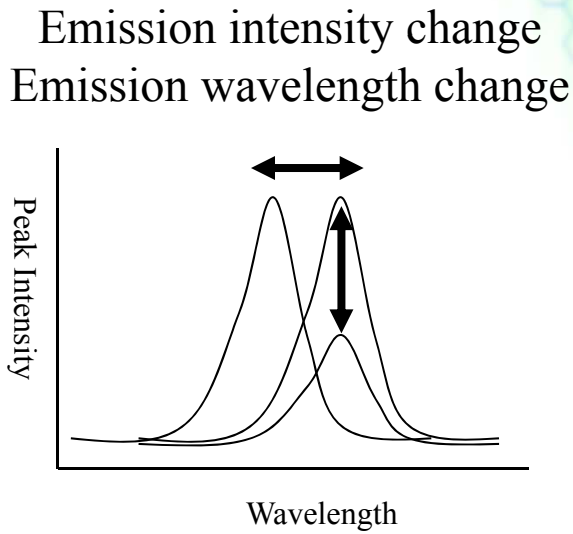
(2) Near-field electroluminescence measurement applied a voltage to the sample

We receive
a lot of inquiries

日本分光

A Need for Near-field Measurement



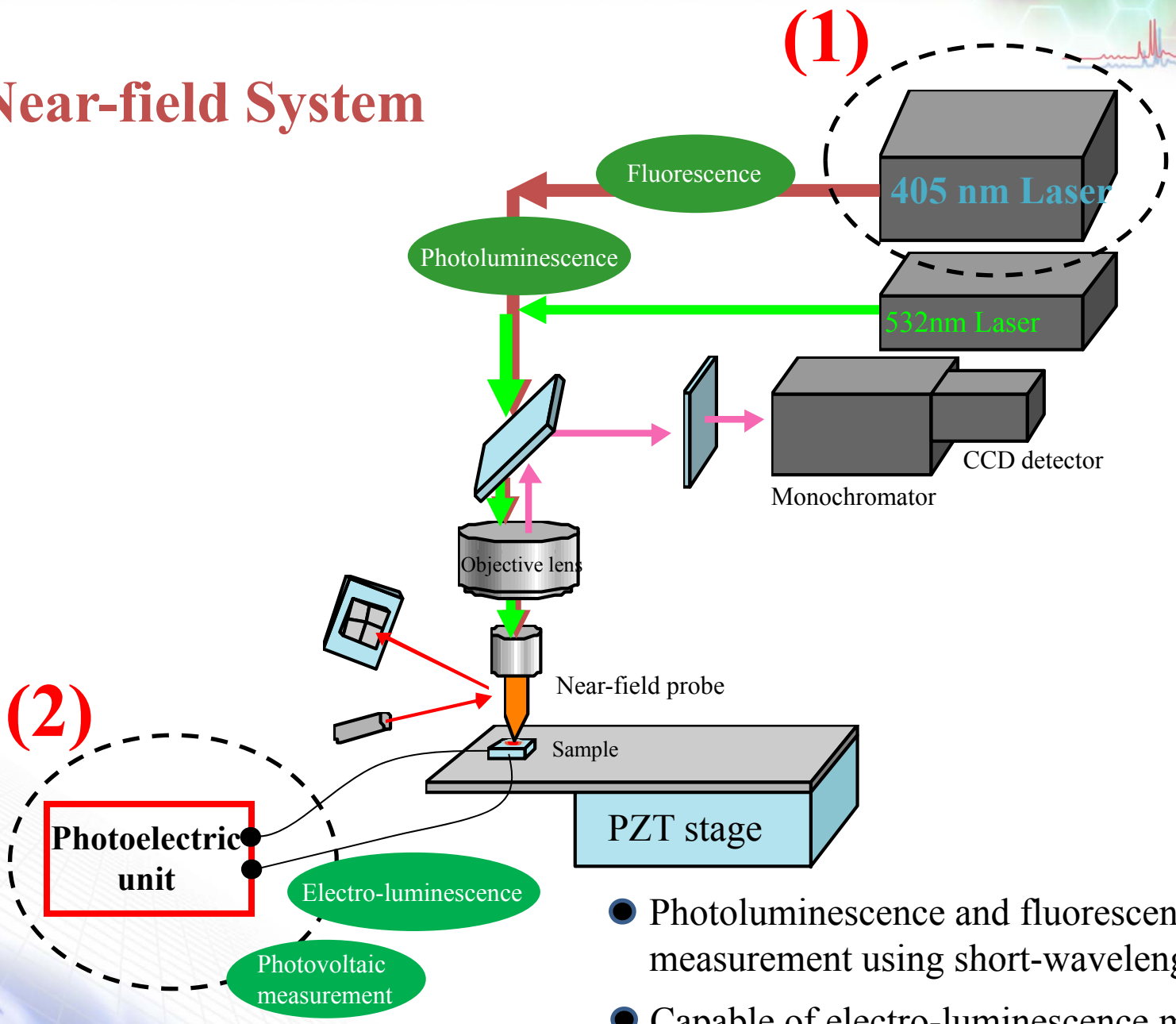


Device miniaturization → In some cases, it can not be determined with a spatial resolution 1μm level.

→ **Near-field measurement is useful.**

日本分光

Near-field System

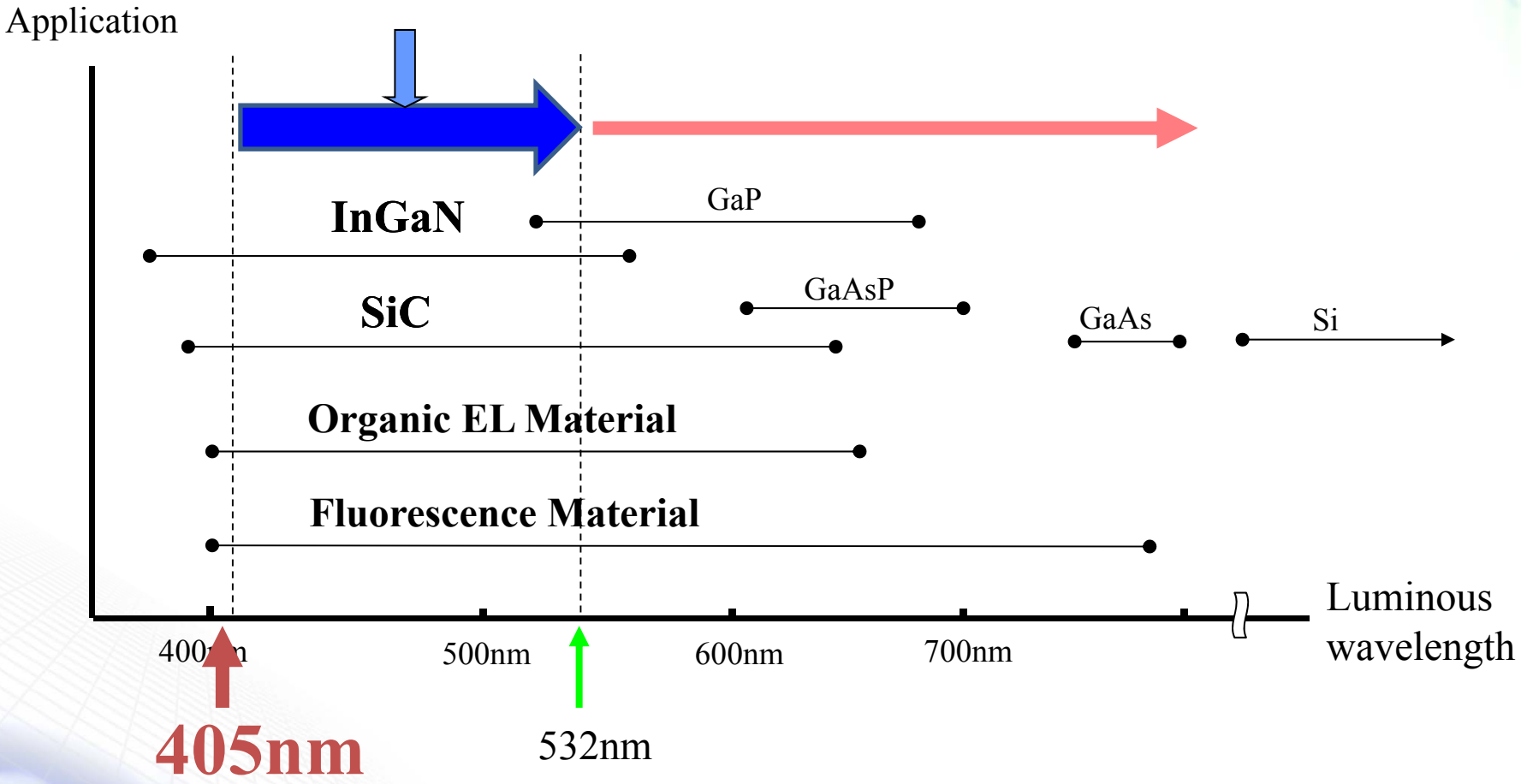


- Photoluminescence and fluorescence measurement using short-wavelength excitation
- Capable of electro-luminescence measurement using photoelectric unit

日本分光

(1) A Need for 405 nm Laser

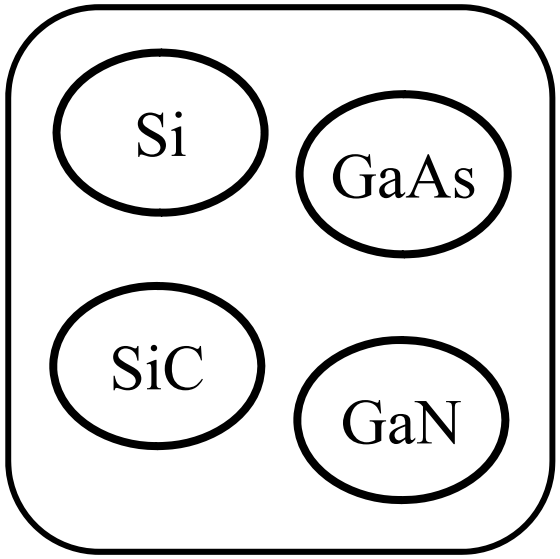
Materials for photodevice and power device



日本分光

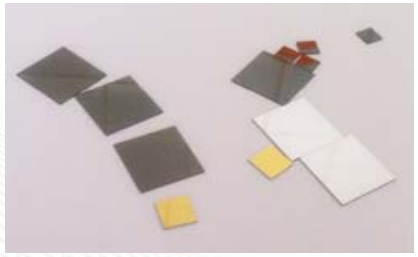
(2) A Need for PhotovoltaicMeasurement

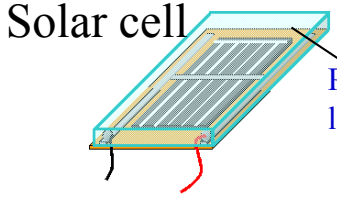
Materials Evaluation



Element or Device Evaluation

- **Solar cell**
  Si type, CIGS
- **Detector**
  PD
- **Luminous element**
  LD, LED





Detector

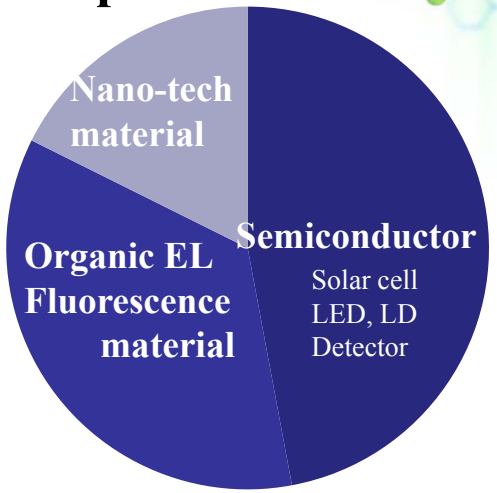
Market scale of JPY 1 trillion per year

日本分光

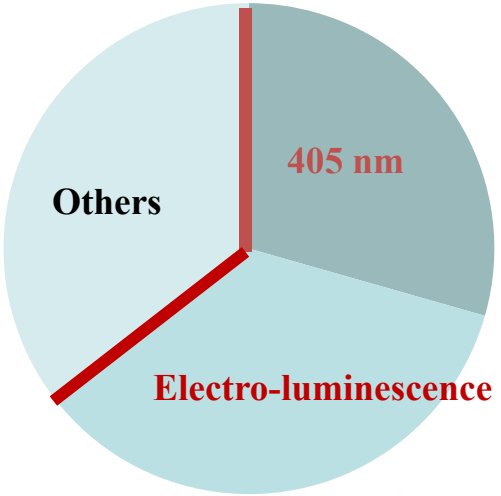
Recent Situation of Measurement Request

	Sample	Research Area	Ex/Photovoltaic	Luminescence
1	Vickers markers of alumina	Ceramics	532 nm	FP
2	EuInGaN	LD, solar cell	405 nm	PL
3	InAs	Solar cell	532 nm	PL
4	Organic EL	Laser, illumination	405 nm	FP
5	GaP	Photo-device	Electric	EL
6	InAs	Quantum dot solar cell	532 nm	PL
7	SiC	Power device	405 nm	PL
8	Graphene	Electrical characteristics	532 nm	Voltage
9	Plasmonic lens	Substrate	405 nm	Transmission
10	InN, GaN	Solar cell etc.	532 nm	Raman
11	Vickers markers of alumina	Ceramics	532 nm	FP
12	Fluorescence material	Photo-function element	405 nm	FP
13	Si photonics	Optical waveguide	532 nm	Electric field
14	Plasmon	Plasmon waveguide	Electric	EL
15	Organic thin film	Organic thin film solar cell	532 nm	Voltage
16	Condensor	Condensor	Electric	EL
17	Liquid crystal	Liquid crystal	Electic	Polarization

Sample



Measurement method



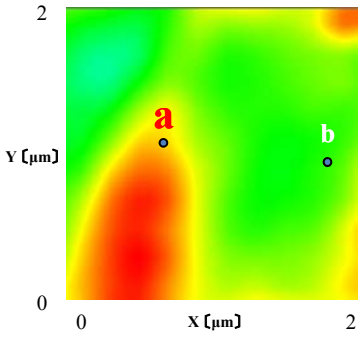
日本分光

* Exhibition by Panel

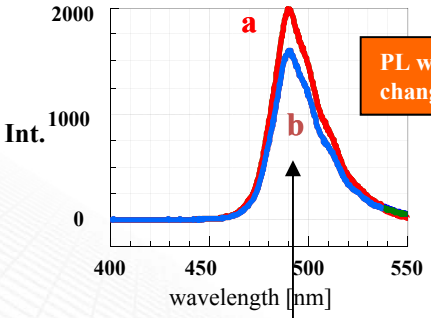
Photoluminescence(PL) Measurement of InGaN by 405 nm Excitation In-plane Composition Distribution

Microscope PL

Luminous intensity Distribution



Microscopic PL Spectra

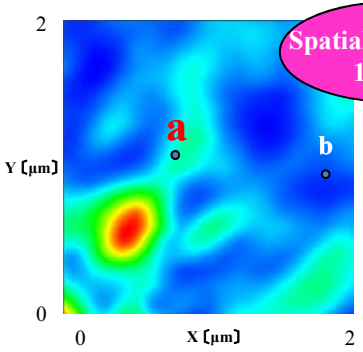


PL wavelength is not changed.

490nm

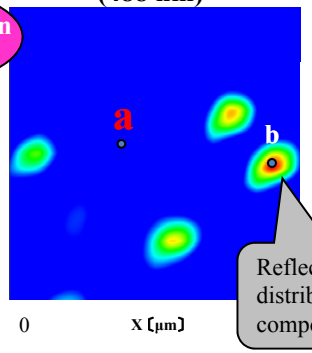
Near-field PL

Luminous intensity Distribution



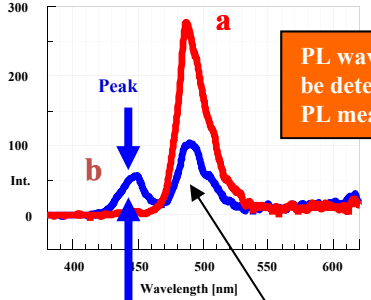
Spatial Resolution 100 nm !

Peak wavelength distribution (488 nm)



Reflecting in-plane distribution of composition ratio

Near-field PL Spectra



PL wavelength that can not be detected by microscopic PL measurement is detected.

448nm

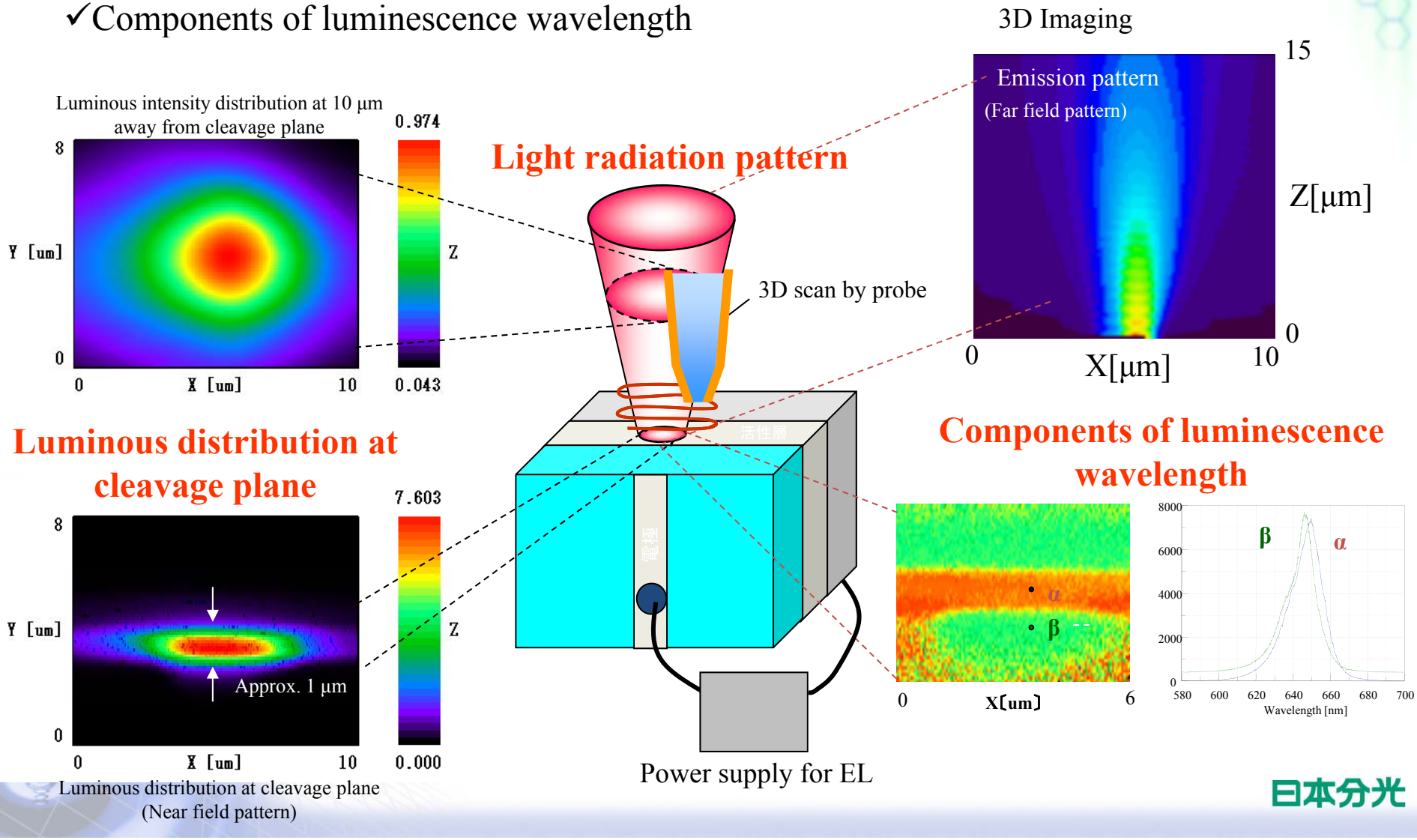
490nm

日本分光

＊パネル展示

Optical Characteristics Evaluation of Semiconductor (LD) Laser

- ✓Light radiation pattern
- ✓Luminous distribution at cleavage plane
- ✓Components of luminescence wavelength



日本分光

Summary

(1) PL and FP measurement by 405 nm excitation

(2) Possible to measure EL

JASCO factory accepts to measure test samples.

Keyword of Potential Customers

Researching nano-device

Researching micro area

- **Customers related to semiconductor field**
- **Customers related to organic EL materials and fluorescence materials**
- **Customers related to nano-tech**

Nano-structure, meta-material , surface plasmon etc.

Researchers related to Near-field or SNOM

日本分光