

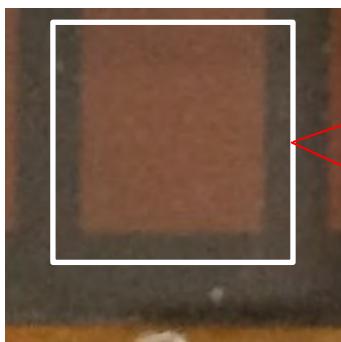
LBC-2 Laser Induced Current Measurement System



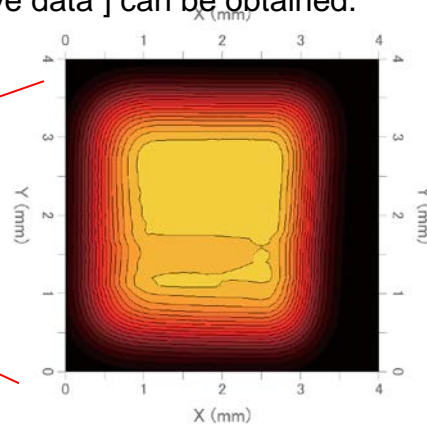
This equipment can perform measurement of photoelectric current distribution of various solar cells and the photoelectric converting elements such as SiPD, CCD and CMOS. For measurement method, Laser Beam Induced Current has been employed.

As standard, 532nm of the green laser is provided with the system with moving the sample in the X-Y direction and then short circuit current (I_{sc}) is measured. The system has achieved $10\mu\text{m}$ spacial resolution and is capable to measure the sample up to $50 \times 50\text{mm}$. Especially, for the perovskite solar cells and etc., which are manufactured in spin coating method, there is a problem of difference of uniformity between the center and the edge on the sample surface. This system is ideal to evaluate such samples. And this system can be also used to evaluate uniformity of coating materials for SiPD, CCD and CMOS.

- An ideal system to evaluate the in-plane distribution of the perovskite solar cells
- Optional lasers are available, which allow the system to perform measurement at different wavelength within the range of $375 \sim 900\text{nm}$
- Specify the area from the obtained data and both surface nonuniformity [$(\text{max. value} - \text{min. value}) / (\text{max. value} + \text{min. value}) \times 100\%$] and average value [$\text{Total effective data} / \text{number of effective data}$] can be obtained.



Perovskite solar cell



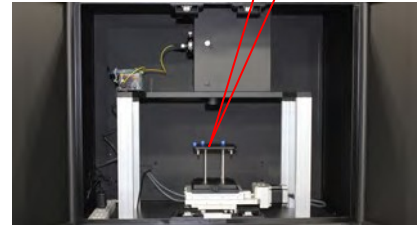
Photoelectric current distribution of Perovskite solar cell

* Measurement data of Perovskite provided by Professor Miyasaka of Toin University of Yokohama in Japan

* The specifications and appearance are subject to change without prior notice.

■ Specifications :

- Laser wavelength : 520nm
- Output : 1mW
- Stability : $\pm 5\%/h$
- Class : Class 2 in the International standard
- XY stage : $\pm 25mm$, 0.01mm minimum step
- Current measurement : 10fA~ 20mA
- Software : Windows
- Dimensions : W750 x D270 x H650mm
(excluding the electrometer, stage controller and the PC)



In the sample chamber

■ Standard configuration

1. Laser light source (wavelength 520nm)
2. XY stage
3. Electrometer
4. Sample chamber (with a manual shutter)
5. Note PC (Windows)
6. Dedicated software for LBC-2

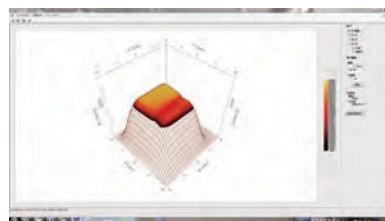
■ Options

- Laser (375/406/445/473/488/635/650/670/785/808/830/850/904/980nm)
 - ◇ Various laser can be switched with the SMA connector
- Observation camera and monitor
 - ◇ Monitoring where the laser is irradiated on the sample
- Automatic shutter mechanism
 - ◇ Mechanism to control the shutter through the software
- Si Photo diode
 - ◇ Detector to be used for Quantum efficiency calculation

■ Software



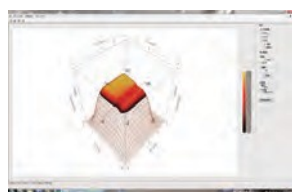
Parameter setting



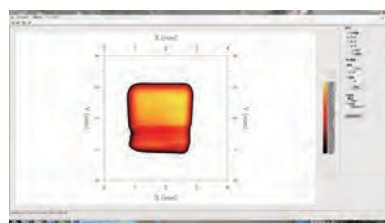
3D curved surface



2D YZ



Rotation of the graph



2D XY



2D XZ

