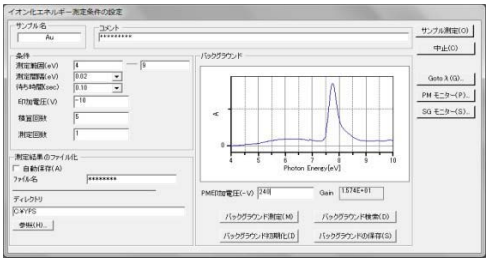
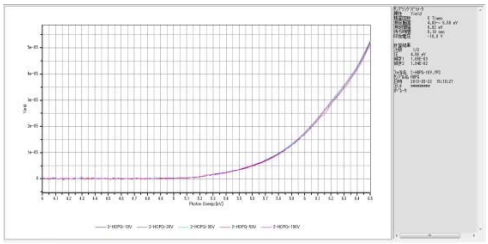
Model BIP-KV201 Ionization Energy Measurement System (Ultra Violet / Vacuum Ultra Violet type)





It is very critical and important to measure ionization energy and work function of the organic semiconductor materials such as organic electronic luminescence and organic thin film solar cells.

Generally, measurement of ionization energy/work function has been done by photoelectron spectroscopy such as UPS and XPS in which the samples have been measured only under high vacuum atmosphere. However, organic devices are affected by the atmosphere so that measurement under various atmospheric gas have been demanded.

By employing Photoelectron Yield Spectroscopy, our Model BIP-KV201 Ionization Energy Measurement System is capable to measure such samples under nitrogen atmosphere, vacuum atmosphere, and atmosphere.

Using a nitrogen purge type manochromator and optical system, the Model BIP-KV201 is capable to irradiate vacuum ultra violet light up to 9.54eV to the samples.

- **Measuring Ionization energy (work function) from 9.54 ~ 4.0eV**
- **Measuring the sample under nitrogen atmosphere, vacuum atmosphere, and atmosphere**
- **Ideal equipment to evaluate organic electronic luminescence and organic thin film solar cells**
- **Employing the Pico-Ammeter enable the system to achieve high sensitivity**

The specifications, configurations and appearance of the system are subject to change without prior notice.

BUNKOUKEIKI 分光計器

Model Name	BIP-KV201 Ionization Energy Measurement System (Ultra Violet/Vacuum Ultra Violet type)
Light source	Deuterium lamp 30W
Measurement wavelength range	Under atmosphere : 6.53 ~ 4.0eV (190 ~ 310nm) Under vacuum : 9.54 ~ 4.0eV (130 ~ 310nm)
Measurement interval	Minimum step 0.01eV
Irradiation area	2 x 2mm (by the slit and vertical aperture)
Measurement method	Photoelectron Yield Spectroscopy (PYS)
Sample compartment	For atmosphere, nitrogen, vacuum
Software	Control of spectral irradiation, Measurement of photoelectrons, Determination of ionization energy (work function), Storing the data in binary and redisplaying the data, Storing data in text file

● Photoelectron Yield Spectroscopy

Monochromatic light is irradiated on the sample. And then quantities of photoelectrons released from there are measured in terms of current and also quantities of the photon in the excitation monochromatic light are measured. Then ionization energy is to be detected from the threshold on the change of its yield.

● Measurement items

①Background measurement

Number of photons are calculated by measuring the light irradiating the sample with the photomultiplier.

②Sample measurement

Monochromatic light at each wavelength is irradiated to the sample while the voltage which gets electrons released easily is applied to the sample.

Then released number of electrons is calculated in terms of current.

③Ionization energy data processing

$Y \propto (hv-I)^n$

Y= Released numbers of electron/ numbers of photon irradiated

h Planck's constant

N Frequency

I Threshold

n Only 2 or 3 can be selected regarding parameter n which depends on density of electrons in the high level edge in the occupied state of the sample.

Standard configuration

Deuterium lamp and its power supply

Vacuum ultraviolet monochoromator

Irradiation optical system

Sample compartment

Sample holder

And others

No.WebFlyer-BIP-KV201-1401YN23-E

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