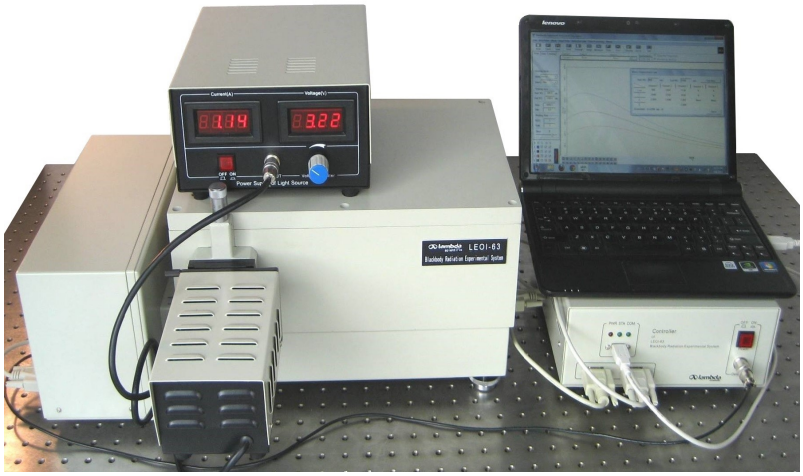
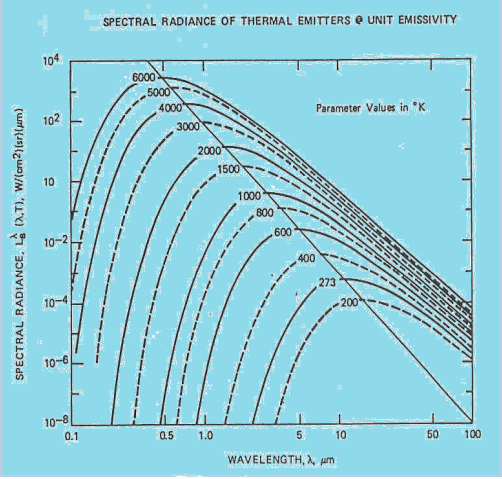
Construct, Conduct & Comprehend Physics Experiments

LEOI-63 Blackbody Experimental System



Note: laptop computer not included

- *Auto-record blackbody radiation spectrum*
- *Auto-deduct transfer function of optical components and photoreceivers*
- *Auto-control and auto-measurement*
- *Including Tungsten-Bromine lamp with power supply*



LEOI-63 is specifically designed to measure blackbody radiation energy or the radiation energy of an emission light source. This system can automatically record the radiation spectrum of an emission light source. By varying the color temperature of the light source, the phenomenon as described by Wien's displacement law can be observed through the recorded radiation spectrum of the light source. This system can be used to precisely verify the Planck's law and Stefan-Boltzmann's law. Based on the Planck's formula, system software can calculate the theoretical radiation spectrum of an absolute blackbody at any given temperature. It can also correct the emissivity coefficient (ε) of a Tungsten-Bromine lamp at various temperatures.

Using this unit, the following experiments can be conducted:

1. Verify the Planck's law of radiation.
2. Verify the Stefan-Boltzmann law.
3. Verify the Wien's Displacement law.
4. Study the relationship of radiation intensity between a blackbody and a non-blackbody emitter.
5. Learn how to measure the radiation energy curve of a non-blackbody emitter.

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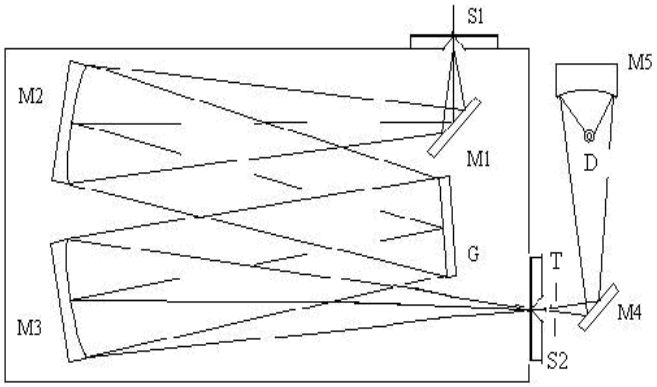
Specifications

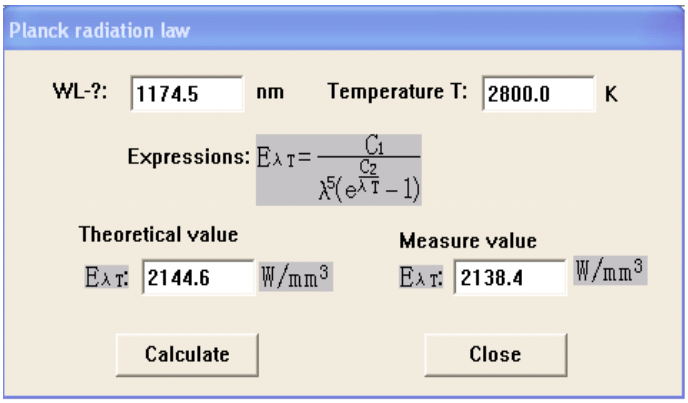
Wavelength Range	800 nm ~ 2500 nm
Relative Aperture	D/F=1/7
Focal Length of Collimation Lens	302 mm
Grating	300 L/mm
Wavelength Accuracy	± 4 nm
Wavelength Repeatability	≤2 nm

Part List

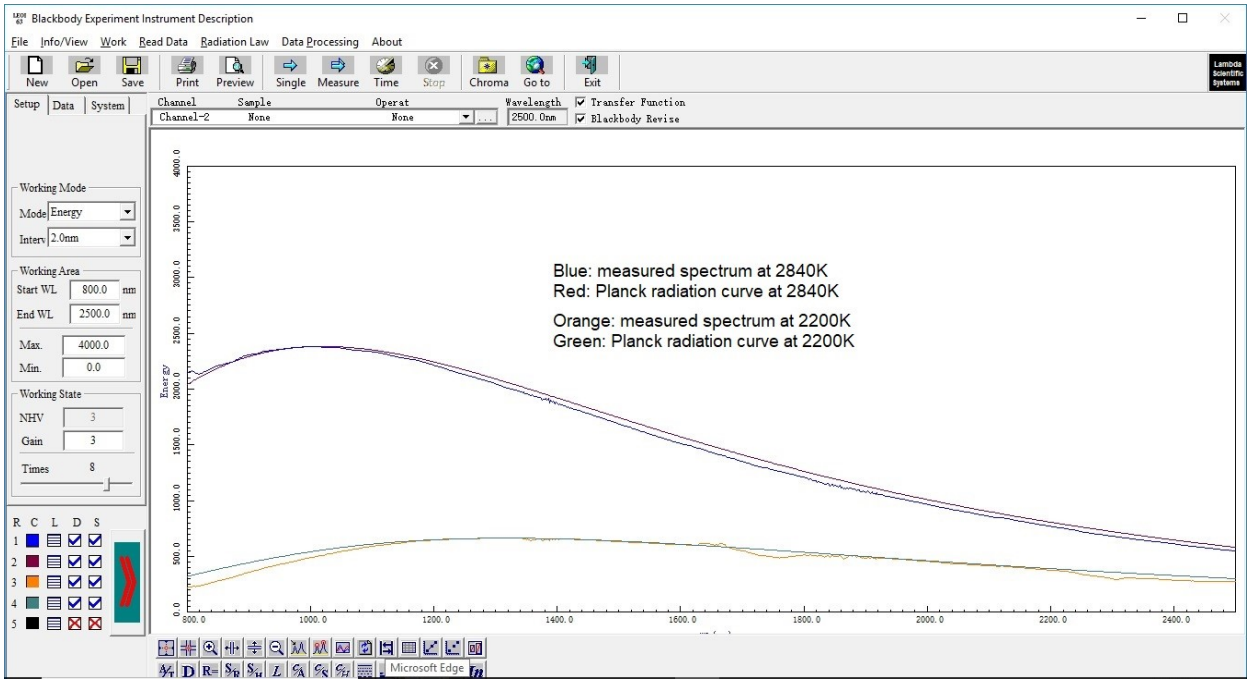
Main Machine Unit	1
Power and Control Unit	1
PMT	1
Software CD (Windows 7/8, 32/64-Bit PC)	1
Power Cord	2
Signal Cable	3
USB Cable	1
Tungsten-Bromine Lamp (LLC-1)	1
Color Filter (White and Yellow)	1 set



Schematic of optical system



Example of experimental result



Spectra: measured vs theoretical

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Note: above product information is subject to change without notice.