

TIU-02

Thermoluminescence Irradiation Unit

Irradiation unit suitable for irradiating alkali halide samples for Thermoluminescence Experiment

- Microcontroller based menu driven
- Cost effective solution
- No radiation hazard
- High quality double stage rotary pump
- Long life tesla coil
- Fully self contained

Introduction

Study of Thermoluminescence in alkali halide crystals need creation of F-centres (colour centres) in alkali halide crystals. To produce the F-centres, the crystals are exposed to ionizing radiation which in turn causes the loss of electron from halide ions. An electron then becomes trapped in the halide ion vacancy. The color is the result of the absorption of a photon by the trapped electron and excitation from the ground state to an excited state for the F-center. This is a classic case of particle in a box.

The source of ionizing radiation could be X-rays, electrons, gamma rays etc. These techniques are too Expensive and unaffordable for normal laboratories. Another method, although little less efficient, is by keeping Alkali halide crystals under low pressure, in the proximity of high Voltage. This in turn produces F-centres in the crystals.

This later technique has been adopted in this set up to make it economical and affordable for all laboratories. The setup is complete in itself and can be used straight away.



Specifications

Vacuum	:	~15 micron
Extra High Voltage	:	~30,000VAC pulsating
Sample Size	:	Upto 6mmx6mmx1mm
Input Mains	:	220VAC, 50Hz

