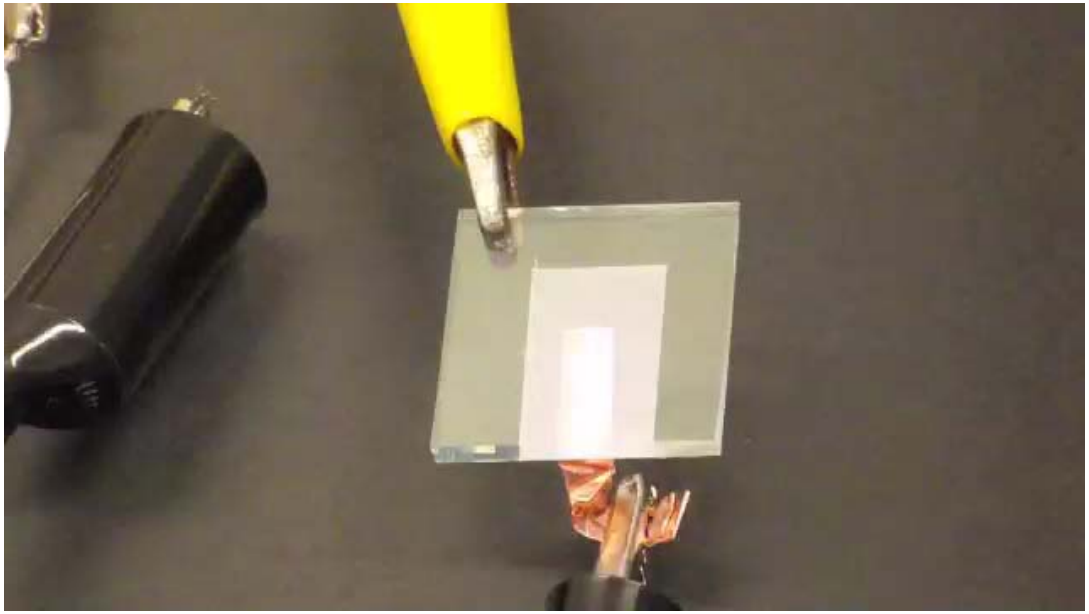
Lab #3 Light Emitting Diode

ZnS:Cu Phosphor



ZnS:Cu was the first formulation successfully displaying electroluminescence, tested at 1936 by Georges Destriau in Madame Marie Curie laboratories in Paris.

ZnS-Cu Phosphor

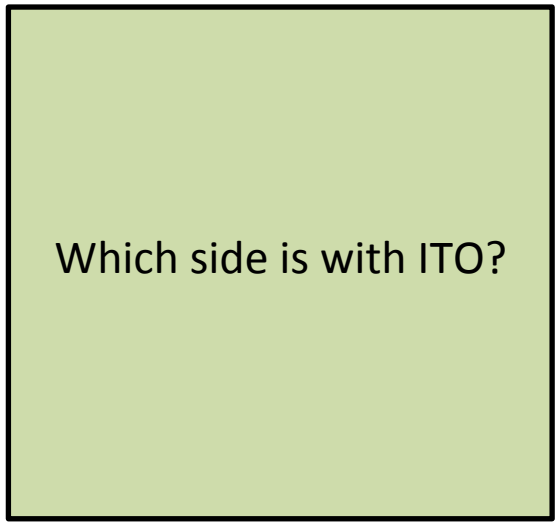
Indium tin oxide is a solid solution of indium oxide (In_2O_3) and tin oxide (SnO_2).

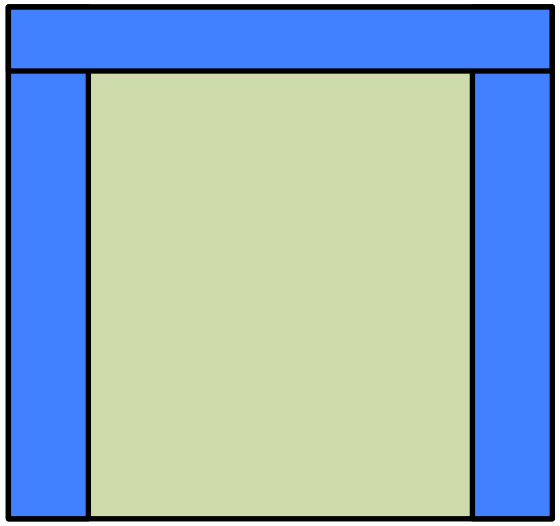
It is transparent and colorless in thin layers and is one of the most widely used conducting oxides because of its electrical conductivity and optical transparency.

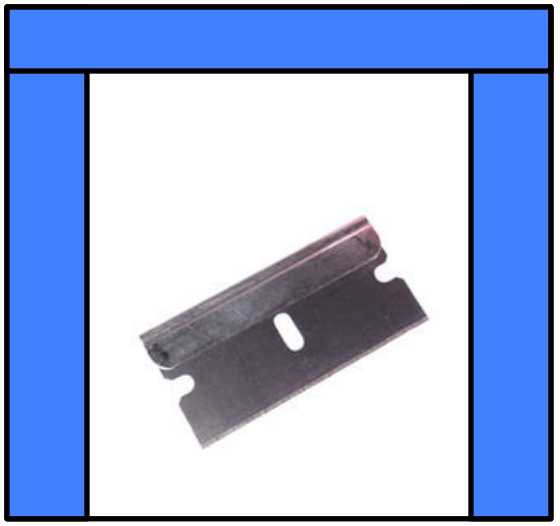
With the conducting side up, tape the glass on three sides.
Wipe off any fingerprints or oils using a tissue wet with ethanol.

Opposite sides of tape will serve as a spacer so the tape should be flat and not wrinkled. The third side of tape gives an uncoated portion where an alligator clip will be connected.

Add some of ZnS-Cu/epoxy paste and quickly spread by pushing with razor blade or microscope slide.

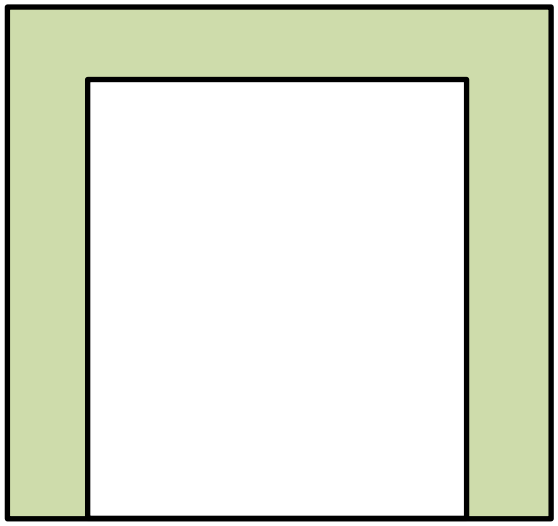




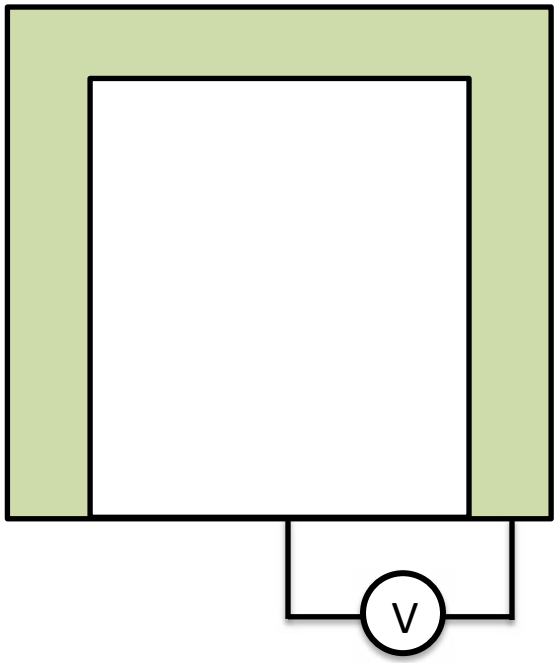


ZnS-Cu Phosphor

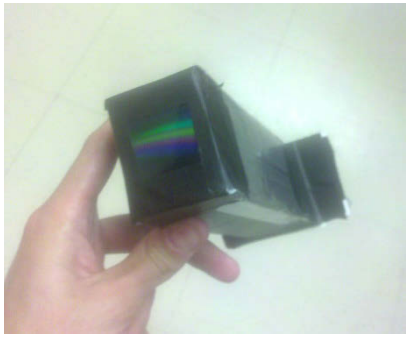
Carefully remove the tape without scratching the coating and heat the glass on a hotplate (100 degree C) for 20 mins until the epoxy is cured

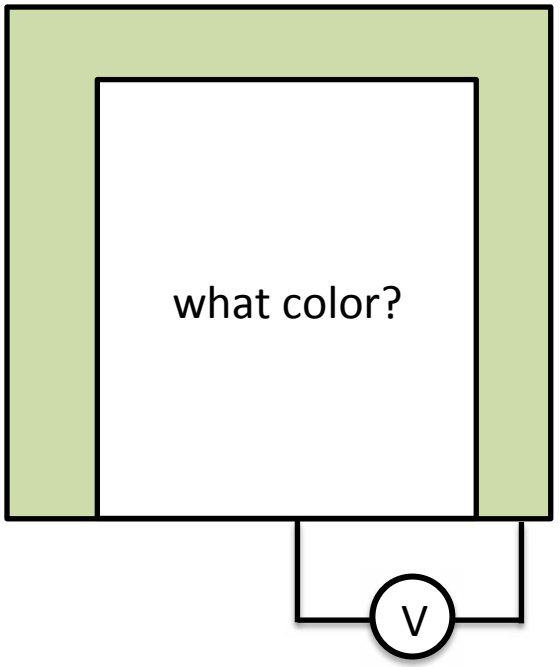


Use conductive tape as electrodes and connect it with the DC-AC inverter. The input voltage is around 5 Vdc while the output voltage is 650 Vac at 80 kHz

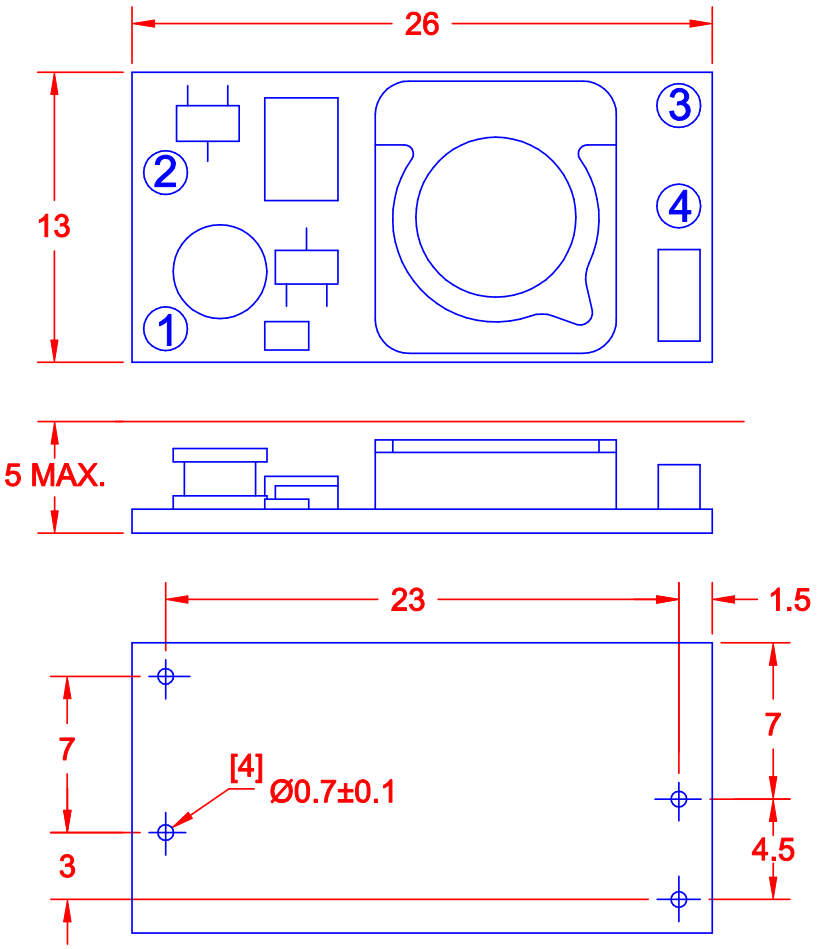


Use the homemade spectrometer to characterize the wavelength





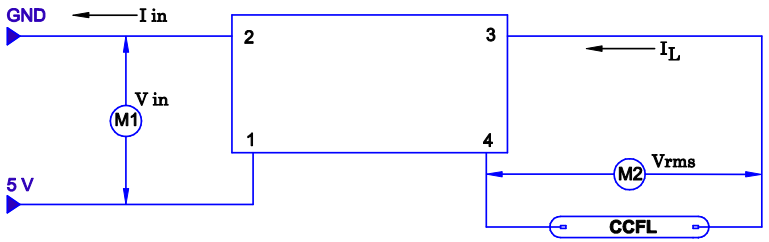
REV.	DESCRIPTION/ECO NO.	DATE
	RELEASED	8/19/97
A	WIRE DIAGRAM CHNGS	10/31/00
B	CONVERT TO CAD	6/6/01
C	ADD HOLE DIA.	3/15/02



CHARACTERISTICS	MIN	TYP	MAX
INPUT VOLTAGE: (vdc)	4.5	5.0	5.5
INPUT CURRENT: (mA)	200	250	300
OUTPUT VOLTAGE: (Vrms)	600	650	700
OUTPUT CURRENT (maRms)	4.0	4.5	5.0
OUTPUT FREQUENCY: (kHz)	70	80	90
OPERATING TEMP: (CELSIUS)	0	25	50

BOARD PIN #	INPUT
1	+V (V in)
2	V (GND)
3	OUT GND
4	V OUT

TOLERANCE	
L < 20	±0.2
20 ≦ L < 50	±0.3
50 ≦ L < 100	±0.4
100 ≦ L	±0.5



METRIC
THIRD ANGLE PROJECTION

DIMENSIONS ARE IN MILLIMETERS
TOLERANCE UNLESS OTHERWISE SPECIFIED
1 PL +/- 0.2
2 PL +/-
ANGLE +/- 0

JKL COMPONENTS CORPORATION

TITLE: 5 V CCFL POWER SUPPLY

DRAWN BY	APP'D BY	DATE	SIZE	FSCM NO.	DRAWING NO.	REV. NO.	SHEET
L. WENGSTROM	F.D.	3/15/02	A	55335	BXA-502	C	OF

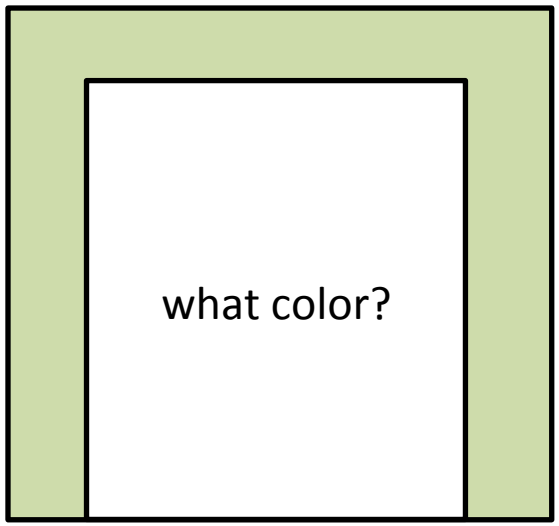
- CAD DRAWING -
MANUAL REVISIONS NOT PERMITTED

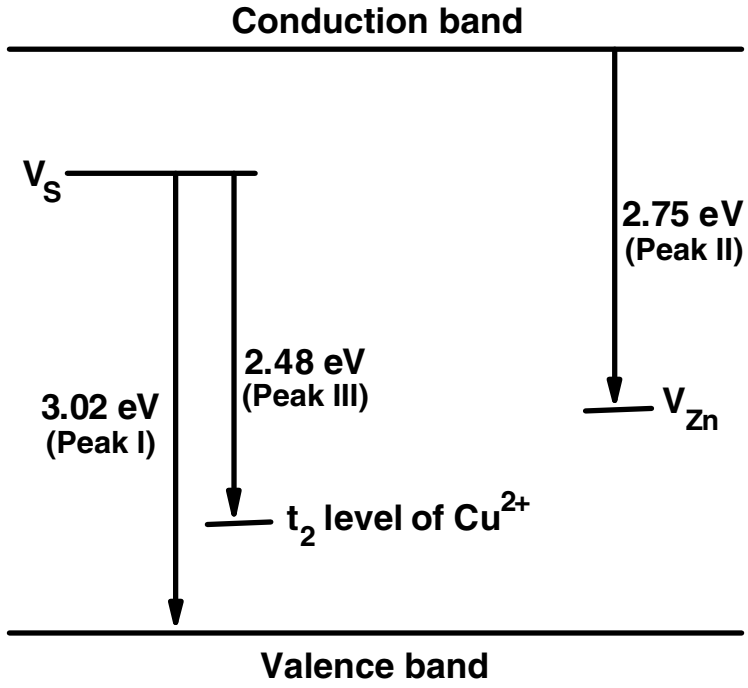
SCALE: NONE
RELEASED DATE: 8/19/97
REVISION DATE: 3/15/02

Photoluminescence

Expose it to UV light and observe what color of light it emits.

Photo courtesy of Bill & Mark Bell on Flickr.





6.S079 Nanomaker

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