

All:

As part of building up our lab with scant money for equipment, I have been frustrated about the cost of high quality microscope lights. Even old fashioned illuminators now cost well over \$200.00 and still deliver sub par light compared to that from fiber optic. Recently, I was in a camping store and was looking at the LED miniflashlights. I noticed that there were now some high intensity 3 watt varieties and picked up a Gerber LX3.0 (about \$50.00) to see if would work as a microscope light. I was impressed with how much light it put out for such a small object (7.5" X ~1" in diameter at the head). At home I tried it out and it blew away even my inexpensive fiber optic (ecolight).

At the office I found that the flashlight fit very nicely into the standard Bausch and Lomb stand's illuminator hole; a little adjusting up and down and I had all the illumination I wanted.

After a while I noticed that the light dimmed as the batteries drained down. I could convert to rechargables, but after reading more about how these particular flashlights work:

<http://candlepowerforums.com/vb/index.php?>

(this is an amazing web site, populated by fanatical flashlight nerds who chat all day about the technical specs of every flashlight known to mankind, check out the LED forum)

I realized that they had a long battery life, but that they did not hold the voltage steady and that light would dim relatively quickly.

The solution was to connect it to house current.

I had been saving wall cube transformers for years, just in case they would come in handy and it turns out that I had a couple that would output around the 4.5V the flashlight liked. According to the experts the LED bulbs are pretty tough so you could likely run them up to maybe 6V without shaving too much off their life.

Make sure that the wall cube converts AC 120V (input) to somewhere around 4.5V DC and not to 4.5V AC....some convert to the proper voltage but in AC. I didn't look closely the first time I tried this and I ran the light on AC, which worked OK, but the light shimmied around and was distracting.

To do the conversion take out the batteries and run a wire down to the bottom of the flashlight. I used a dowel to which I added a tiny screw to one end and then attached a wire to that screw and tightened it. Be careful to not let any of the wire touch the wall of the flashlight or it will create a short. I then taped the wire to the dowel and ran the whole thing to the bottom. For the return, I ground off some of the nonconductive anodized finish, and simply taped the end of another wire to the body. I cut the end of the wall cube off and attached the wires to wires coming off of the light. If your first try doesn't work then switch the wires as the polarity may be wrong (this is not supposed to be healthy for the LED, but mine survived). You can then put a switch in the line if you want, or simply plug and unplug the wall cube.

I imagine that price and variety will lower the price on these flashlights soon too.

Have fun.

Sam