

Re: Most Efficient Light Source??

Source: <http://sci.tech-archive.net/Archive/sci.energy/2005-11/msg00090.html>

- *From:* "Fritz Schlunder" <me@xxxxxxxxxxx>
 - *Date:* Fri, 18 Nov 2005 18:53:37 -0700
-

"manofsan@xxxxxxxx" <manofsan@xxxxxxxx> wrote in message
<news:1132362520.597844.207810@xx>
> I'd read that incandescent bulbs produce about 13 lumens per watt,
> while halogen lights produce about 90 lumens per watt. LED lamps have
> making inroads with their approx 70 lumens per watt.

Incandescent efficiency is all over the map (as are the other technologies), but for various types anywhere from 1–20 lumen/watt is not unrealistic. A conventional 120V 100W regular 750 hour life lamp will probably yeild 17 lumens/watt. Generally speaking the larger the lamp and shorter the life expectancy the higher the efficiency, the smaller and longer life the worse efficiency.

Halogen lamps don't produce anywhere near 90 lumens/watt. Typically they will produce from 20–30 lumens/watt (the 30 lumens/watt ones probably coated with internal infrared reflecting material), with smaller lamps like those for flashlights somewhere between 10–20 lumens/watt (or perhaps less for very small lamps).

LED efficiency is all over the map as well, but even more so. Old ones, or even modern but low efficiency ones will achieve less than 1 lumen/watt while good super high efficiency modern ones (that aren't necessarily available yet in large quantities) of white color might achieve the 70 lumens/watt figure or perhaps even more soon.

- > But recently some
- > Japanese researcher has claimed to produce LEDs with double the normal
- > efficiency, at 130 lumens per watt:
- >
- > <http://www.theinquirer.net/?article=27731>

This is most likely bogus, although at least a physical possibility. Any advancements to 130 lumens/watt will most likely be produced by well established white LED/dice manufacturers such as Cree or Nichia, not some single "professor" goofing around. Additionally it is unlikely a 130 lumen/watt white LED would be based around a purple LED die since purple

Re: Most Efficient Light Source??

photons have more energy than blue photons, but the phosphors waste any excess photon energy when downconverting the short wavelength light into longer wavelengths.

- > And now recent experimental results show that nanotubes can emit light
- > 1000 times more efficiently than an LED:
- >
- > <http://physicsweb.org/articles/news/9/11/12/1>

Obviously bogus or at least their claims are totally bogus. Unless they are comparing output against say a 1970's vintage LED of very low efficiency, 1000X efficiency is simply not possible. Today's LEDs (including those both available and those that have simply been demonstrated in a lab, but not mass produced yet) will achieve overall electrical to optical output efficiencies from say 1%–50%. 1000X improved efficiency would imply much greater than 100% overall efficiency, which would imply breaking the laws of physics. Obviously that isn't possible. TANSTAAFL

Be patient. LED efficiencies are improving (and fairly rapidly at that), and in due time the ultimate light source will probably be achieved. No mega "breakthroughs" involving key BS buzz phrases that usually don't mean much like "quantum," "nanotube," etc. are likely necessary.

• *Follow-Ups:*

- ◆ [**Re: Most Efficient Light Source??**](#)
◇ *From:* manofsanATyahoo.com
- ◆ [**Re: Most Efficient Light Source??**](#)
◇ *From:* Fritz Schlunder

• *References:*

- ◆ [**Most Efficient Light Source??**](#)
◇ *From:* manofsan@xxxxxxxxxx
- Prev by Date: [**Most Efficient Light Source??**](#)
- Next by Date: [**Re: Most Efficient Light Source??**](#)
- Previous by thread: [**Most Efficient Light Source??**](#)
- Next by thread: [**Re: Most Efficient Light Source??**](#)
- Index(es):
 - ◆ [**Date**](#)
 - ◆ [**Thread**](#)