

The “E”-nnovation of Lights



Presented to you by:
Marc Reyes - 7484769
Miranda Holder - 7703844

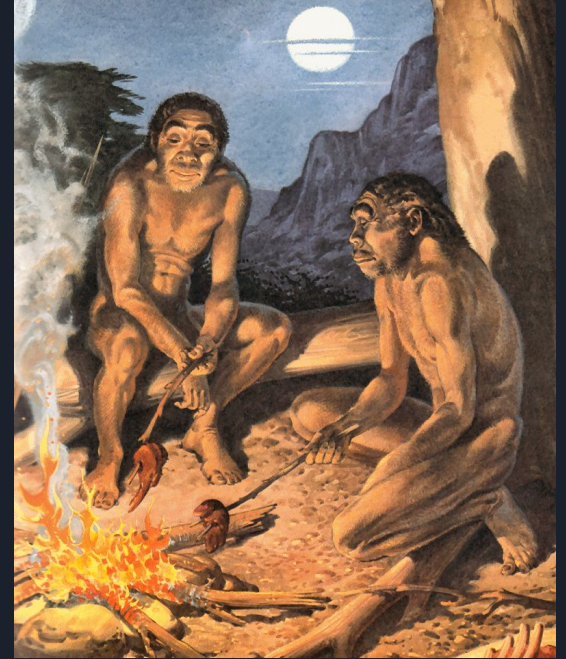
Introduction

- What is artificial lighting?
 - Light generated via artificial sources, such as lamps, LEDs, etc
 - Several factors of it can be controlled, such as quality, quantity, and duration of light
- Why is lighting important?
 - Lighting is used for many applications
 - Headlamps in vehicles
 - For photosynthesis (growing plants/vegetation indoors and sometimes outdoors, and to grow corals as well)
 - Gives vision in the dark
- Who is this important to?
 - Everyone!



General History

- Origin of artificial light occurred one million years ago from humans mastering fire
- Electric light was discovered only around 200 years ago
- Since then, there has been a huge growth in the capabilities of electric light



Important Milestones

- Joseph Swan invents first light bulb in 1860
- Thomas Edison files for a patent for the electric lamp in 1879
 - Huge explosion in growth of electric lighting follows
- Peter Cooper Hewitt invents the fluorescent light in 1903
 - By 1951, it is the most produced and used lighting source
- In 1962, the first LED (Light Emitting Diode) is invented
 - Slow growth in the popularity of LEDs
- In early 1990s, the blue LED is invented
 - Huge milestone as now white light can be created
- Today:
 - LED lighting is quickly taking over as the most affordable and most efficient lighting source



How do these lighting sources work?

- Electric driven device that uses either AC or DC to operate.
- Can be operated by harvesting natural energy such as solar, wind and hydro.
- Can be manipulated by a dimmer.
- Advance lightings can be manipulated by programming it.



Common Current Lighting Sources

Incandescent

- Cheapest and basic source of light
- Normally has warm color temperature

Fluorescent

- Better light source than incandescent that will cover more surface area than incandescent, higher power output
- More on the cold color temperature

High Intensity Discharge Lamps

- Strong light source
- Mostly used on the highway roads because of massive coverage.
- Disadvantage: Extremely high in power consumption



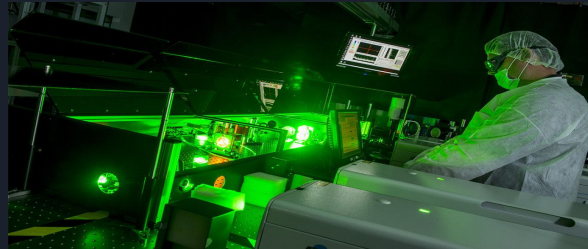
The Future of Lighting

- LED technology
 - Currently, LEDs are the most efficient lighting source
 - Excellent light sources for homes and offices
 - Major problem: droop
 - Efficiency decreases sharply as current density increases
 - Unless this problem can be fixed, LEDs will struggle to remain viable options for applications that need large power consumption



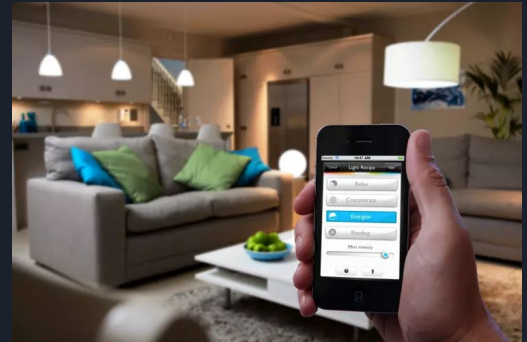
The Future of Lighting

- Laser technology
 - Lasers are being researched more due to the limitations of LEDs
 - Lasers do not experience a droop at high levels of current and power
 - Limitations:
 - Limited research means lasers are still relatively new to the market
 - Will be a few years before viable laser lighting options become available for public use



The Future of Lighting

- How to achieve a green future?
 - Internet of Things
 - “Smart lighting”
 - Lighting controlled via an app
 - Sensors to track movement and GPS-enabled devices
 - Public knowledge
 - Education into the importance of energy-efficient lighting
 - OLEDs (Organic Light Emitting Diode)
 - Produce less carbon in manufacturing vs. LEDs
 - Can last forever
 - Still relatively new technology
 - Can be expensive compared to LEDs



Extra research and future prototypes

For more informations and articles:

<http://www.futureoflight.philips.com/>



The “E”-nnovation of Lights

Brief History

- Artificial lighting began with the mastery of fire by humans
- Electric light was discovered around 200 years ago, and shaped the growth of our society drastically
- Incandescent bulbs were invented in 1860, and fluorescent bulbs invented in 1903
- LEDs were invented in 1962, and since then have come a long way in efficiency and price

LEDs

- LEDs are so far the current advance lighting material made and used today.
- Advanced LEDs can be manipulated or programmed
- Wide spectrum when it comes to lumens, color temperature, PAR (Photosynthetically Active Radiation)
- Used for growing sun light-dependent plants, vegetations and even corals



Lights currently in use

- Incandescent
- Fluorescent
- High Intensity Discharge Lamps
- LEDs

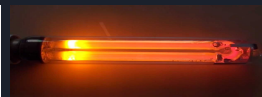


The Future Lights - What's Next?

- OLED (Organic Light-Emitting Diodes)
 - Environmentally friendly
 - Last forever
- Internet of Things
 - “Smart Lighting” can increase efficiency
- Lasers
 - Currently in research stages
 - Potential for high efficiency in high-power applications

Light that are about to be phased out

- Low Pressure Sodium Lamps
- Metal Halides (in Canada)
- Halogen Lamps
- Some Fluorescent lamps like T10, T12





**Any
Questions?**





Thank you!



Have a nice day!!! :) :) :)