



FIP International Year of Light Student Fellow

1st Place Winner

How Light - Technologies Positively Impacted My life

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When you were born as a child, you saw your first light. And till the end, you will be continue to rise with sunshine to a day ends with a flip of a light switch. So it's worth seeing how human lives are entangled with light and related technologies

Daily life

It is said, after Thomas Edison invented electrical light bulb, the working time of mankind was considerably increased. Since then we have been able to work more, learn more and play more. Owing to artificial and controllable light we can not only increase but also manage the whole 24 hours towards best productivity.

Healthcare and Medicine

I remember the little flash light doctors used to check patients throats. Medical applications of light span throughout the electromagnetic spectrum. X ray and other tomographic imaging technologies open up the body noninvasively. In my personal experience ultraviolet and infrared light is used for light treatments for like vitamin D deficiency etc.

Clothing and Fashion

Whenever I see those kids' shoes with little flashing lights, I think modern childhood is more fun than It was 50 years ago. As a school student, I had to ware pure white uniform and my mom's biggest problem was how to re-whiten cloths after all the 'browning' I go through. Divergent powered with fluorescent, which glows in bright white under sunlight was the solution. Most commercially available tooth whitening treatments used today shares a story with light technology as well.

Communication

One of earliest method of communication – beacon fire- is a good example how we stated. Now, in this fiber optic era, we can't imagine any communication without light. Modern internet and intercontinental communication has its backbone of light. If we consider invisible light, satellite

communication comes first but old fashioned UHF, VHF, FM and all sort of electromagnetic communication too counts. But wait a moment before boast about satellites, the TV remote at the reach of your fingertips, its infrared right?

Automobile and Aviation

Red light – stop, green light – go. That’s our daily routine. Driving is all about light signals now. Colors never were meaningful than this. Visibility, which is a light penetration parameter, is a main cause of flight delay. Even the DMV road tests starts with a check of lights. Application of light varies from simple turn signal to red lights on sky scrapers

Travel

All popular travel destinations are detailed with light. Even those old-days monuments like pyramids and taj-mahal are lighted up for more attractive look, not mention new-year fireworks. Times Square, which is just another street is so -‘SO’ owing to the numerous light sign boards.

Research: Physics, chemistry, biology, engineering, Astronomy

Physics has a well-established field of Atomic Molecular and optical physics which dedicated to study light –atom interaction (Just to mention my “reason of existence”). Apart from that other fields of physics also owe (or rather ‘own’) light technologies a lot. In Condensed matter, they use x-ray diffraction to probe into crystal structure. Both Nuclear and High energy physicists use electromagnetic (light) detectors. And laser in conditioning targets as well.... I don’t think I can control myself if started to speak of the role of light in physics ... Chemists use laser light to induce, control and probe reactions. One example in biology is fluorescent protein tagging. Since Robert Hook invented the microscope, it is a key biological tool. In engineering, light is used as a humble, yet powerful tool. As a benchmark of astronomy, Galileo discovered four biggest moons of Jupiter using his first reflector telescope. Then from Hershel’s work through modern day to future, observation astronomy, including radio astronomy is a story written by light on the ultimate paper of dark sky. Apart from those, interdisciplinary fields like nano –photonics will open new avenues for light technologies

Politics and business

Although being a boring field, propaganda technologies like digital sign boards to cutting edge commercial implementations like Teleprompters, holographic projection has been used in political propaganda. Tele conferencing is used in politics and business extensively.

Military

Radar was one of classic examples. And it’s being a while they have started military laser research. And it’s good news that US Navy deployed its first laser gun recently. But in background , light technologies has being used for targeting , range finding and guidance, not to mention usual communication applications.

Agriculture and food

Whole agriculture is based food chains, which based on trees, which based on chlorophyll, which convert light energy to chemical energy. Even though it's unseen, it's the most important application of light. That's how we tame the sun in the benefit of survival. As I know, covering some fruit (like banana) with colored foil, which selectively let light pass through, can induce growth.

In greenhouses, there is a potential of using LED lights optimized to plant growth. In food preservation, I guess gamma rays can be used under control to sterilize food.

Architecture and Design

Now light is not just a beauty article for buildings. The use of glass and other techniques to utilize natural light to the maximum has being a revolution in architecture. Heading towards the fossil fuel crisis, designing energy efficient buildings is a crucial thing. In this issue Light management plays a big role. In security installations like CCTV, motion detection ... light plays a key role.

Education

In the process of conveying information effectively, light plays part. It can be a simple use of a laser pointer. Multimedia projector is an essential thing in a modern classroom. Modern day's classroom lighting is carefully done than we see in the first glance.

Entertainment

From good old photography to disco lights, light technology is extensively used in entertainment because if light's inherent ability to stimulate human mind. Indeed it addresses to the most powerful of five senses, the sight.

And finally,

Satellite images, looking down on earth which capture earth's lighting patterns define a new type of map. So far we considered our earth as the 'blue planet' because of its oceanic signature. Bur if any alien observe us from outer space, they would rather notice earth as a planet of light – day and night

So all the alien folks out there welcome to the planet of light!!!