

MIT ILLUMINATIONS SEMINAR

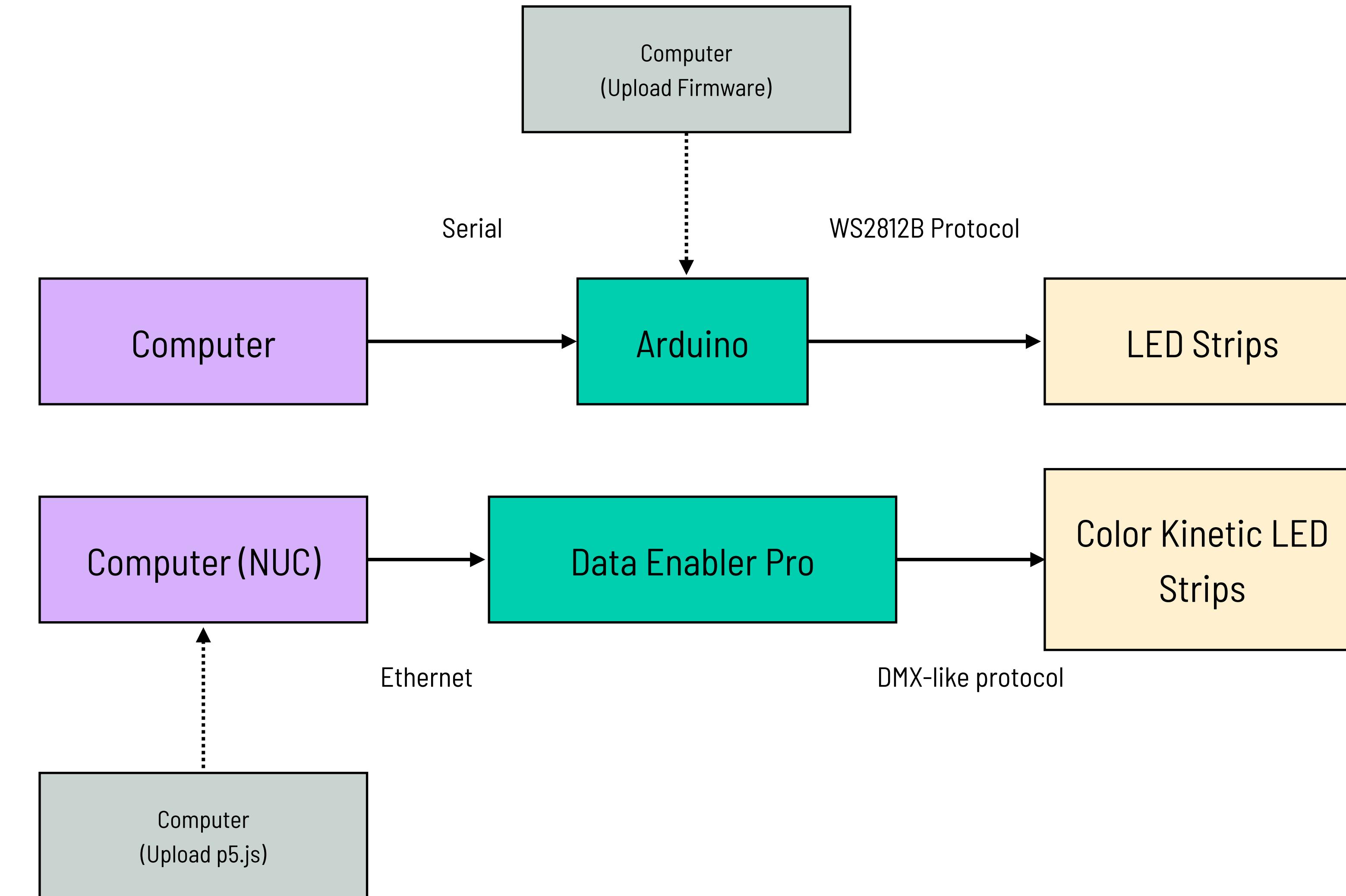
Nov 1, 2022

Today

Recap

Behaviors of Light

Activity





MINIQUIZ

Write your name in the top left hand corner

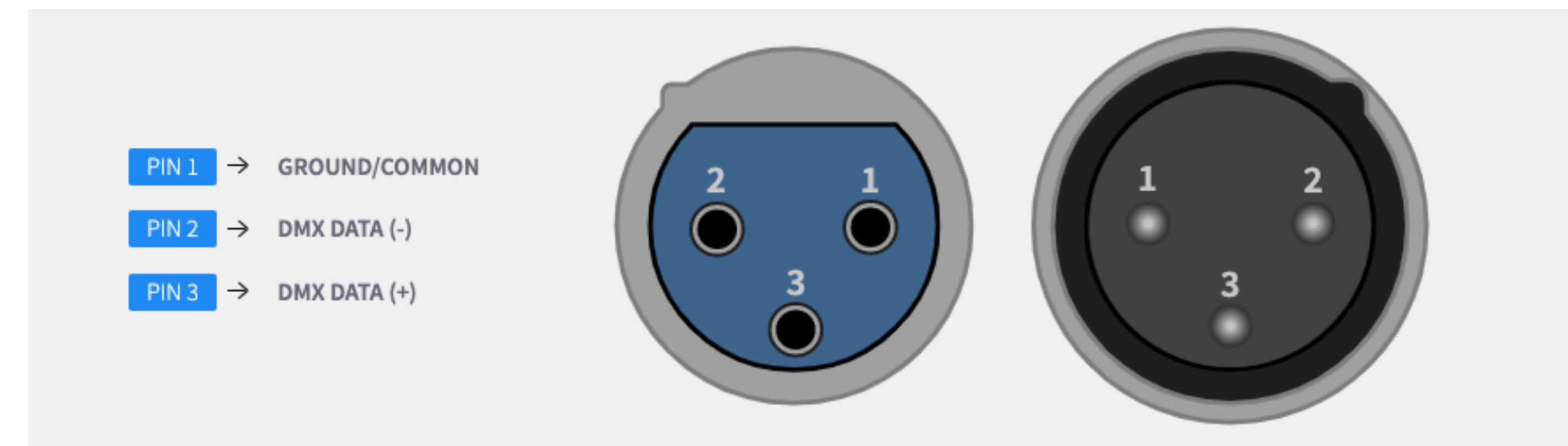
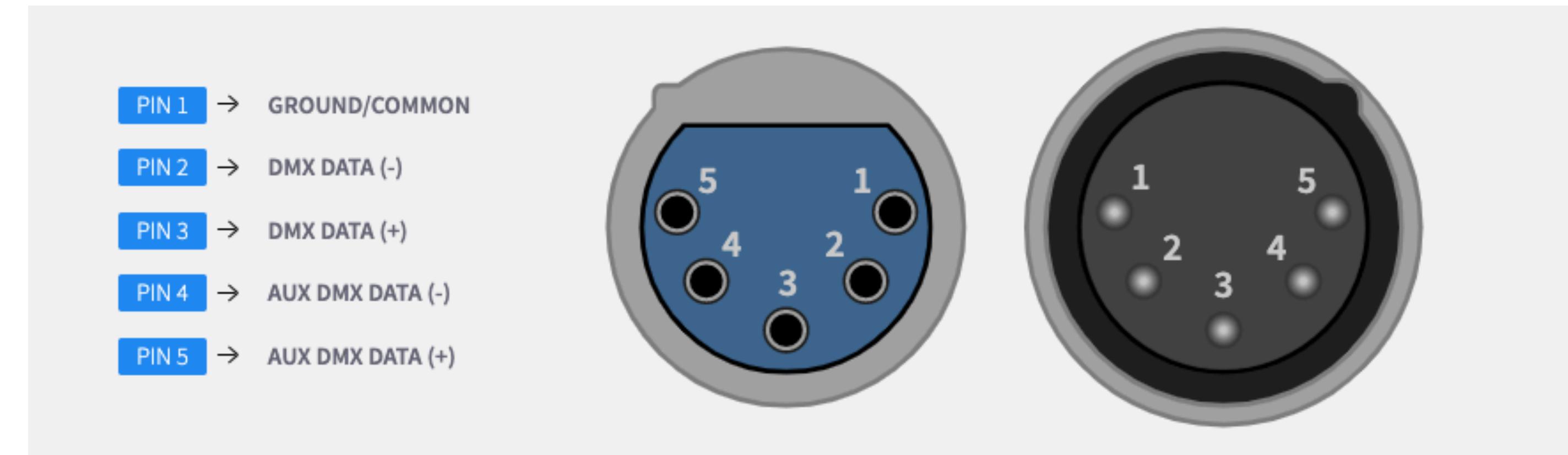
1. What's the lighting protocol used to control the lights (*not serial*)... (list multiple if you think you know multiple)
2. What tech is behind the MIT Illuminations App? What's the name of the JavaScript wrapper that converts the web app into a downloadable desktop app?
3. What is the 'frieze'

Lighting Protocol

DMX

512 Addresses

One DMX universe



3pin DMX Cable

Lighting Protocol

sACN

many universes (up to 64k)

Built on IP addresses

Art-Net

many universes (up to 32k)

Public domain

Also built on IP addresses

(both very similar)

MIT Illuminations Application

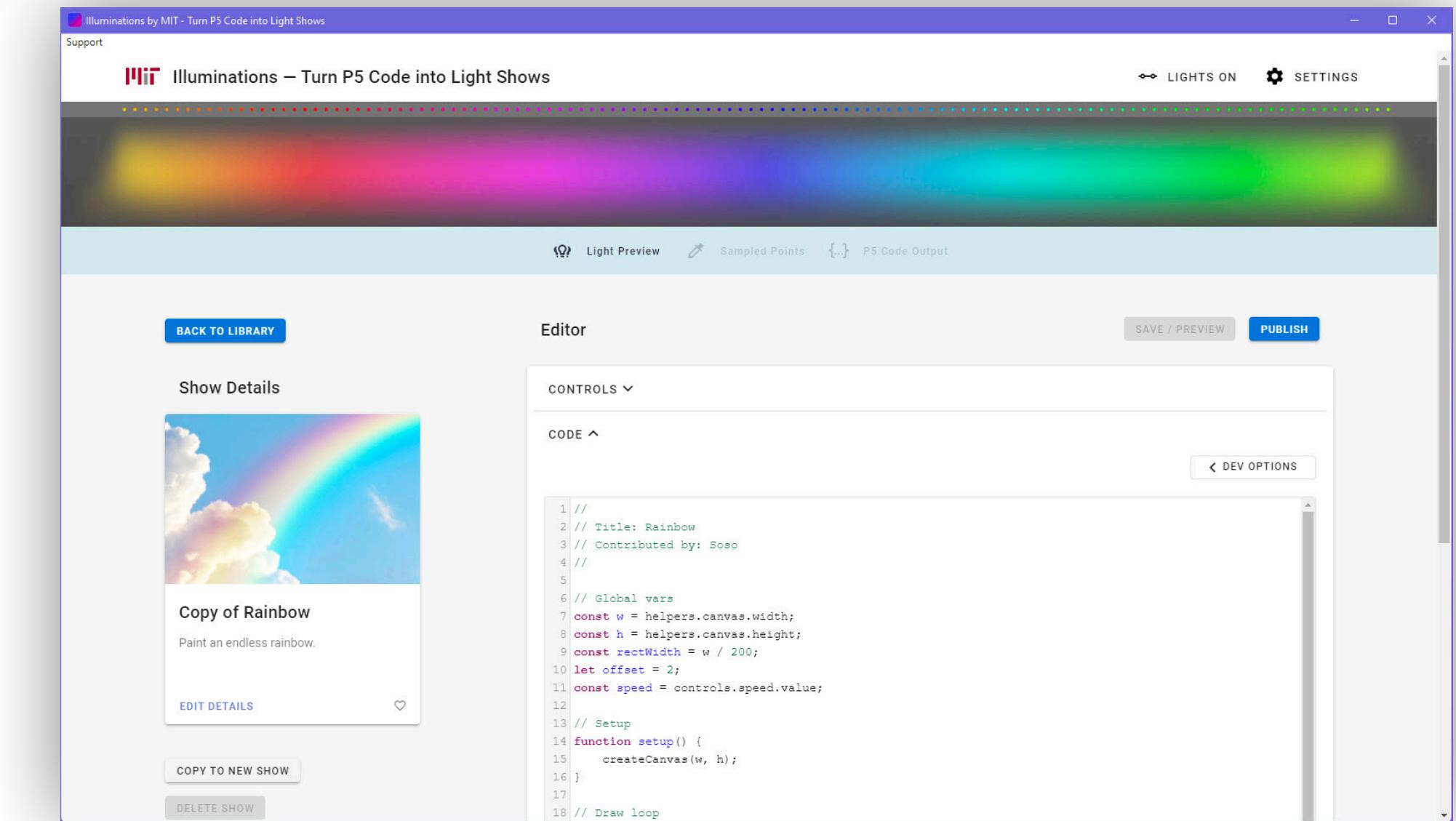


Web Technologies:
HTML, JavaScript, CSS

+



JS Framework
Vue.js



ELECTRON

Electron: A wrapper to help build
cross-platform desktop apps



MIT Illuminations Application

It's on GitHub!

<https://github.com/sosolimited/MIT-Illuminations>

The screenshot shows the GitHub repository page for 'sosolimited / MIT-Illuminations'. The page includes a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. Below the navigation is a search bar and a repository header showing it's a public repository. The main content area displays a list of recent commits on the master branch, each with a commit message, author, date, and number of commits. To the right of the commits is an 'About' section with a description of the project, tags (p5js, adafruit-neopixel), and repository statistics (2 stars, 5 watching, 0 forks). At the bottom, there's a 'Releases' section with a link to the latest version (v1.2.10).

Search or jump to... Pull requests Issues Marketplace Explore

sosolimited / MIT-Illuminations Public

Code Issues 1 Pull requests Actions Projects Security Insights

master 1 branch 9 tags

westhom electronStore needs init from main process 26f7d29 3 days ago 102 commits

arduino Added support for RGB + W Neopixel devices. 11 months ago

build get microphone-based shows working on prod mac 26 days ago

extraResources Added images for vocalizer/equalizer. Resolves #6 15 days ago

public Localized P5 and some deferred loading 18 days ago

src electronStore needs init from main process 3 days ago

tools add notarization step to build process (macOS) 26 days ago

.env.production Let there be light. 11 months ago

.gitignore Let there be light. 11 months ago

README.md update build details in readme 26 days ago

README.pdf Added a PDF of README. 9 months ago

babel.config.js Let there be light. 11 months ago

package-lock.json Dynamic watcher for deployment to P5 18 days ago

About

This open source application takes P5 code and visualizes/outputs it to various professional and hobbyist lighting units, making creating light shows easy and accessible.

p5js adafruit-neopixel

Readme 2 stars 5 watching 0 forks

Releases 9

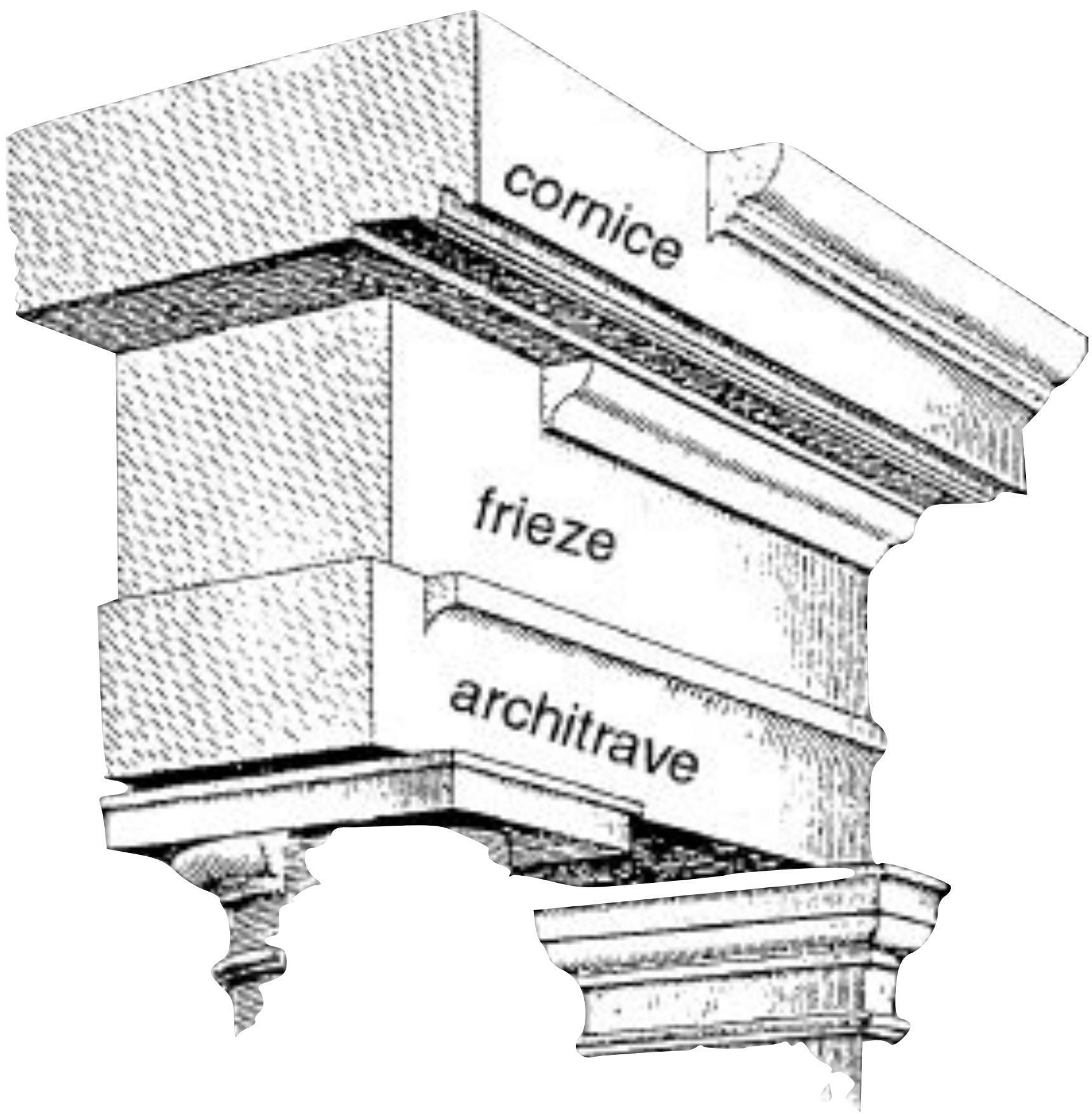
v1.2.10 Latest 5 days ago

+ 8 releases

MIT Illuminations Application

“... hope that if we mention these technologies, if they see it in the future, they'll have a bit more context”

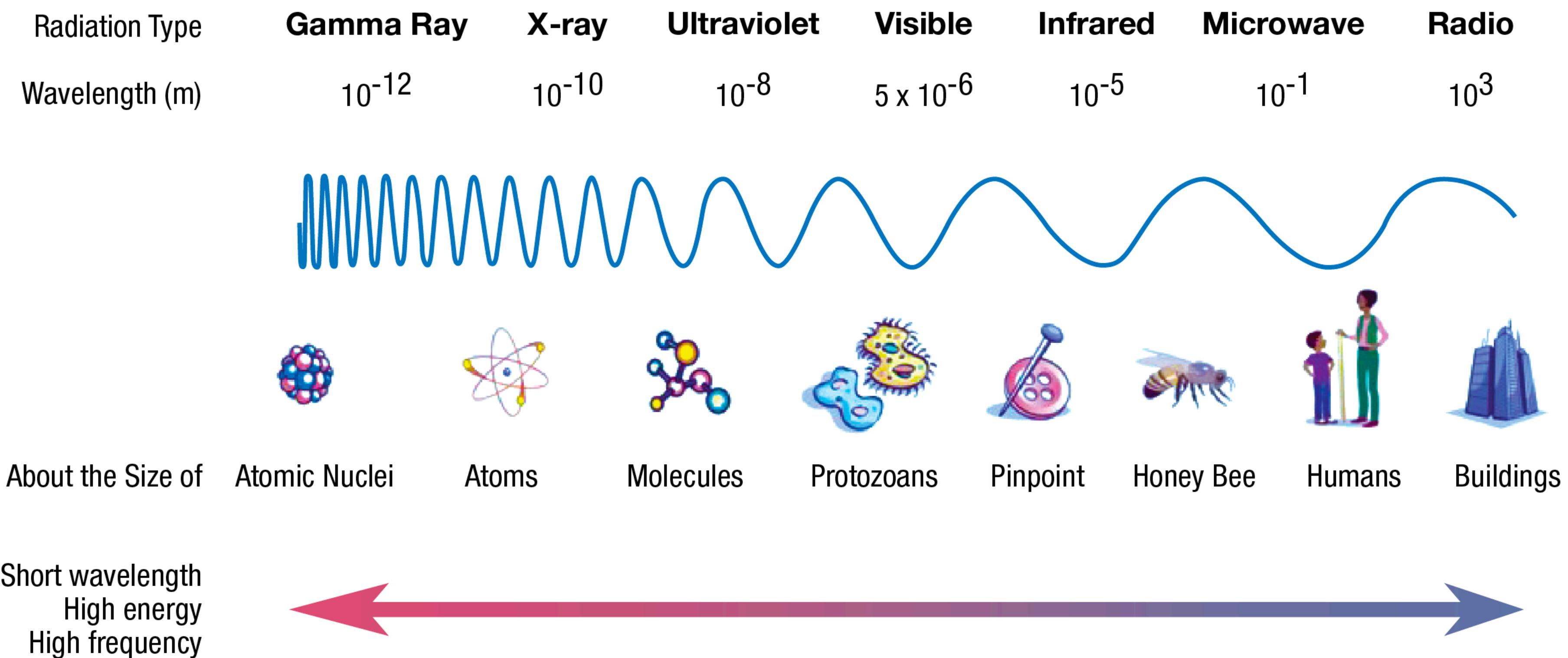
What is the frieze?



The Illuminated Surface

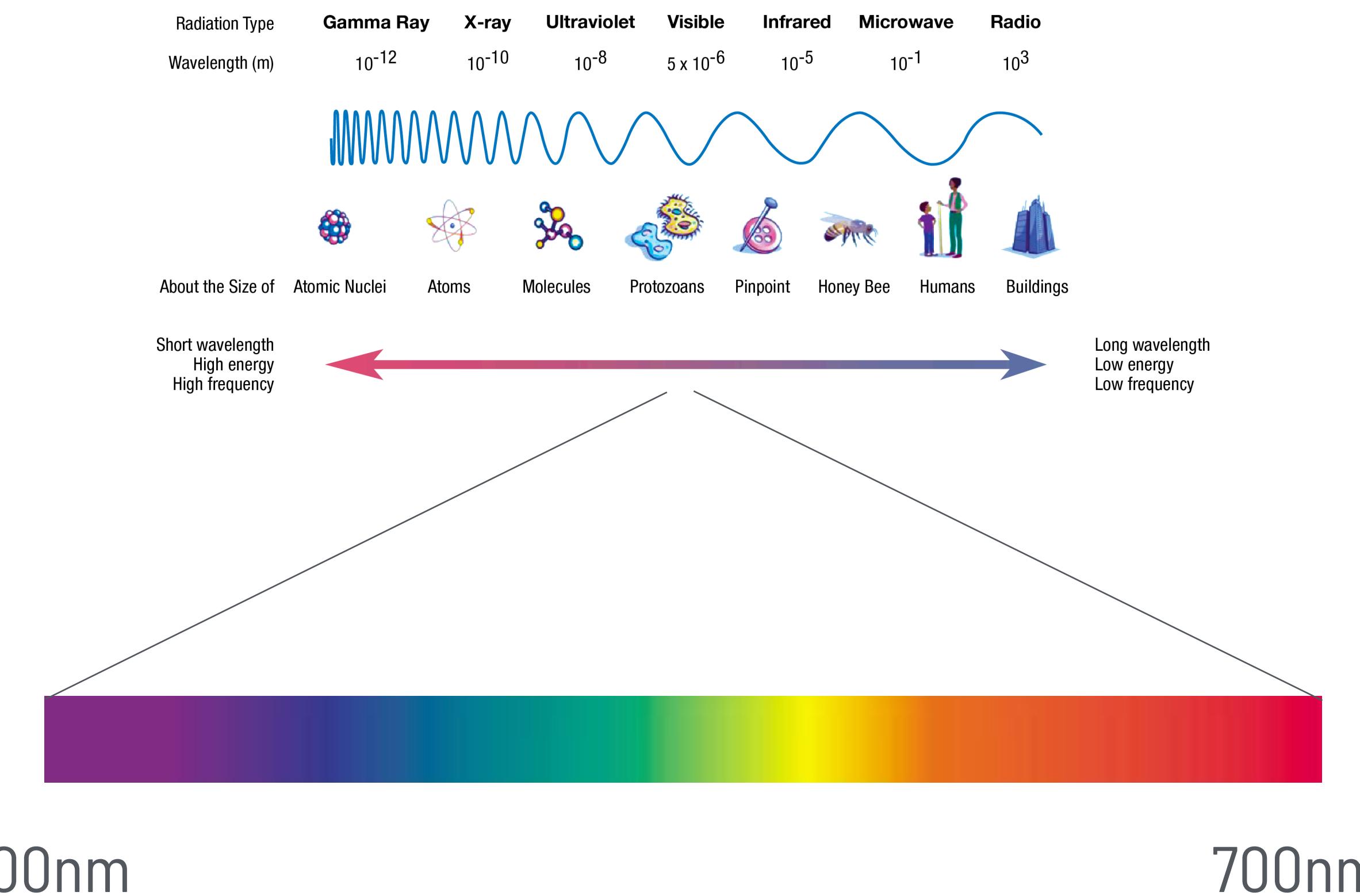


Electromagnetic Spectrum



The Electromagnetic Spectrum. Image Credit: NASA

Visible Spectrum



The Electromagnetic Spectrum. Image Credit: NASA

Perceiving Color

When white light hits the umbrella, the fabric absorbs most of the wavelengths and reflects the rest.

If the patch is orange it absorbs everything and reflects the orange wavelengths.

Photoreceptors (rods & cones) in our retinas help us process these shades & hues.

Colorblindness?

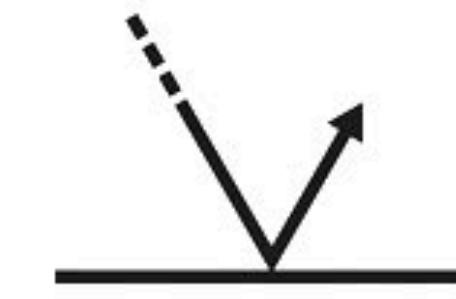




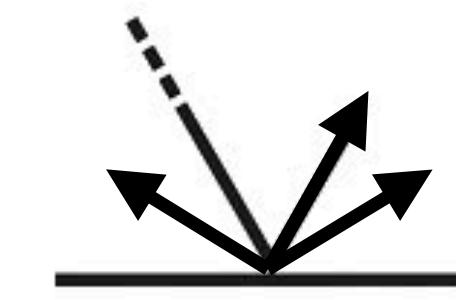
Behaviors of Light

1. Reflection
2. Refraction
3. Diffusion
4. Absorption

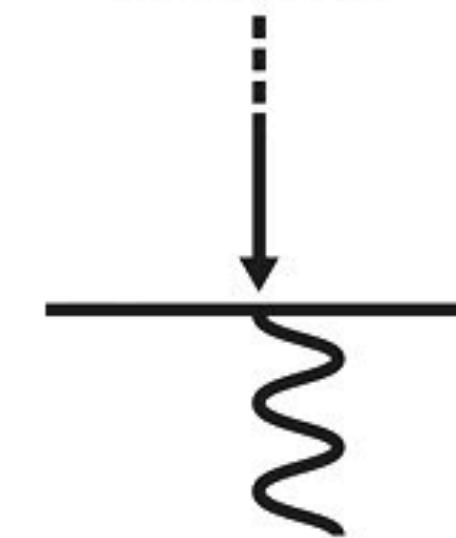




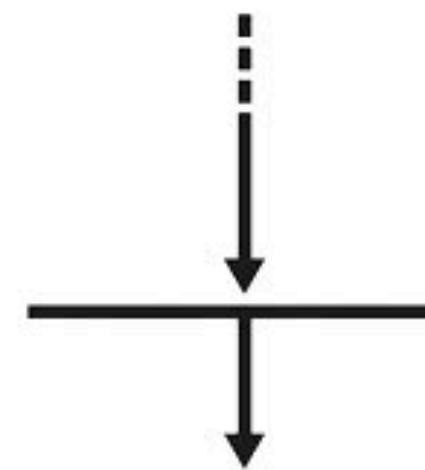
Reflection



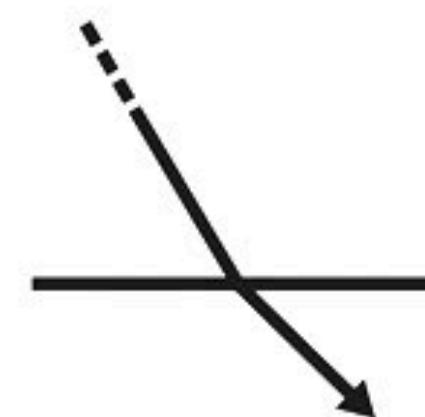
Diffusion



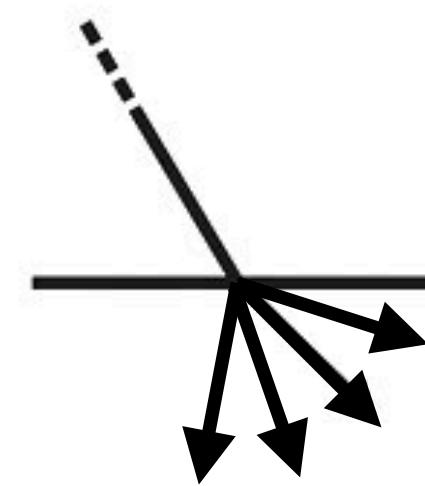
Absorption



Direct
Transmission

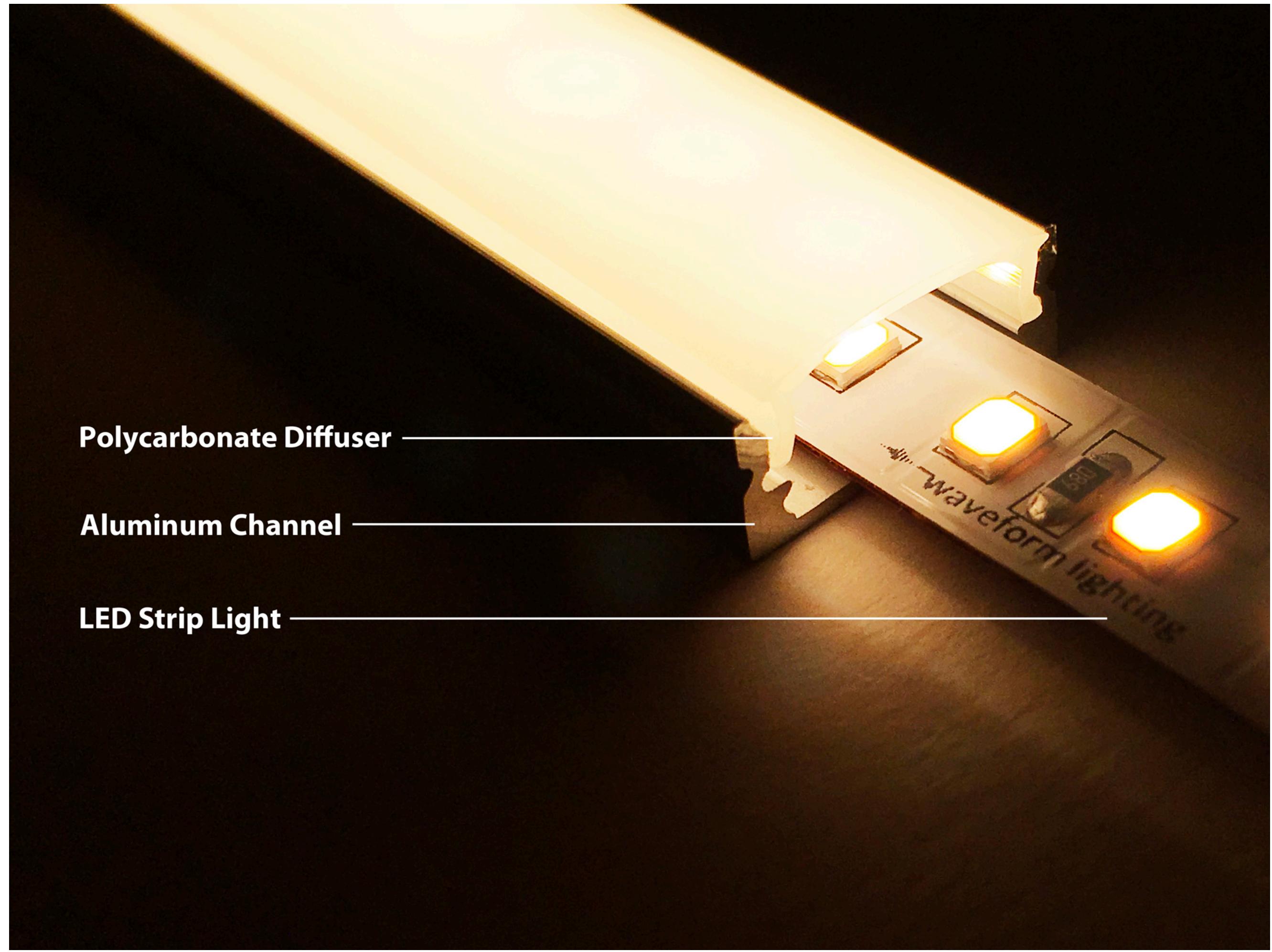
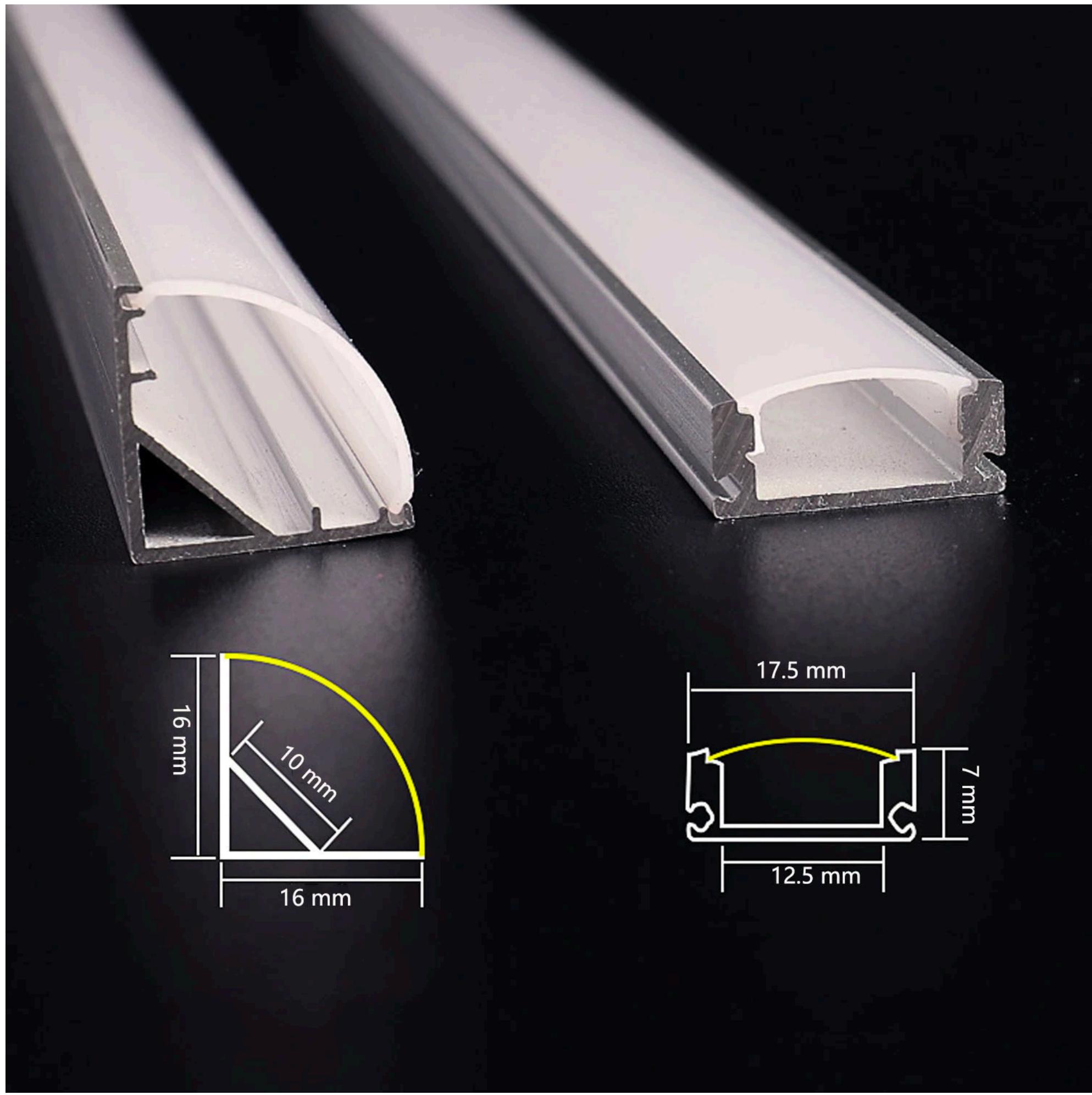


Refraction

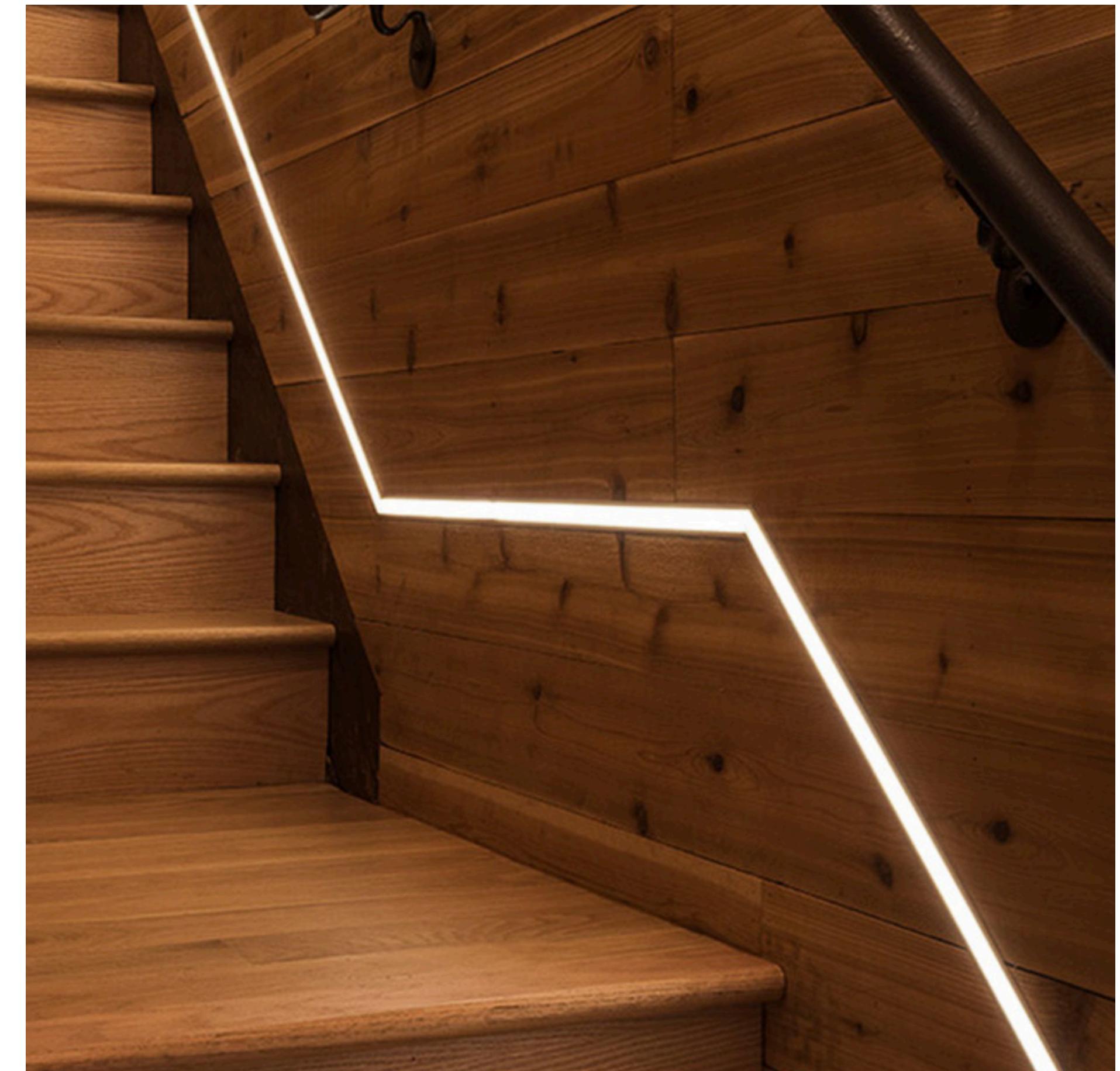


Scattering/
Diffraction

LED Diffusers



LED Diffusers

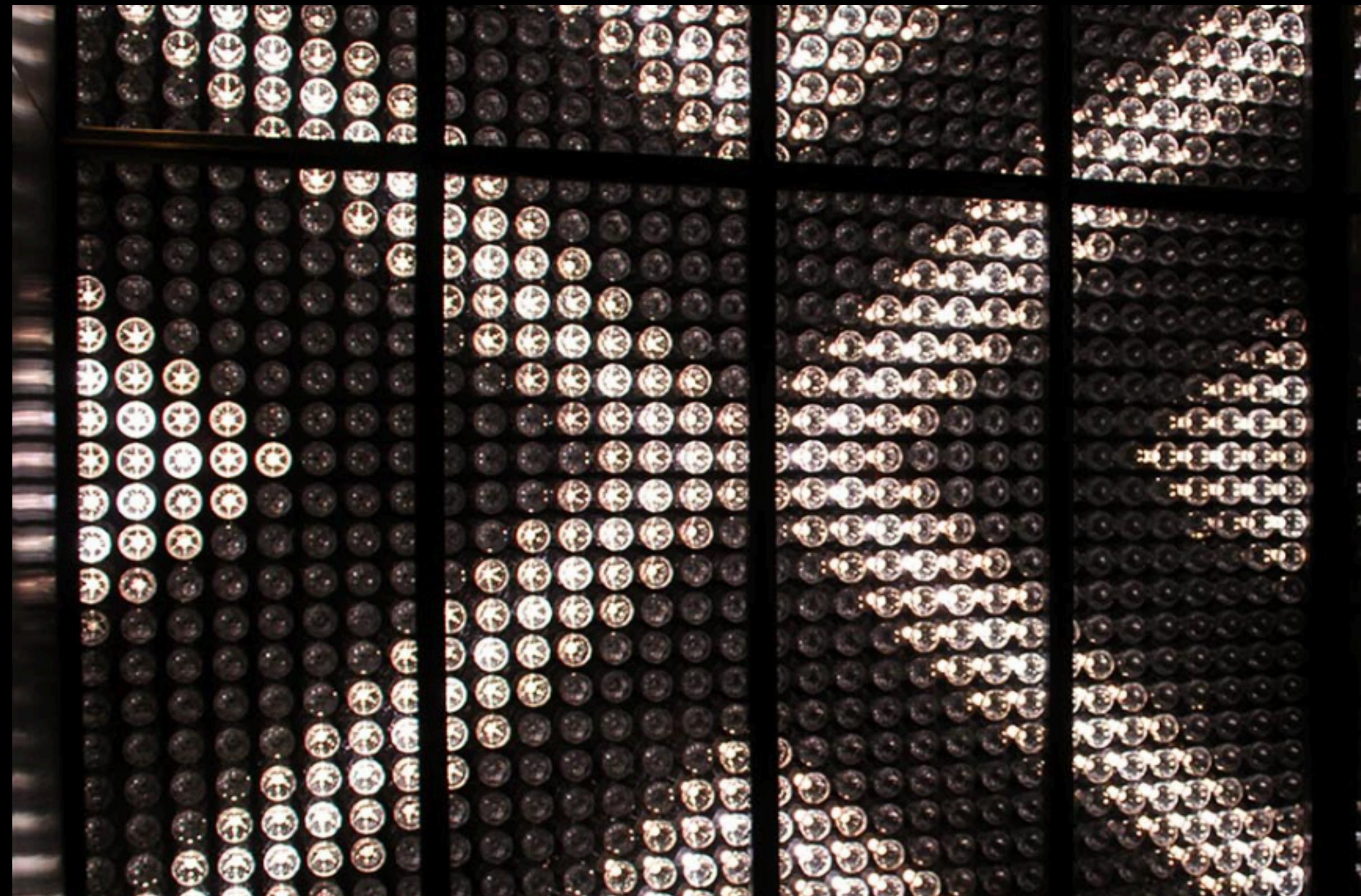




Akamai Customer Experience - SOSO Limited



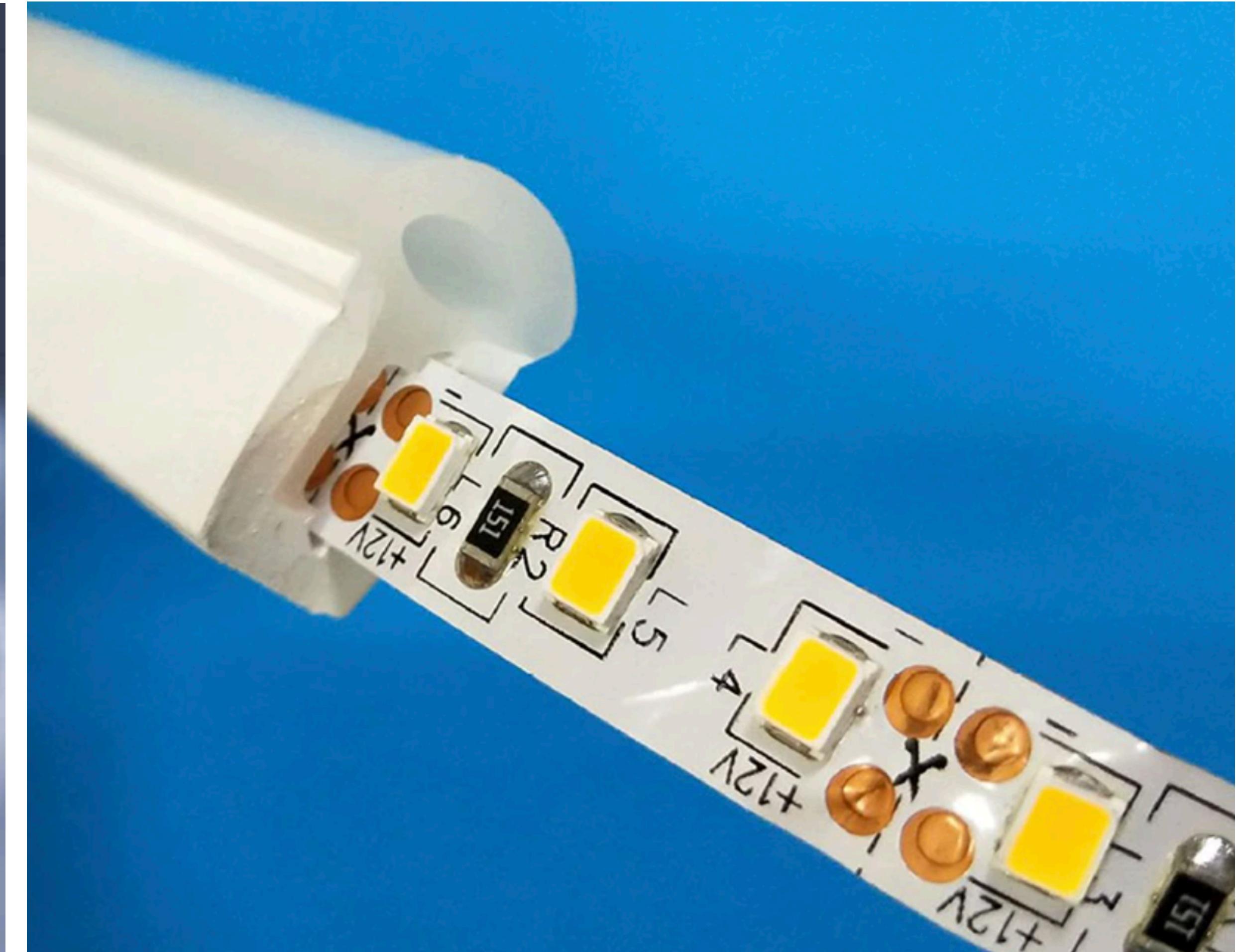
Colorspace - SOSO Limited



Harcourt Wall - SOSO Limited



LED Neon Diffusers







The Smithsonian American Art Museum

Architectural LED Lighting

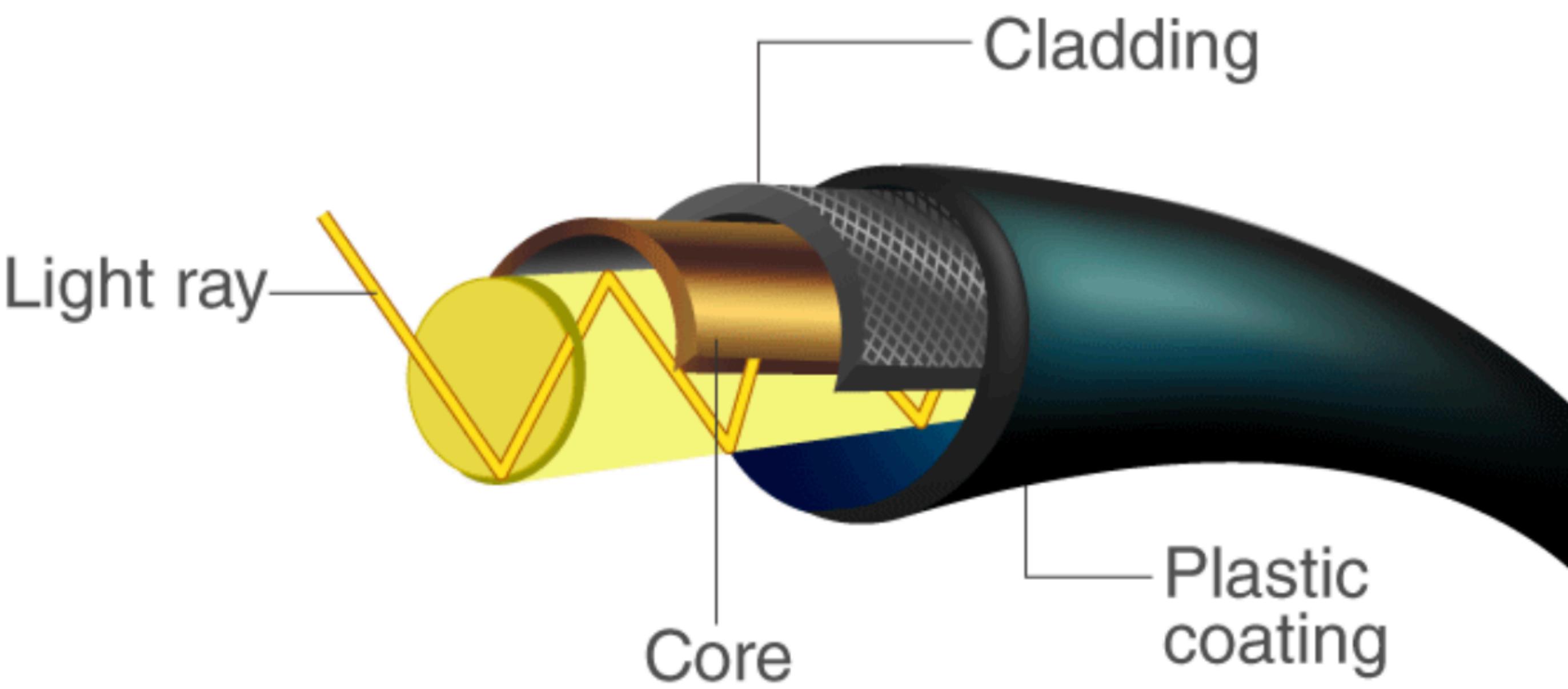
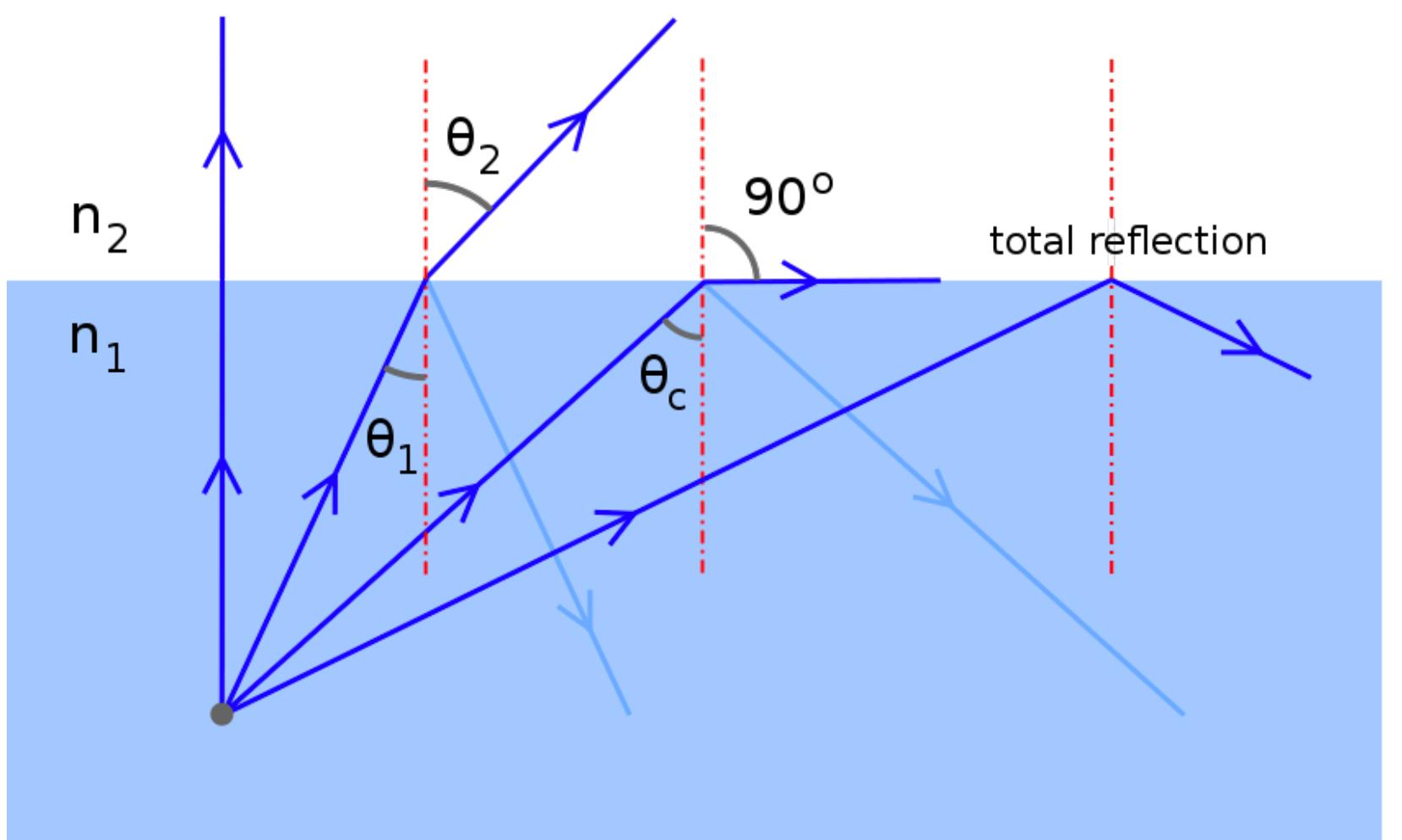
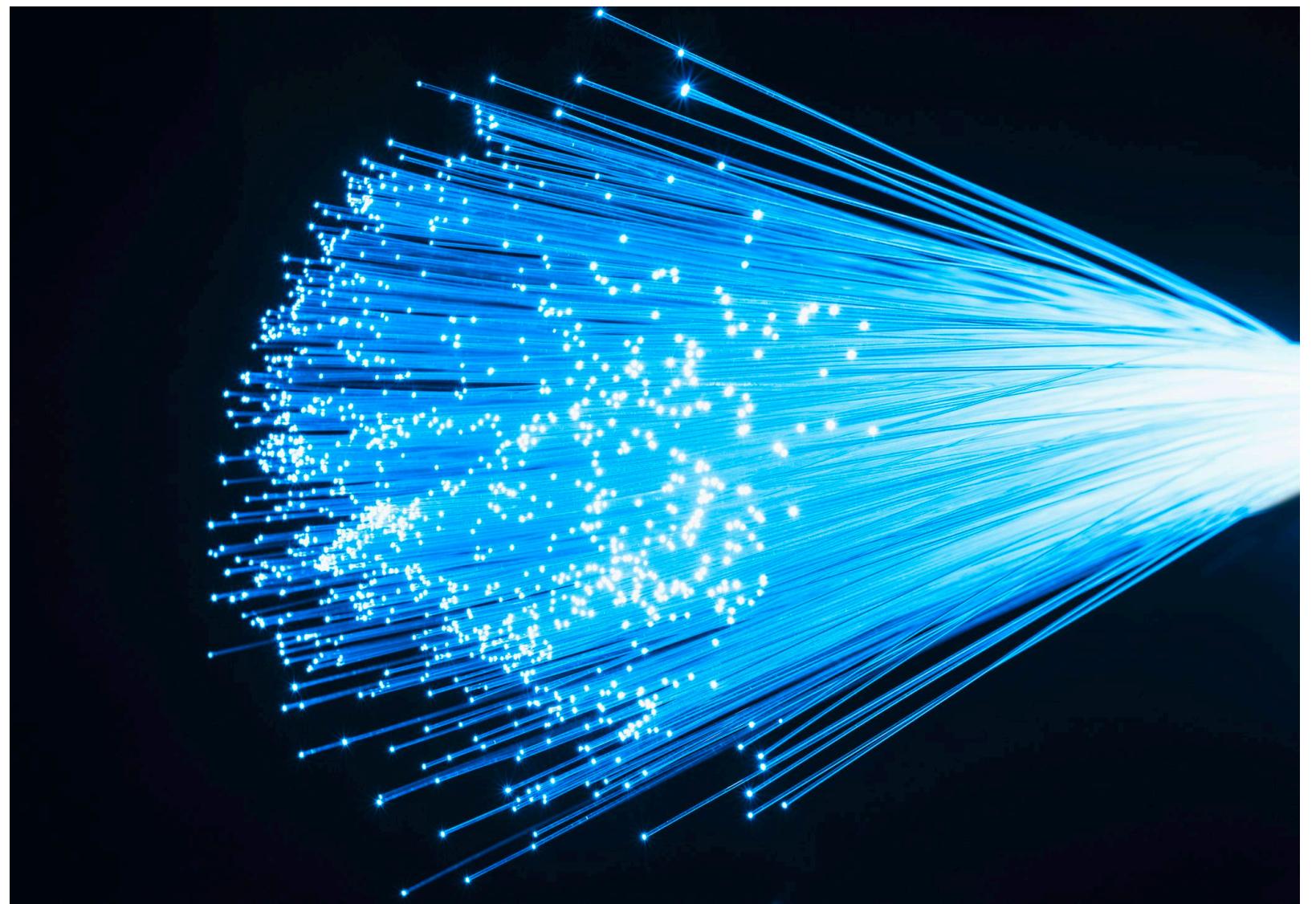


Designed by David Svensson, a total of 400 meters of a neon resembled warm white LED from GE is a work of art representing the pulse of city life in busy Stockholm station.

Optical Fiber

"Total internal reflection" to capture the light transmitted in an optical fiber and confine the light to the core of the fiber.

Why optical fiber cables over traditional copper cables?





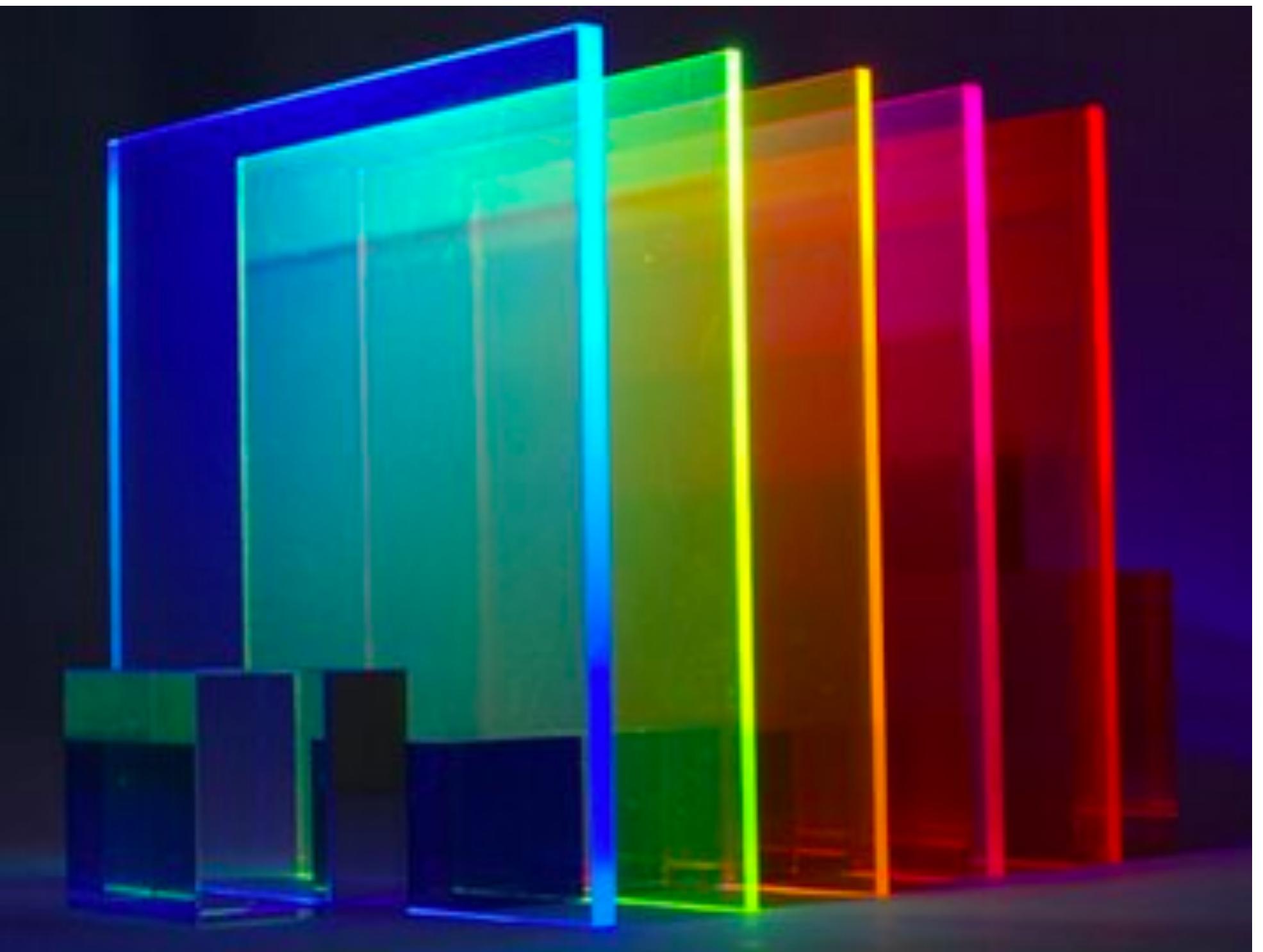
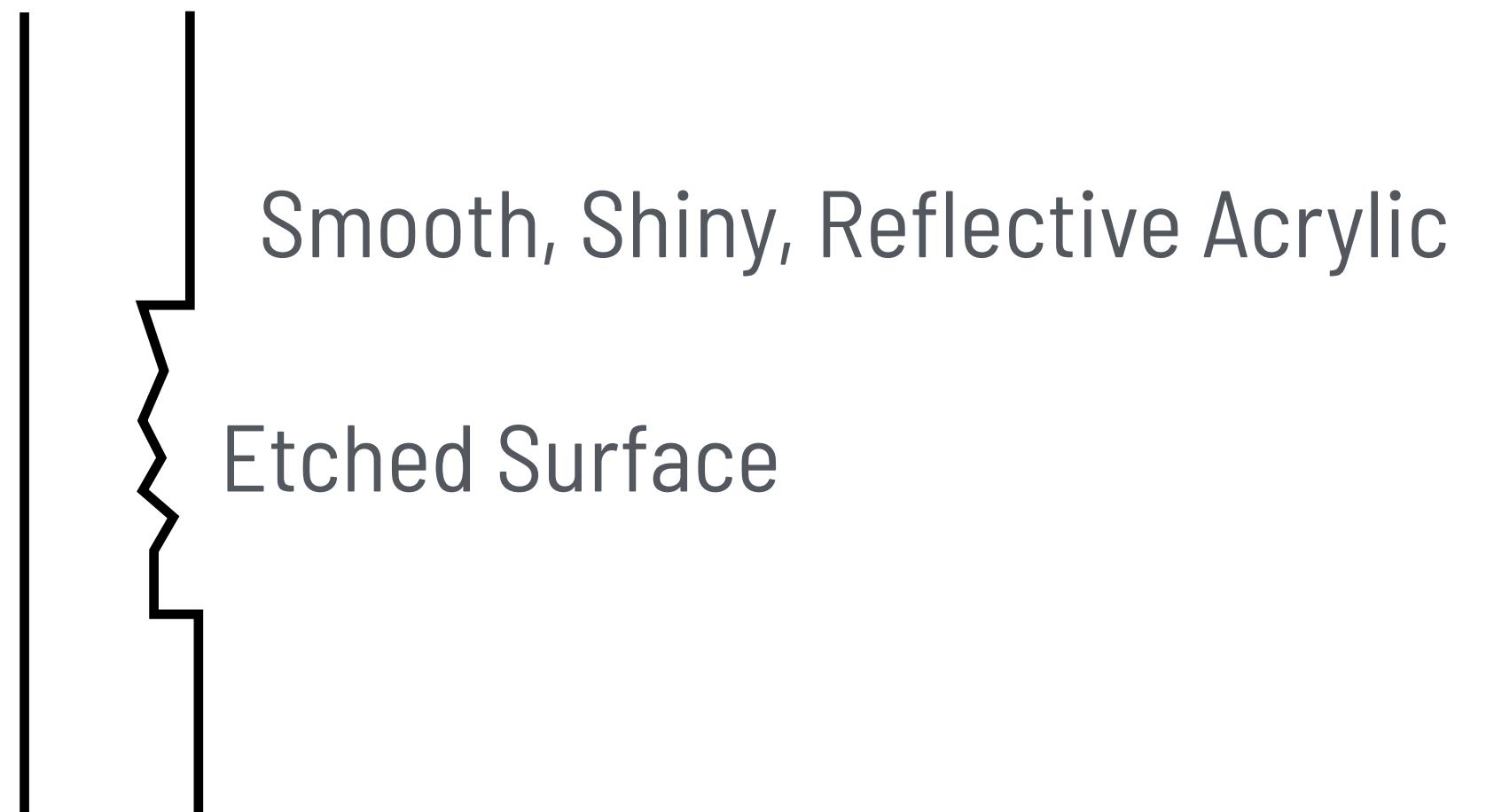


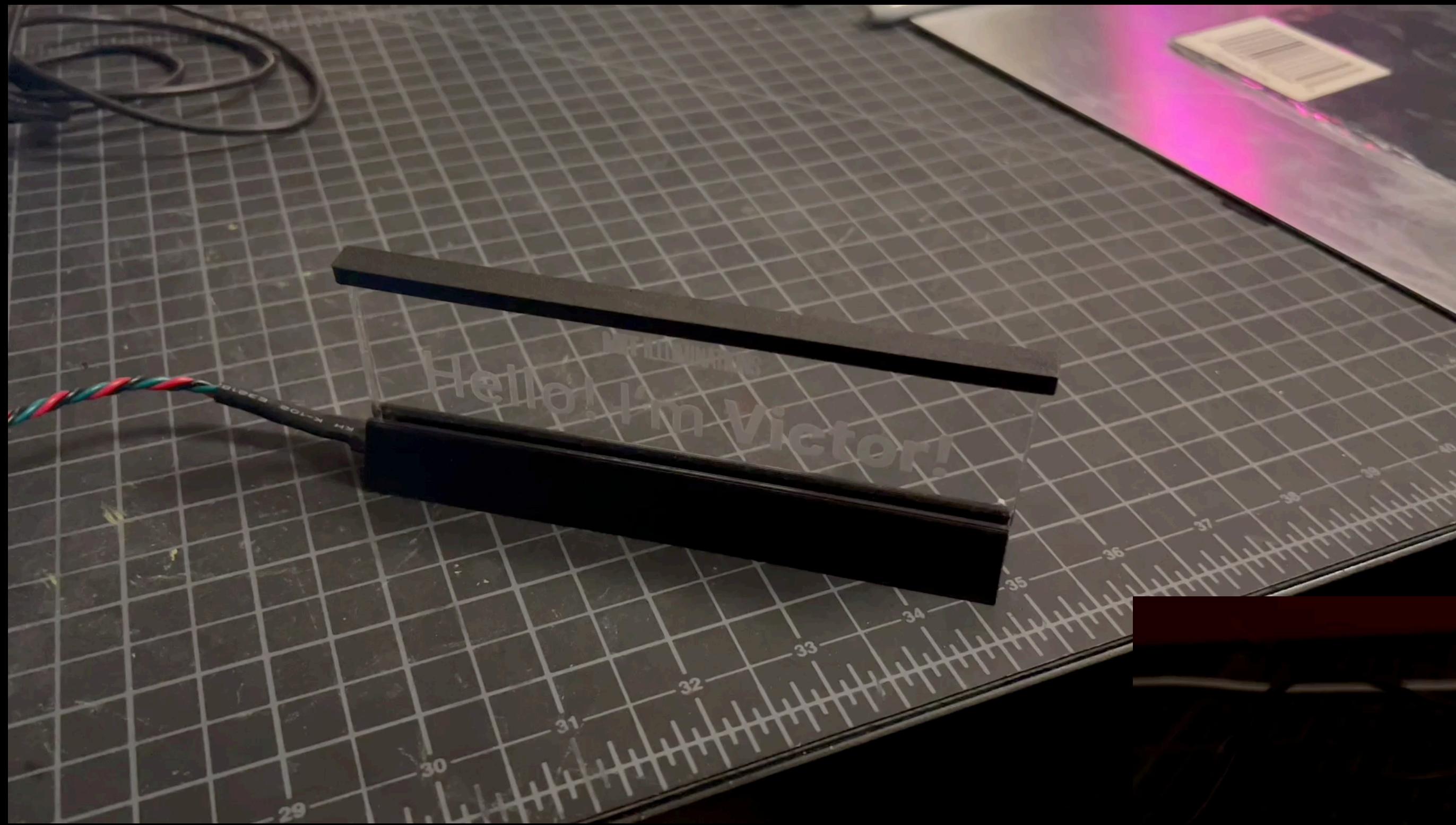
Field of Light - Bruce Munro

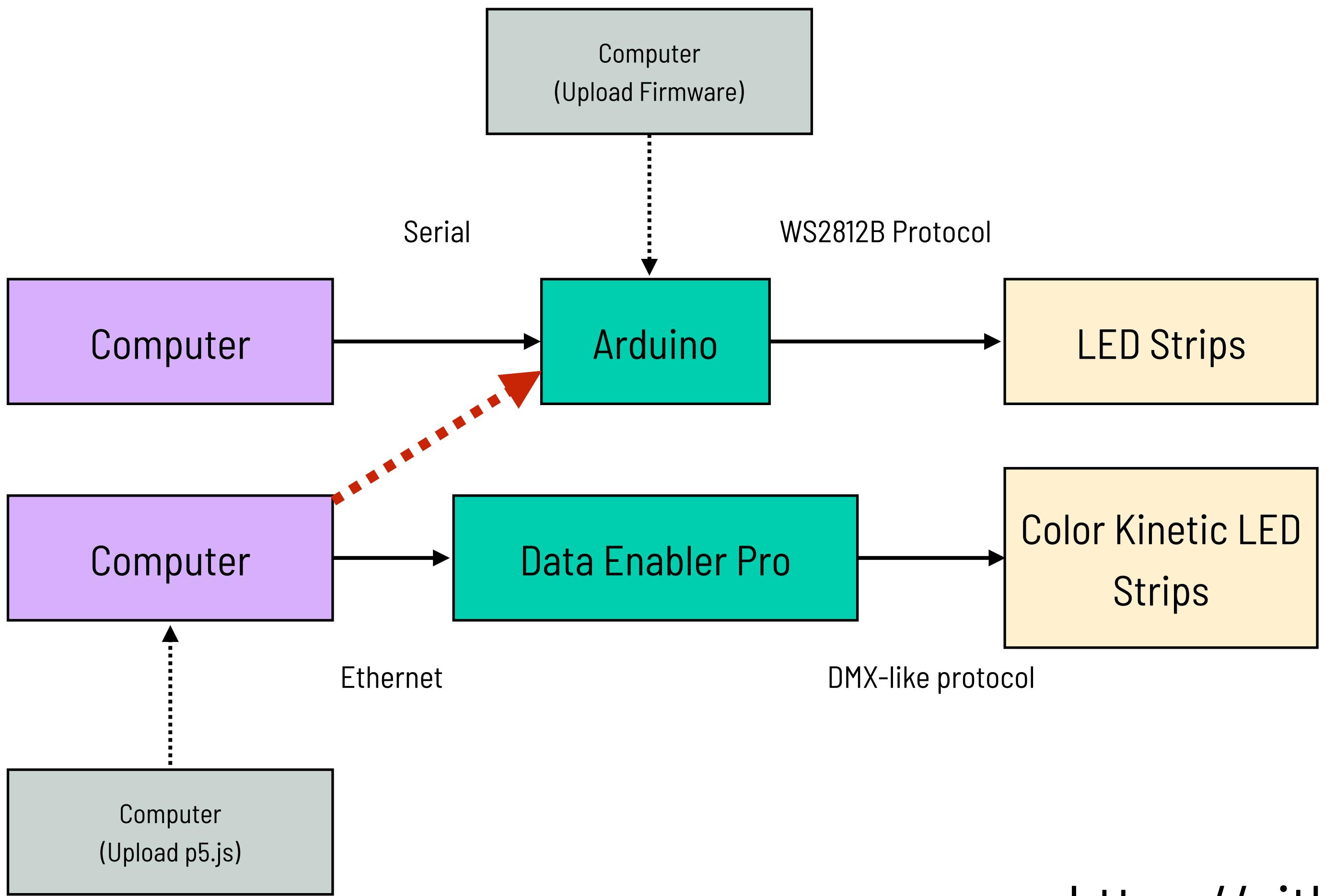
It's your turn!

Polymethyl Methacrylate
... aka Acrylic!

Edge Lit Acrylic







Step 1: Get this working

<https://github.com/sosolimited/MIT-Illuminations>

Change Pin & Install Adafruit NeoPixels!

Step 2: Make excitement