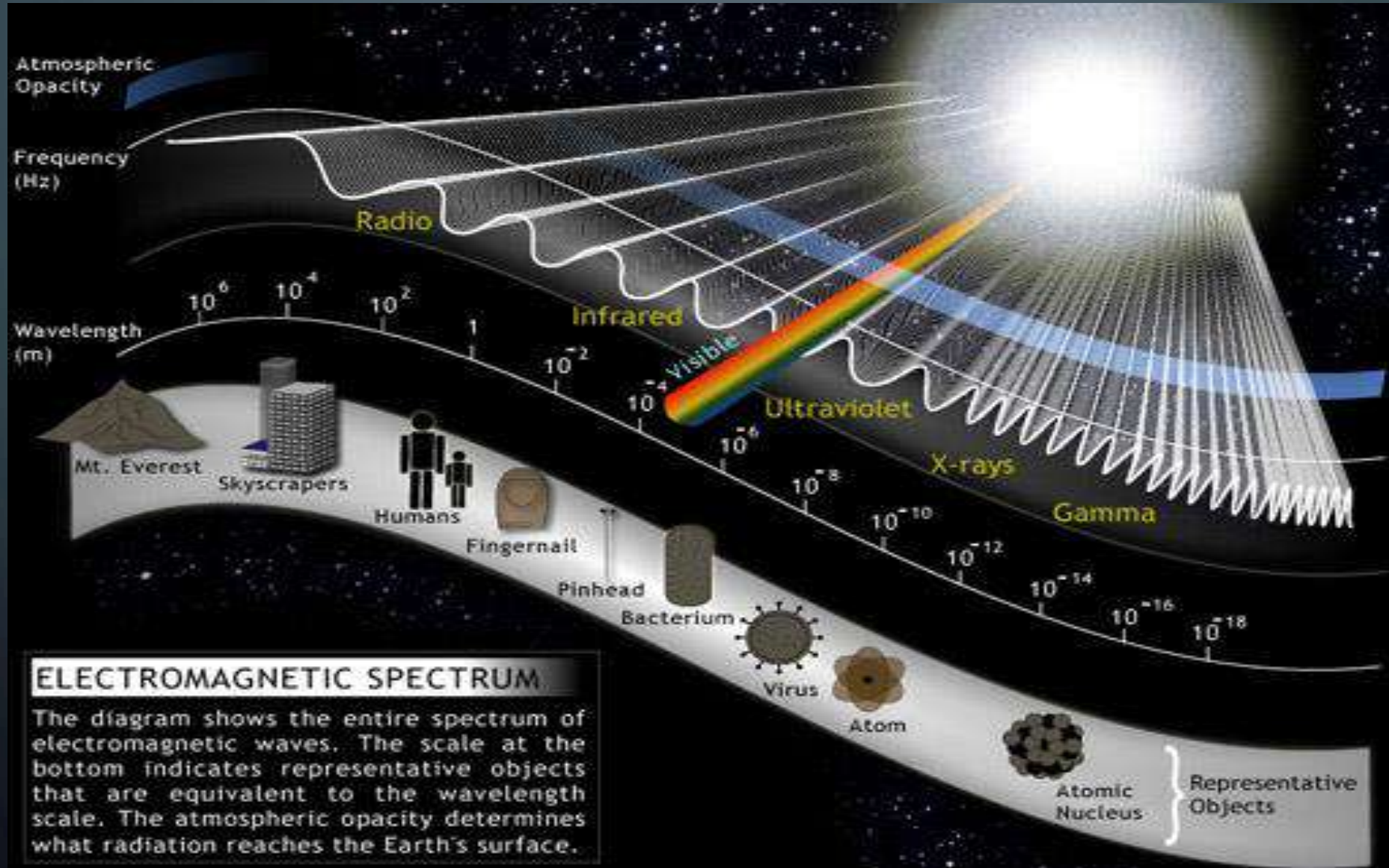


THE POWER OF POLARIZED LENSES



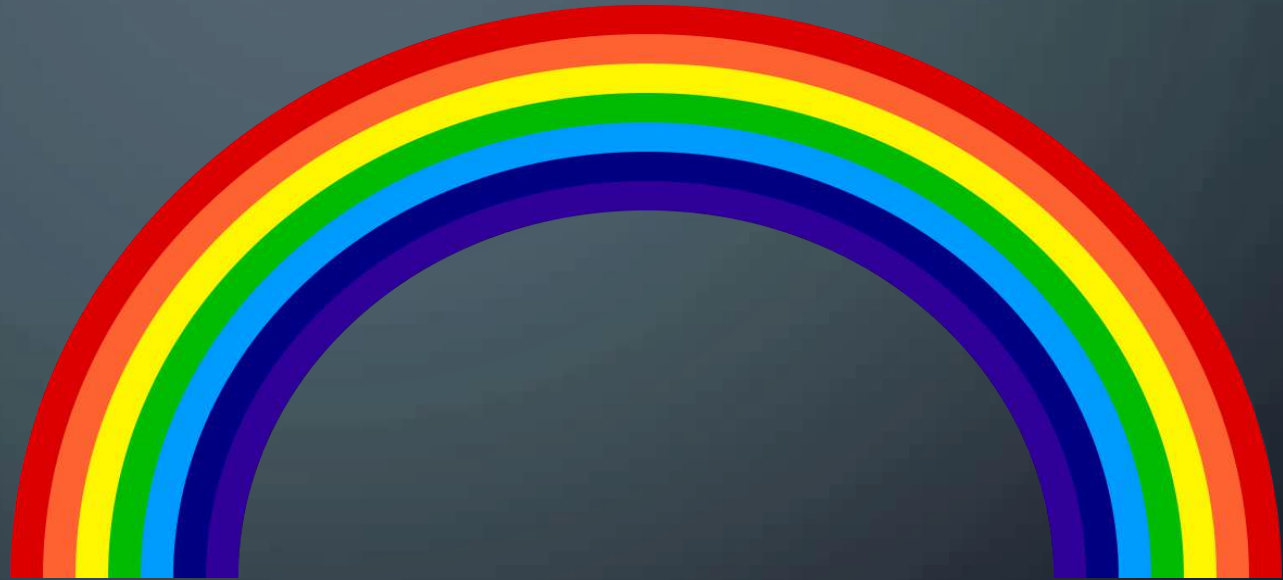
Technical Level 1
Jackie O'Keefe, LDO
Opticon @ Vision Expo East
2023

ELECTROMAGNETIC SPECTRUM



VISIBLE LIGHT

ROYGBIV



3 LAWS OF LIGHT

Reflects

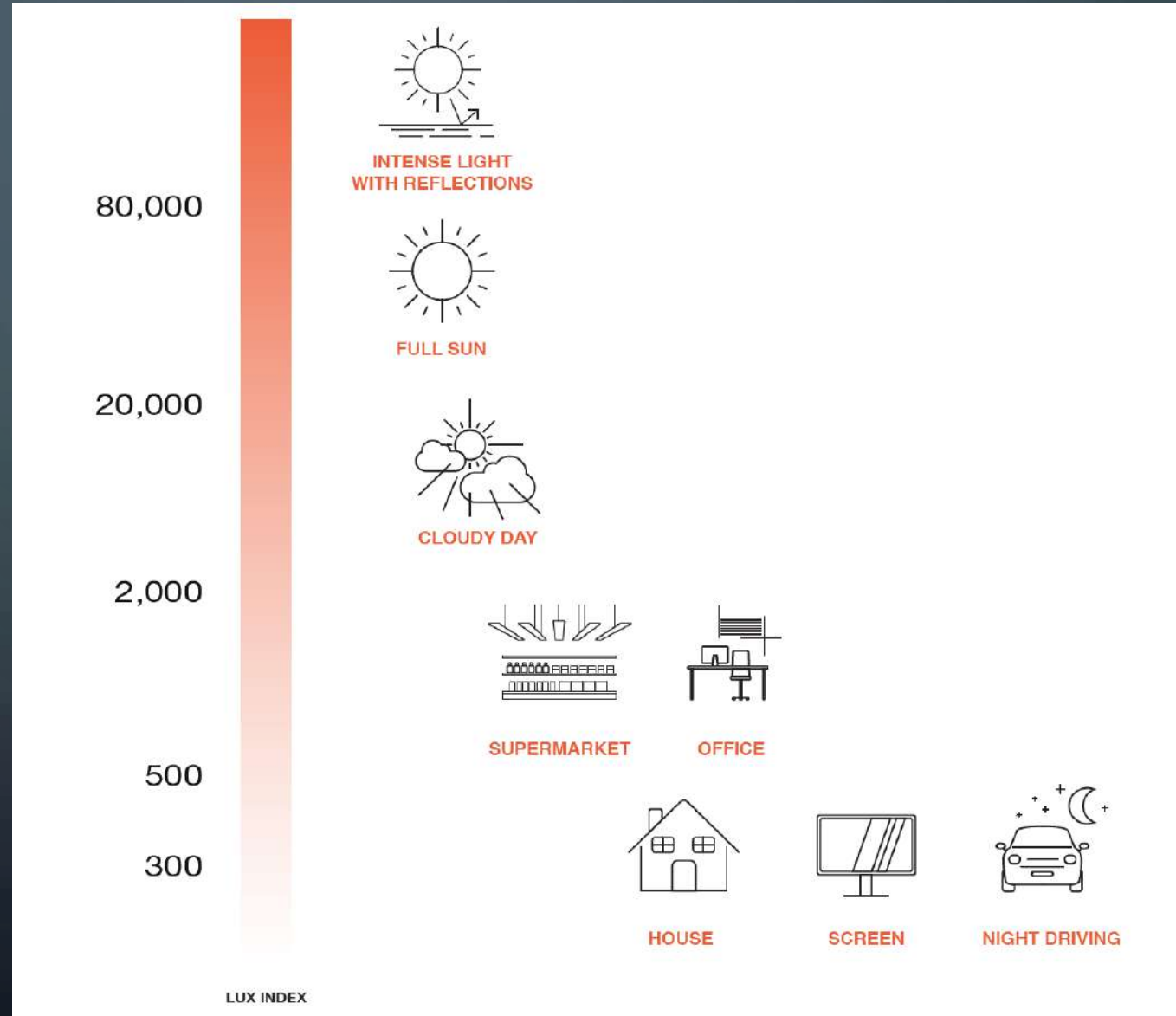
Refracts

Absorbed



LIGHT INTENSITY

Do The Math
1 to 80,000+

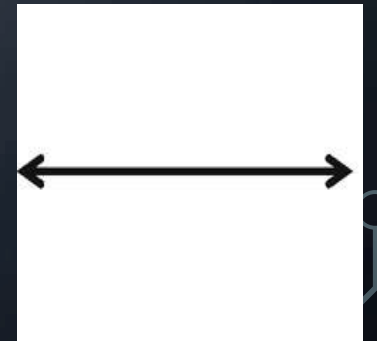
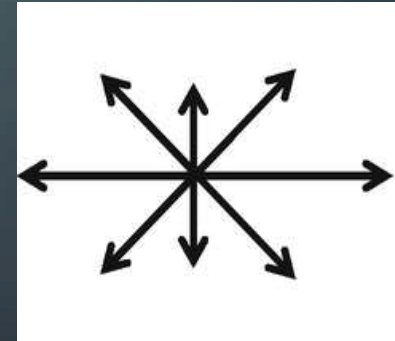
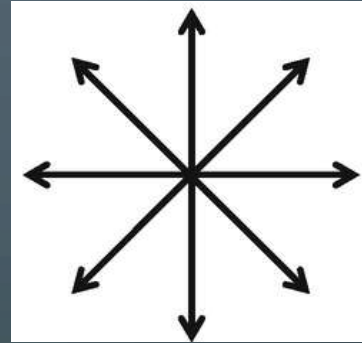


POLARIZED LIGHT WAVES

Unpolarized Light

Partially Polarized Light

Plane Polarized = Single Plain



BREWSTER'S ANGLE

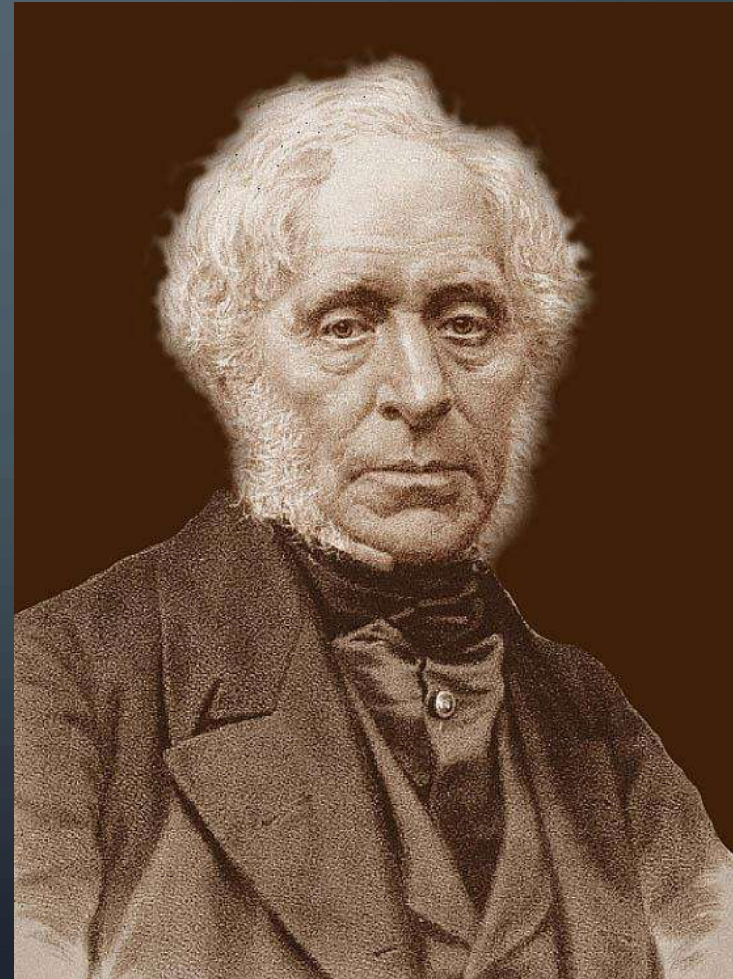
Prof. David Brewster

An Exact Formula

Specific Angle of Light

Plane Polarized

Light Suppression/Skimming



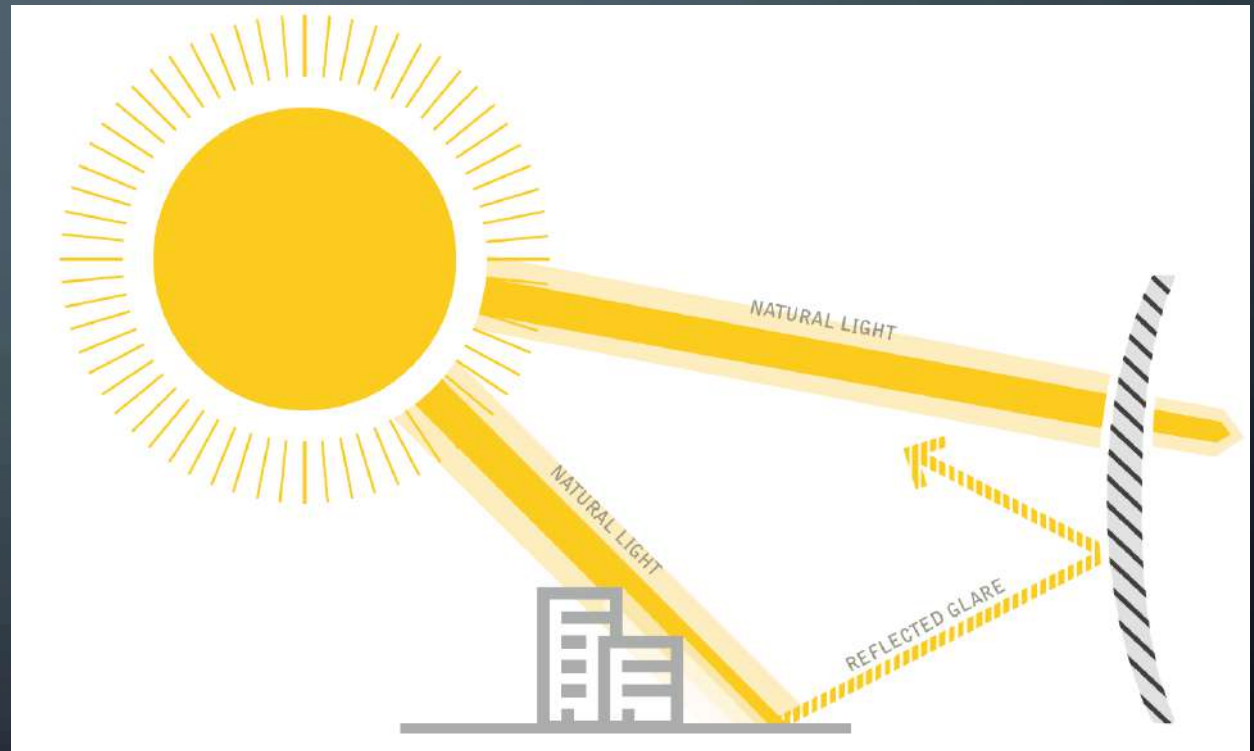
PLANE POLARIZED LIGHT

Light Incident

PM & AM

Dusk Dawn

Glare Affects



GLARE DEFINED



- “Reflective light creates polarized light on flat surfaces causing poor visual accommodation and aggravated eyestrain in the human eye.

Distracting Glare

Caused by reflections from the lens surface
Causes eye fatigue



Discomforting Glare

Caused by everyday bright light
Can occur even when cloudy
Causes squinting and eye fatigue



Disabling Glare

Caused by excessive intense light
Blocks vision

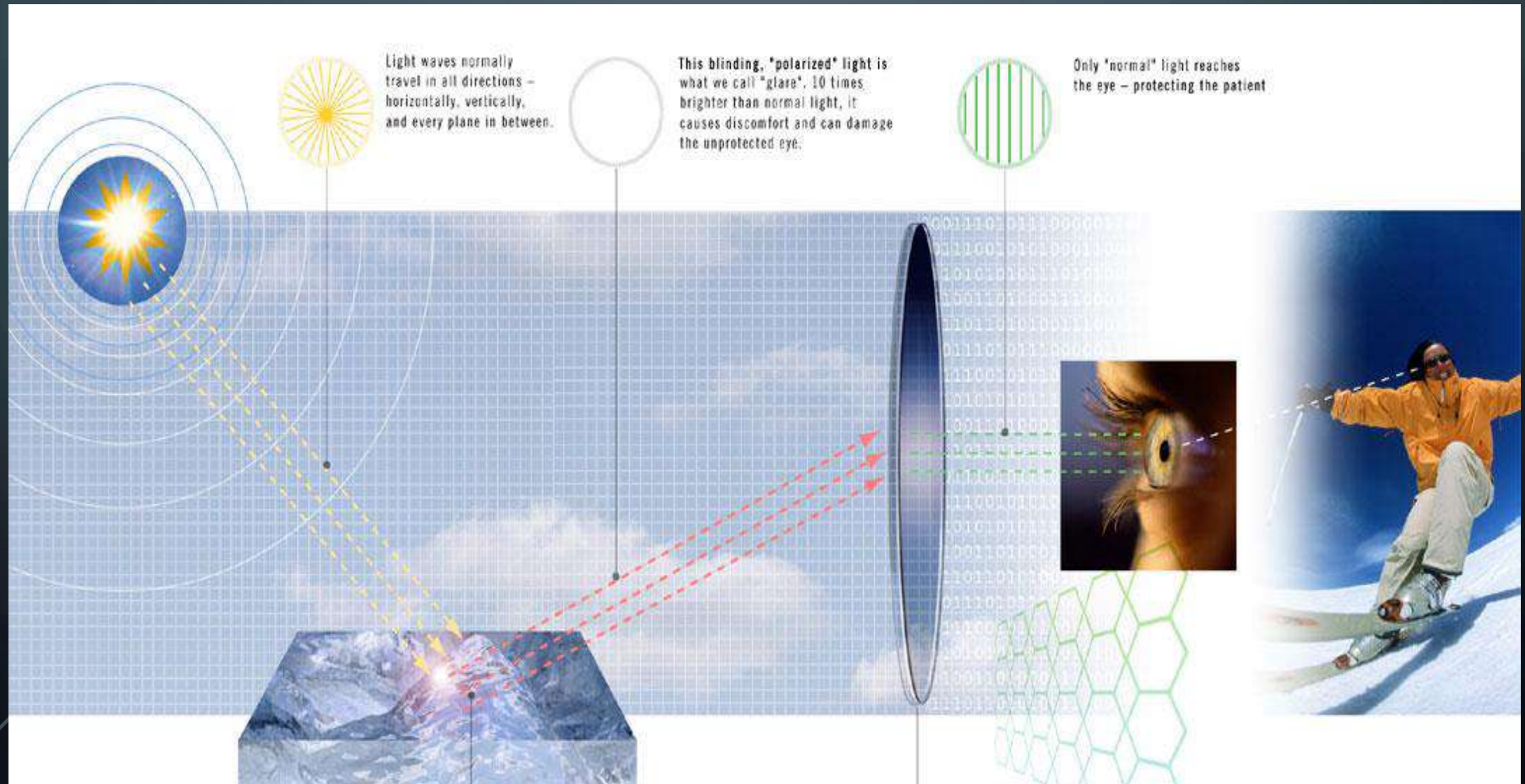


Blinding Glare

Caused by light reflected off smooth shiny surfaces
Blocks vision



GLARE IN OUR WORLD



DISABLING & BLINDING



Reflected off the road surface



**Glare coming directly from sun and sky.
Scattered light. All light reflected from
horizontal surfaces**



**From the windshield trim, wiper hardware and
steering wheel hardware**



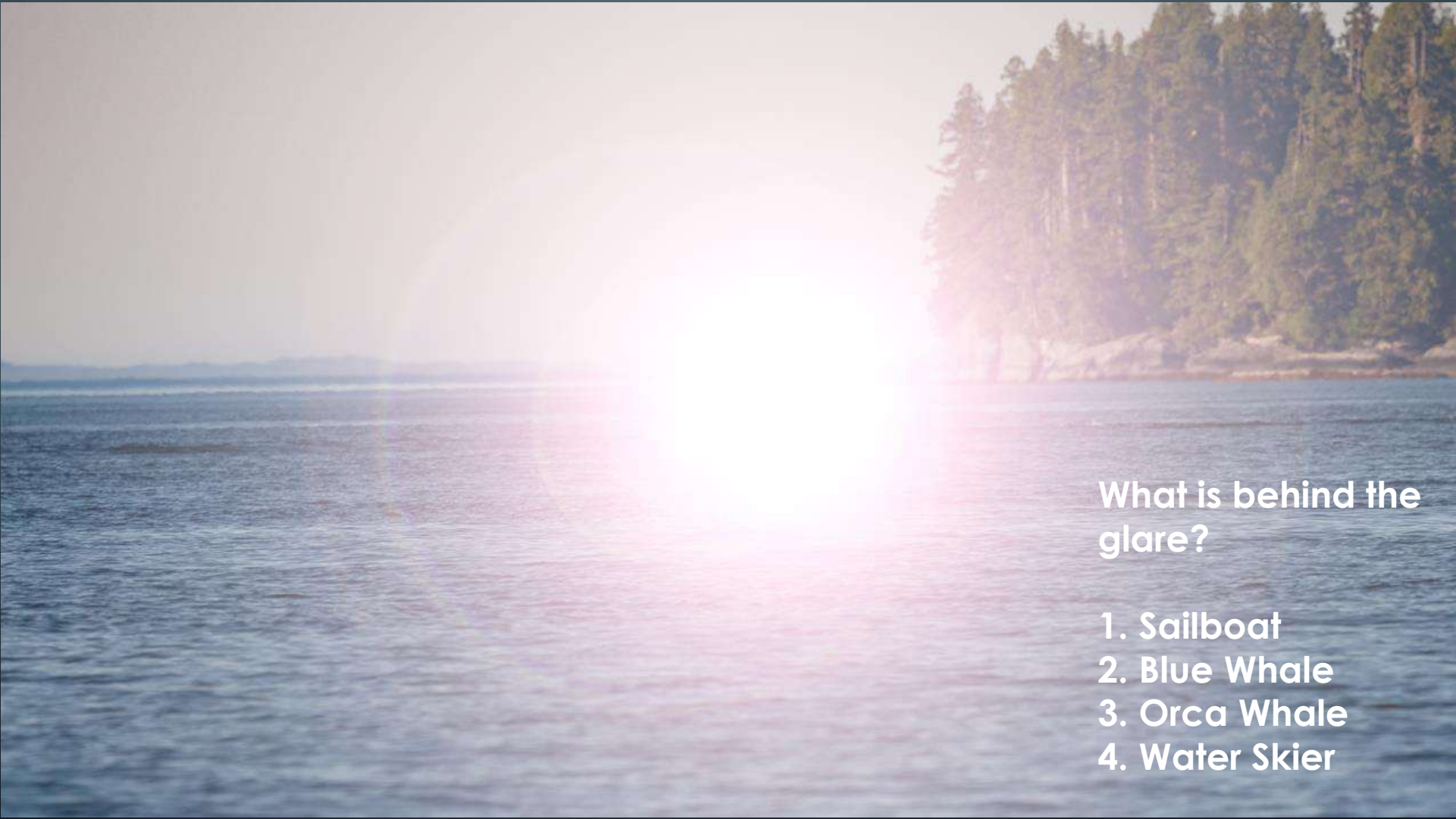
**Reflection from mirror hardware and
glare light directly from the sun/sky**

HAVE YOU EXPERIENCED TRUE GLARE?

Anyone?

The Struggle Is Real

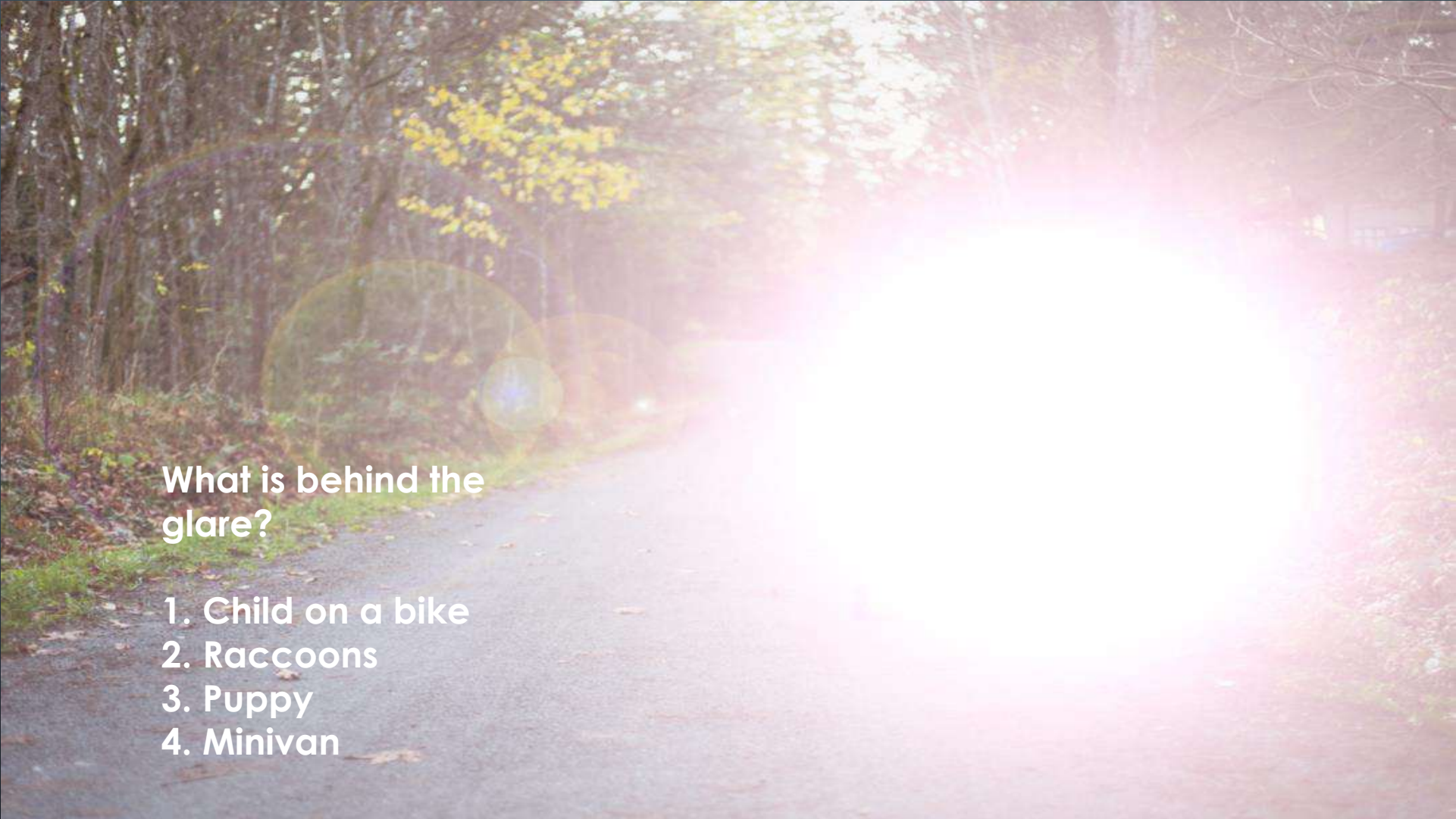




What is behind the glare?

- 1. Sailboat**
- 2. Blue Whale**
- 3. Orca Whale**
- 4. Water Skier**





What is behind the glare?

- 1. Child on a bike**
- 2. Raccoons**
- 3. Puppy**
- 4. Minivan**





What is behind the image?

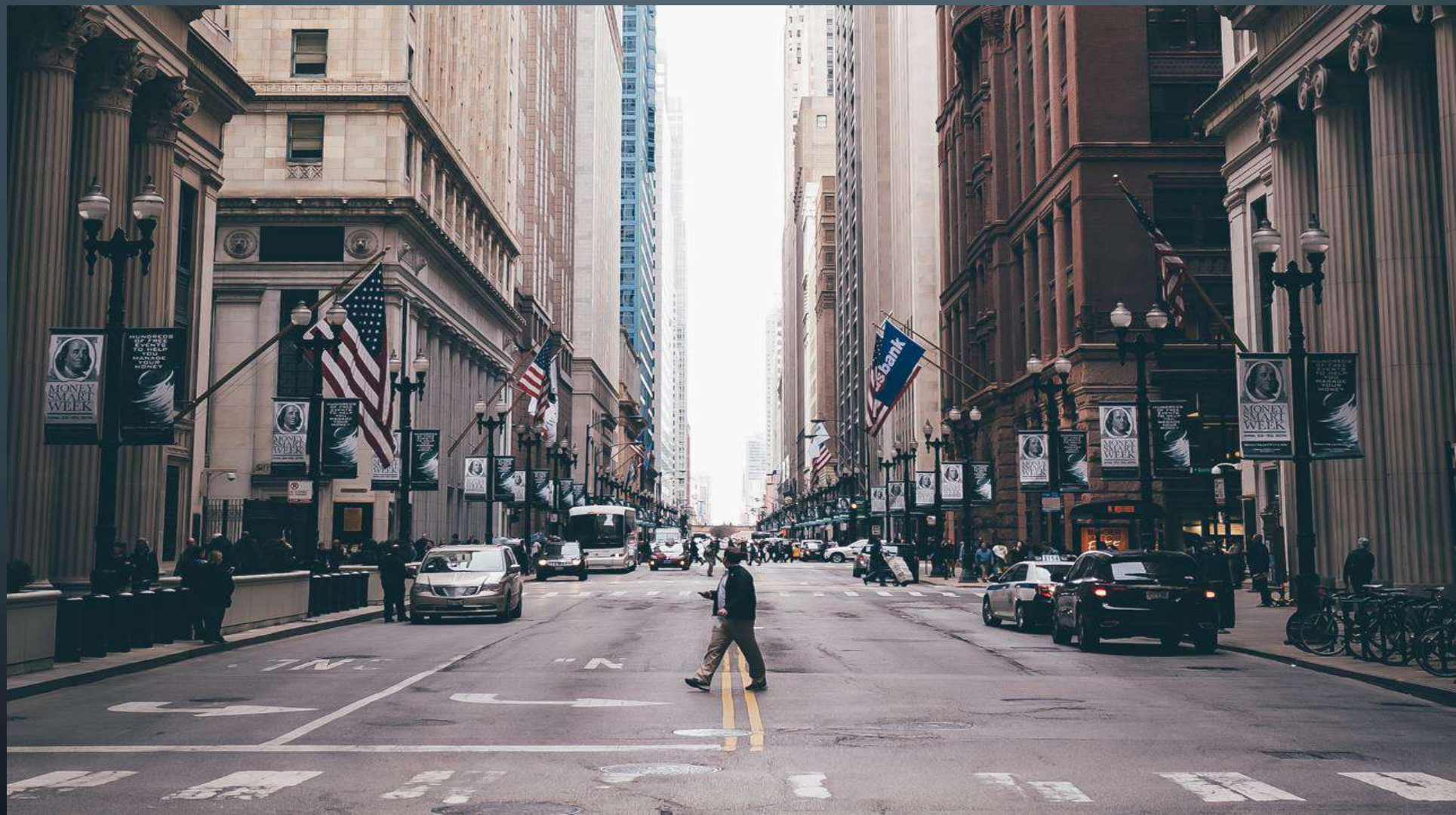
1. Deer
2. Family of ducks
3. Semi truck
4. Child





What is behind the glare?

1. Delivery truck
2. Pedestrian
3. Street vendor
4. Cyclist



HOW ARE POLARIZED LENSES MADE?

It Starts With the Delicate Wafer

PVA Heated x 5

Iodine Crystal Bath

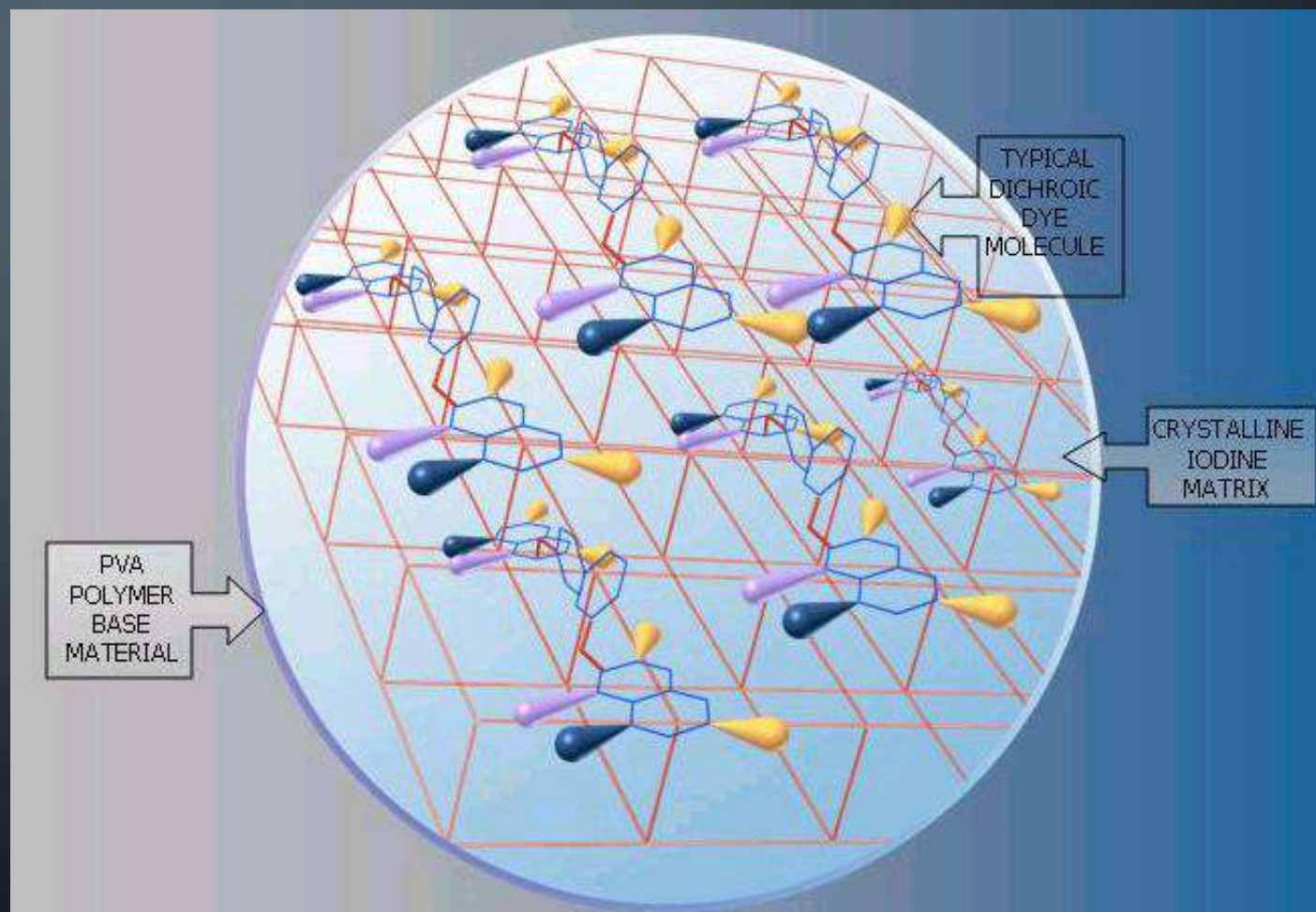
Crystals Form Parallel Chains

Premium Dichroic Dyes

CAB Sandwich = Filter

Raw Material, Substrate, Salt

Cast,/Embedded Laminate .8mm.



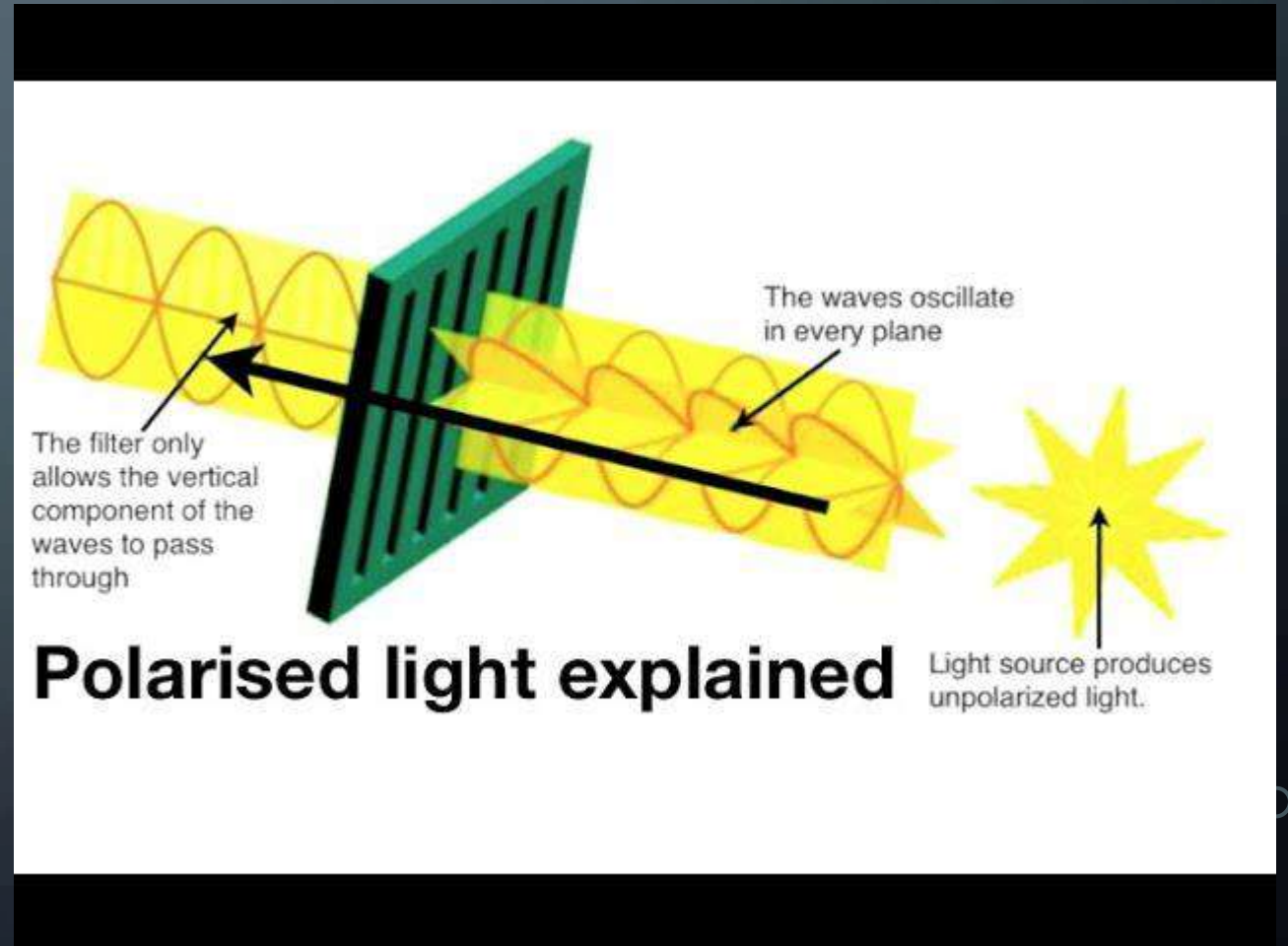
HOW DO THEY WORK?

Vertical Blind Example

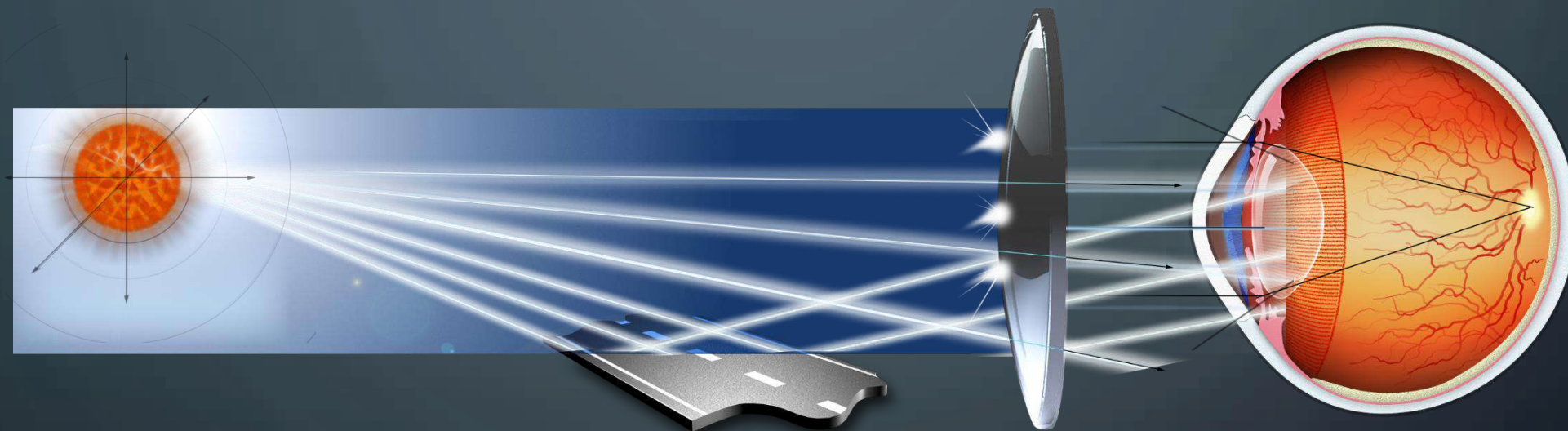
Filter Aligned 90° From
Horizontal Polarized Light

Photographers

Trolley Cars



HOW DO THEY WORK?



Light Waves
travel in all directions
from the sun

Blinding Glare
created when light is reflected
from horizontal surfaces

Blinding Glare Blocked
by polarizing filter
inside lens

Only Information Carrying Light
reaches the eye, providing visual
comfort and better vision

WHAT ABOUT VARIABLE POLARIZATION?

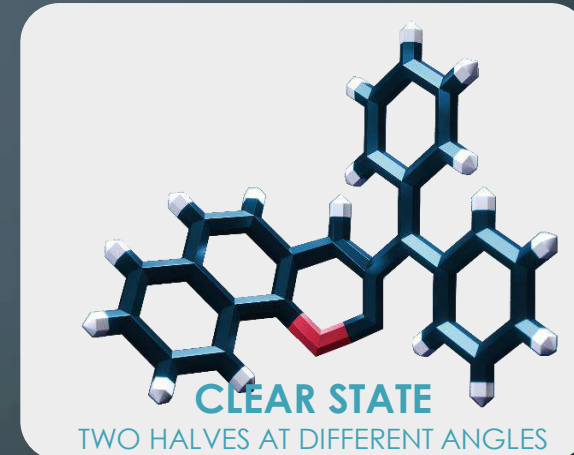
It Starts With The Matrix

Millions of Molecular Dichroic Dyes

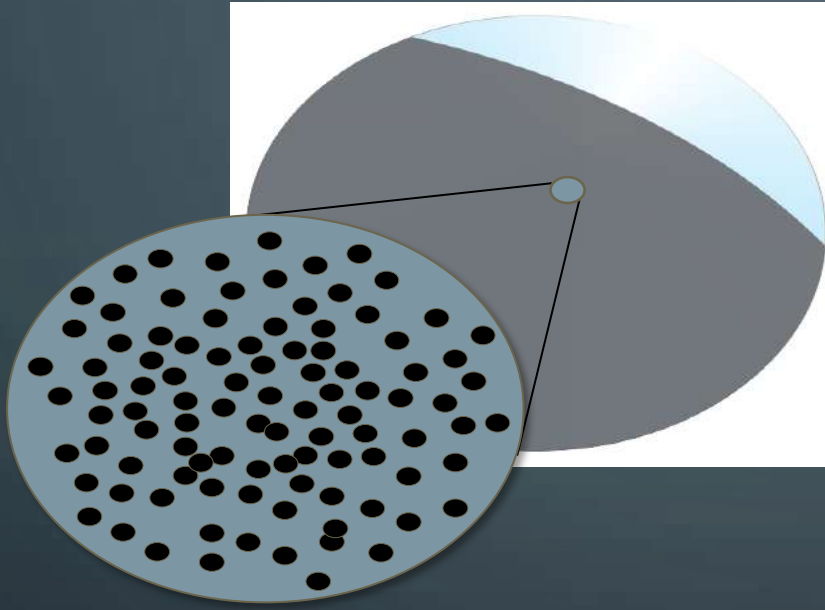
Agile Photochromic Dyes

Molecular Chemical Bond Breaks

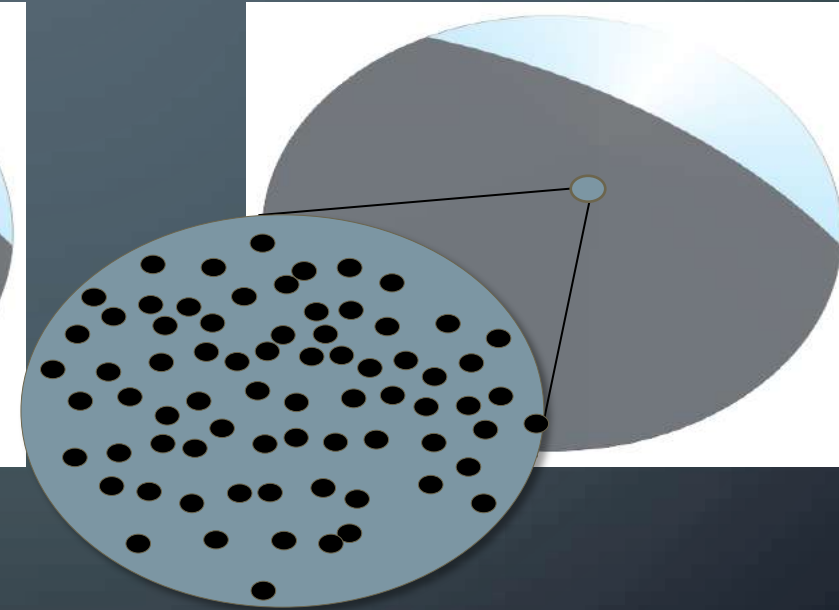
Cast, Laminate, Trans bonded



DICHROIC DYES



Conventional photochromic
molecules darken in
random patterns



Transitions lens molecules
darken + horizontally align
to create polarization

POLARIZED PERFORMANCE

Polarized Effectiveness

High Performance

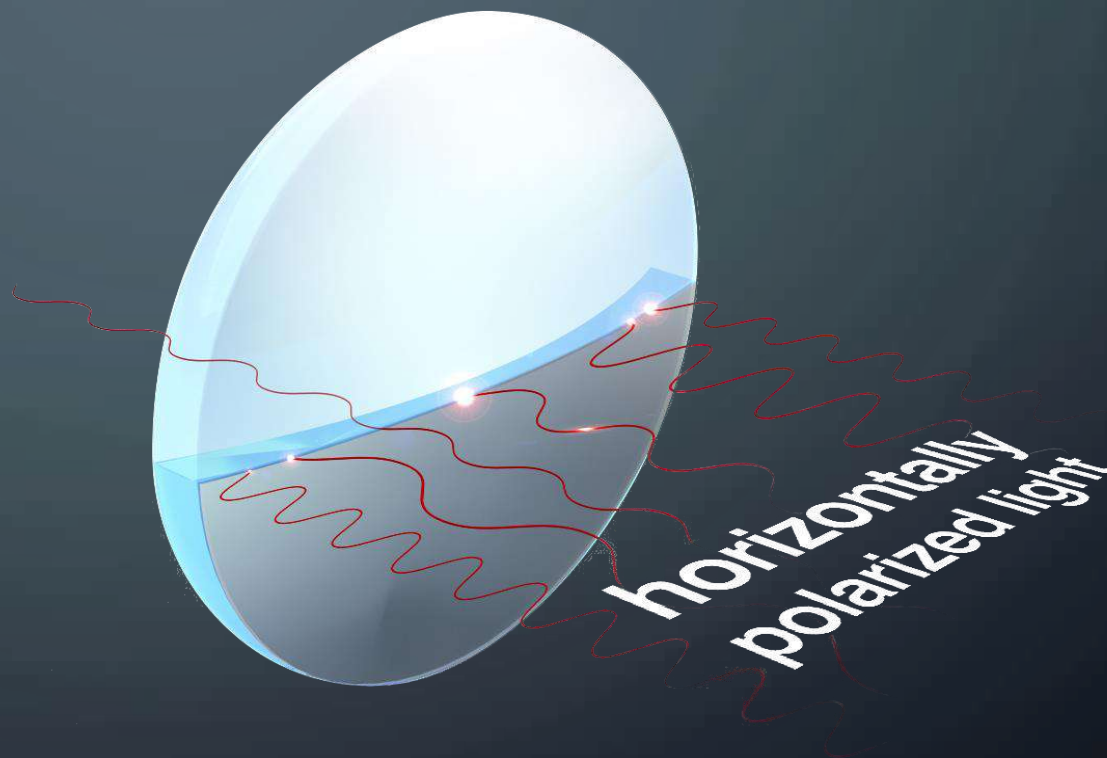
Scale of 1-100

Polarized A=93%

Polarized B=95%

Polarized C=99%

Tinting Has No Affect



WHAT ABOUT COLOR?

Fashion

Low Performance

Effectiveness

Fashion=50% at best



WHO IS THE POLARIZED PATIENT?

Elderly, Kids, Surgical

Everyone

Listen To Them

Let Them Play



GETTING THE MESSAGE THROUGH

Hands On

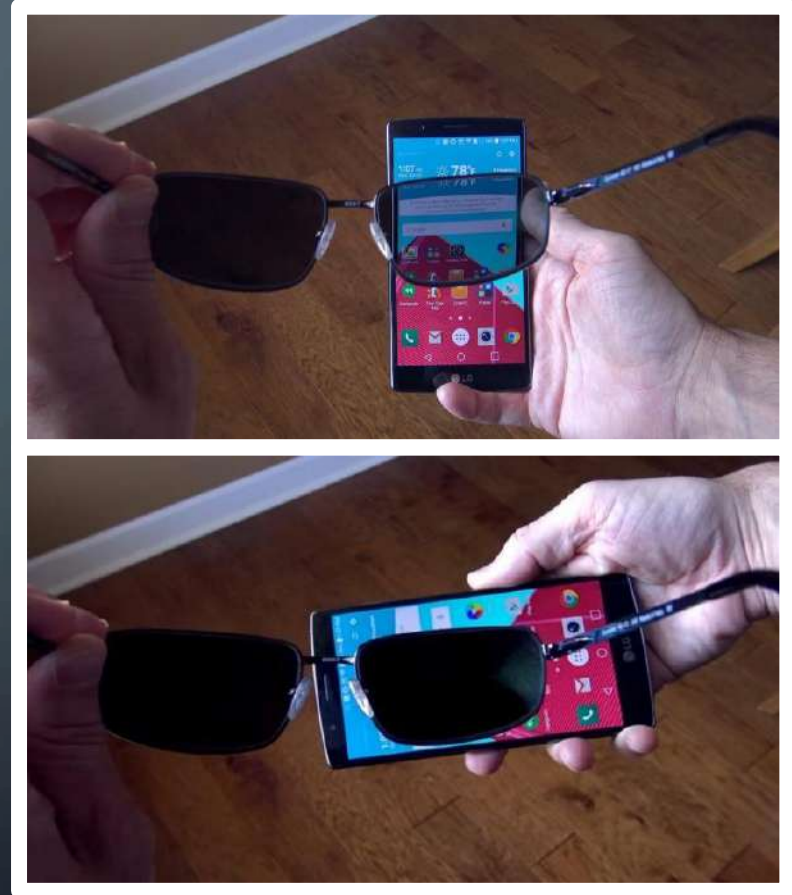
Educate/Demonstrate

Reduction Of Glare

Manufacturers' Demo Devices

Flip Lorgnettes

Cross Polarization



GETTING THE MESSAGE THROUGH

Patients Need To Visualize

Visual POP

Sunwear Mixed In

Wear By Example



The background is a dark blue gradient. In the corners, there are white line-art illustrations of circuit boards or neural networks, with lines connecting to small circles.

“I hear and I forget...

I see and I remember...

I do and I understand”

Benjamin Franklin

WHAT DO THEY WANT?

Sharper Vision



Wider Field of View



Vivid Colors



WHY WOULD THEY OBJECT?

I can buy at drugstore

Check Lens Quality

Backside AR?

Non Rx

CAB Product

To expensive/Managed Care

Poor Experience



WHY WOULD THEY OBJECT?

I prefer clip-ons

Backside Reflections

Making Contact

Adds Weight

I prefer fit-overs

I wear VTL



OFFER SOLUTIONS

Polarized Sunwear

VTL Polarized Eyewear

Clip-ons

Fit-overs

Whatever It Takes

