Syntonic Filters
What are the Secret Ingredients?

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1

Disclosures

- Dr Curtis is founder and owner of EyeLux Integrations, manufacturer and distributor of syntonic filters and instruments. Some of the filters referred to in this presentation may be those from EyeLux Integrations but are strictly being used for educational purposes.

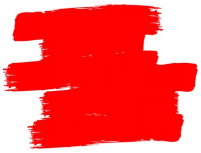
2

Objectives

- Reveal the fascinating physics and chemistry of each syntonic filter.
- Learn how this can assist filter selection process clinically.
- Understand the effects various light sources have on our treatment.
- Become more confident explaining the science of syntonics to patients.

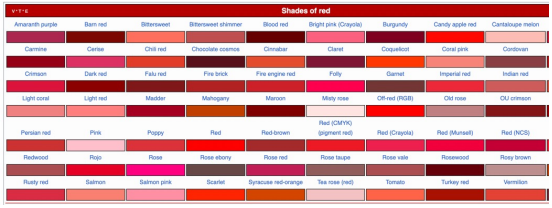
3

Audience Color Naming Activity



- Red
- Scarlet
- Crimson
- Mahogany
- Rose

4



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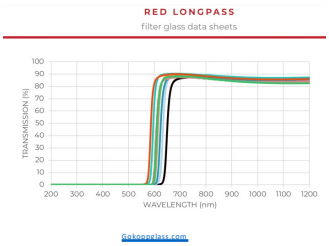
How can we prescribe just red when there are so many variations?

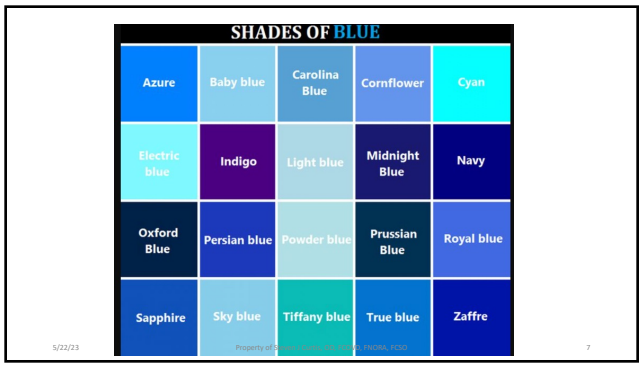
Thus, we prescribe wavelength frequencies

Which of these represents our "red" syntonics filters?



Gokopglass.com

6


SHADES OF BLUE
Azure
Baby blue
Carolina Blue
Cornflower
Cyan
Electric blue
Indigo
Light blue
Midnight Blue
Navy
Oxford Blue
Persian blue
Powder blue
Prussian Blue
Royal blue
Sapphire
Sky blue
Tiffany blue
True blue
Zaffre
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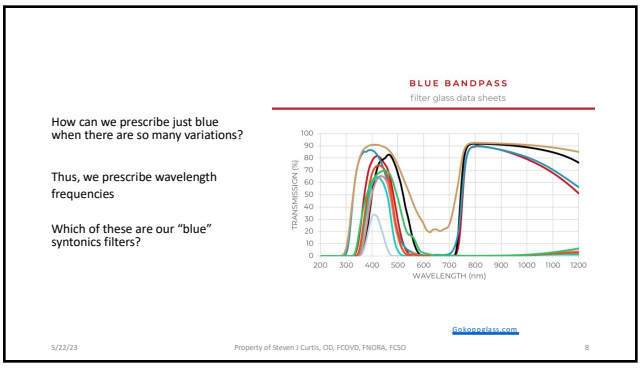
7

7


How can we prescribe just blue when there are so many variations?
Thus, we prescribe wavelength frequencies
Which of these are our "blue" syntonics filters?
BLUE BANDPASS
filter glass data sheets
TRANSMISSION (%)
WAVELENGTH (nm)
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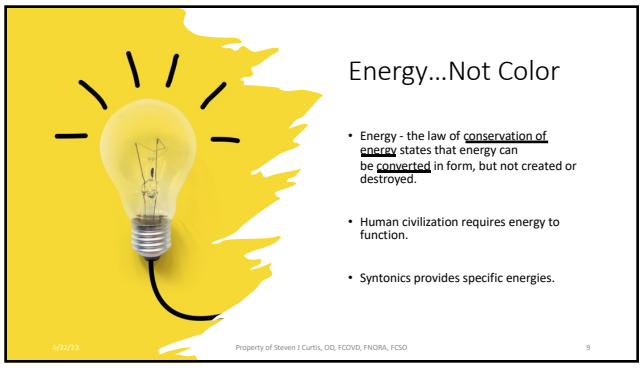
8

8


Energy…Not Color
• Energy - the law of conservation of energy states that energy can be converted in form, but not created or destroyed.
• Human civilization requires energy to function.
• Syntonics provides specific energies.
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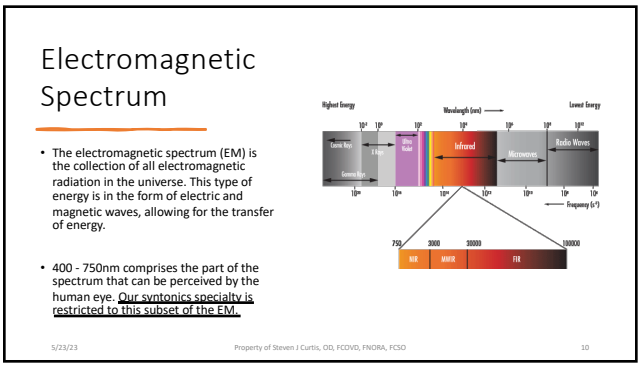
9

9


Electromagnetic Spectrum
• The electromagnetic spectrum (EM) is the collection of all electromagnetic radiation in the universe. This type of energy is in the form of electric and magnetic waves, allowing for the transfer of energy.
• 400 - 750nm comprises the part of the spectrum that can be perceived by the human eye. Our syntonics specialty is restricted to this subset of the EM.
Highest Energy
Wavelength (nm)
Lowest Energy
Cosmic Rays
Gamma Rays
Ultra Violet
Infrared
Microwaves
Radio Waves
Frequency (s⁻¹)
750
3000
30000
300000
NIR
MWIR
FIR
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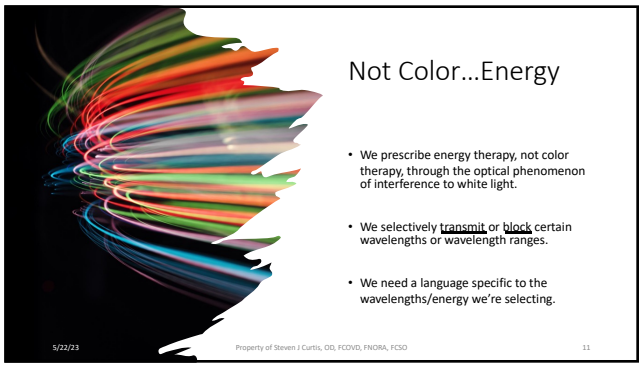
10

10


Not Color…Energy
• We prescribe energy therapy, not color therapy, through the optical phenomenon of interference to white light.
• We selectively transmit or block certain wavelengths or wavelength ranges.
• We need a language specific to the wavelengths/energy we're selecting.
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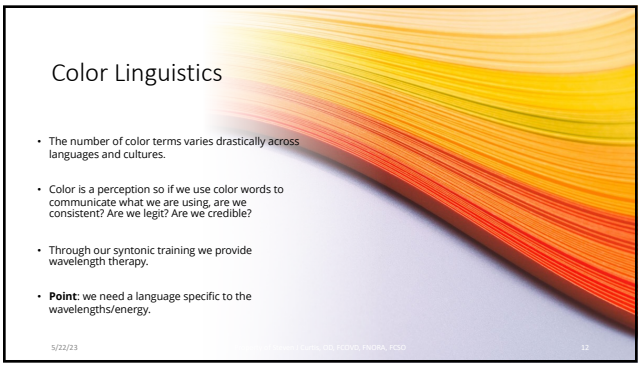
11

11


Color Linguistics
• The number of color terms varies drastically across languages and cultures.
• Color is a perception so if we use color words to communicate what we are using, are we consistent? Are we legit? Are we credible?
• Through our syntonic training we provide wavelength therapy.
• Point: we need a language specific to the wavelengths/energy.
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12

12

Importance of this Language Point?

- Our nervous system is, in and of itself, variable person to person, so to have any chance to have scientific basis for syntonics research, we need to eliminate variables where possible when prescribing colored filters.
- Thus, in the context of syntonics, we use the Greek alphabet to represent specific wavelength ranges.

13

Syntonics uses Greek alphabet to provide a universal reference to a selective filtration of white light

- Greek alphabet is from 800 BC.
- Where most European alphabets came from.
- It helped bridge communication gaps amongst languages.
- To this day, it is frequently used universally in science and mathematics

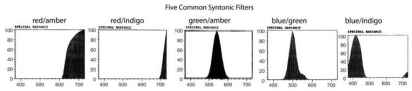
14

Spectrophotometer – Syntonics' "Lensometer"

- Spectrophotometer – measures the percentage of transmitted light of different wavelengths across the EM spectrum
- Invented by Arnold O. Beckman in 1940 and it became commercially available in 1941.
- Its use spans various scientific fields, such as physics, materials science, chemistry, biochemistry, chemical engineering, and molecular biology.

15

Five Common Syntonic Filters



Alpha/Delta Alpha/Omega Mu/Delta Mu/Upsilon Upsilon/Omega

16

Alpha Beta Gamma Delta Epsilon Zeta Eta Theta Iota Kappa Lambda Mu Nu Xi Omicron Pi Rho Sigma Tau Upsilon Phi Chi Psi Omega

Reds-----Oranges-----Yellows-----Greens-----Blues-----Indigos/Violets

Sympathetics----------Parasympathetics

17

Optics and Colored Filters

- Optics is the branch of physics that deals with light and its properties and behavior.
- Optometry employs aspects of optics such as reflection, refraction, dispersion, diffraction and interference to manipulate visible light.
- Colored filters **absorb** unwanted light and **transmit** wanted light.

18

Optical Color Filters

Selectively transmit or block certain wavelength ranges of the visible spectrum

- Broadband or Narrowband
- Bandpass, Notch
- Longpass, Shortpass

19

Optical Color Filters

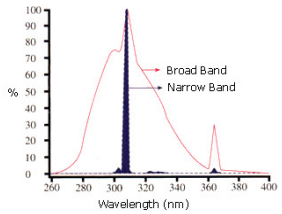
- **Broadband** filters are used to provide a wide range of wavelengths
- **Narrowband** filters are used to provide a small range of wavelengths (or an individual wavelength).

- **Bandpass** filters transmit a band of wavelengths, while blocking the wavelengths on either side of that band.
- **Notch** filter is the opposite of a bandpass filter, it blocks a specific band of wavelengths.
- **Longpass** filters transmit wavelength longer than the specified cut-on wavelength and block the shorter wavelengths.
- **Shortpass** filters transmit wavelengths shorter than the specified cut-on wavelength.

20

Optical Color Filters

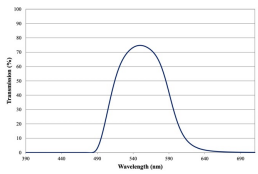
- **Broadband** filters are used to provide a wide range of wavelengths.
- **Narrowband** filters are used to provide a small range of wavelengths (or an individual wavelength).
  Not traditionally used in syntonics.



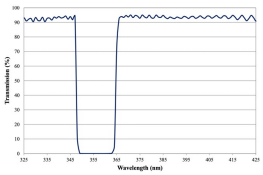
21

Optical Color Filters

Bandpass filters transmit a band of wavelengths, while blocking the wavelengths on either side of that band.
Ex: Mu, Upsilon



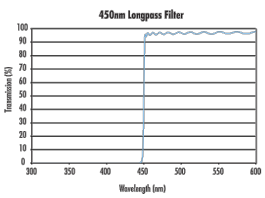
Notch filters are the opposite of bandpass filters, blocking a specific band of wavelengths.
Ex: Neurasthenia



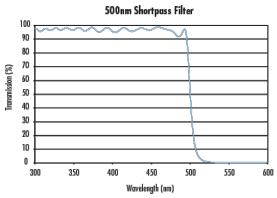
22

Longpass vs Shortpass

Longpass filters transmit long wavelengths beyond a specific cut point.
Ex: Alpha, Delta, Theta, A/D



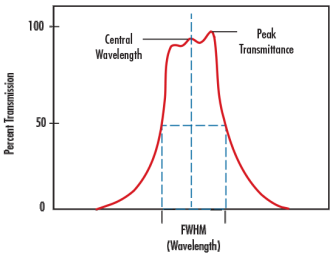
Shortpass filters are the opposite and transmit the shorter wavelengths.
Ex: none in syntonics



23

Key Terminology in Bandpass Filters

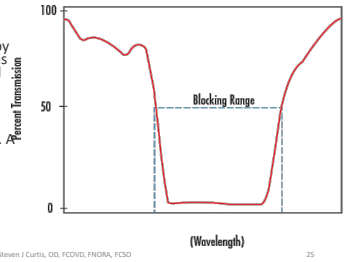
- **Bandwidth** is a wavelength range that refers to a specific part of the spectrum.
- **Center Wavelength** (CWL): - midpoint over which the filter transmits. **Ex: Mu:** 530nm, **Pi** 510nm, **Upsilon**: 470nm, **Omega:** 430nm
- **Full Width-Half Maximum** (FWHM): bandwidth over which a bandpass filter achieves 50% of the maximum transmission.



24

Key Terminology in Notch Filters

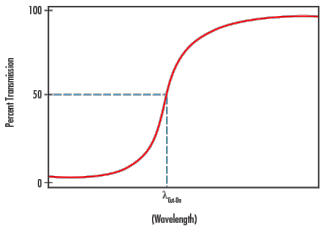
- Blocking Range is a wavelength interval used to denote a spectral region of energy that is attenuated by the filter. The degree of its blocking is typically specified in terms of optical density.
- Optical Density (OD) describes the amount of energy blocked by a filter. A high optical density value indicates low transmission, and low optical density indicates high transmission.
- Ex: **Omega** has high OD



25

Longpass Filters

- **Longpass filters** transmit all wavelengths longer than the specified cut-on wavelength. Ex: **Alpha, Delta, Theta**
- **Cut-On Wavelength** is a term used to denote the wavelength at which the transmission increases to 50% throughput in a longpass filter.



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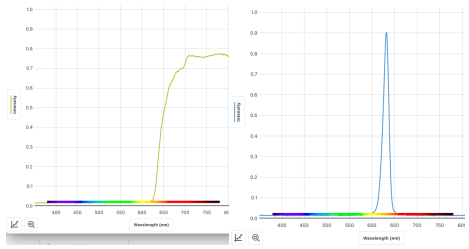
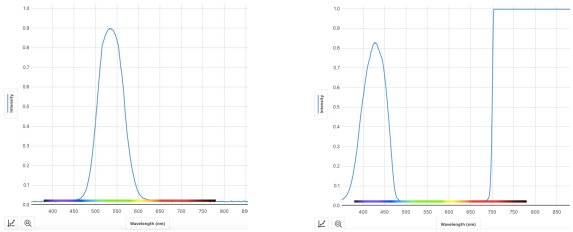


Optical Color Filters - Terminology Quiz

27



Optical Color Filters - Terminology Quiz

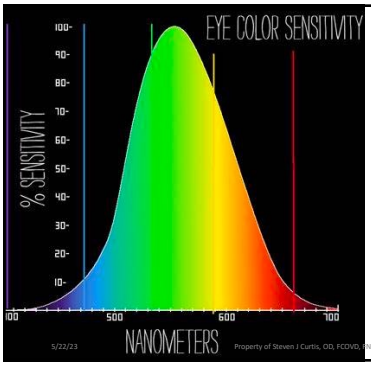
28

Use Our Knowledge of Transmission Curves

For Clinical Decisions
And
Research

Examples:
-Chronic photophobia post tbi
-Alternative filter choices

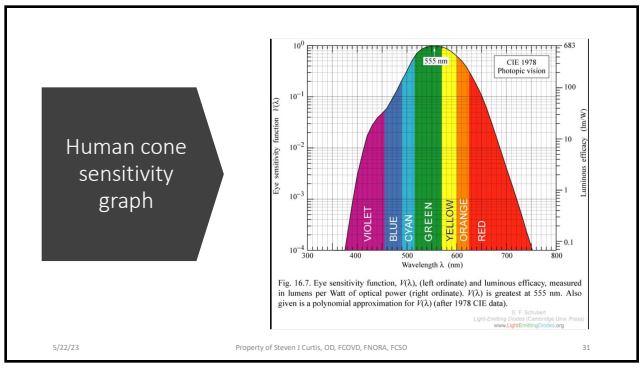
29



Human Eye Sensitivity to Color

- The sensitivity of the human eye varies greatly.
- Under daylight conditions, the normal human eye is most sensitive at wavelength 555 nm.
- Thus, green produces the impression of highest "brightness".

30



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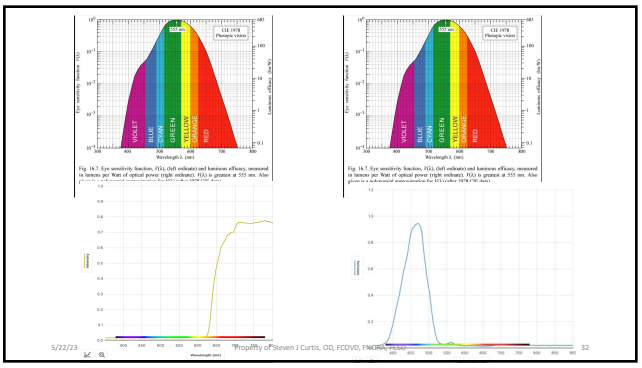

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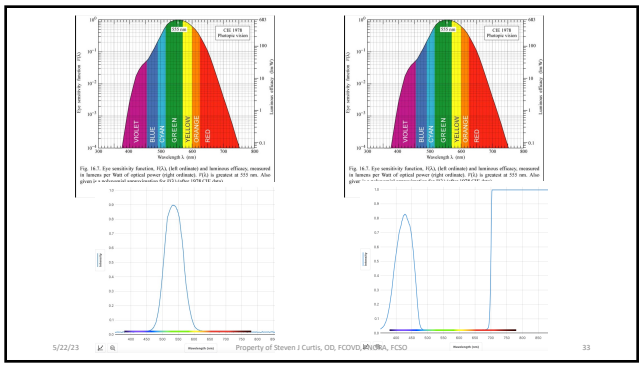

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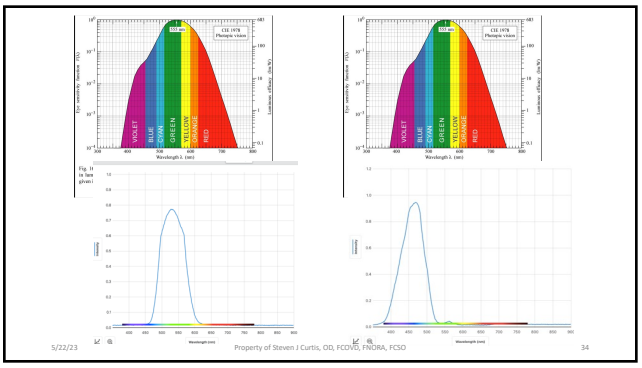

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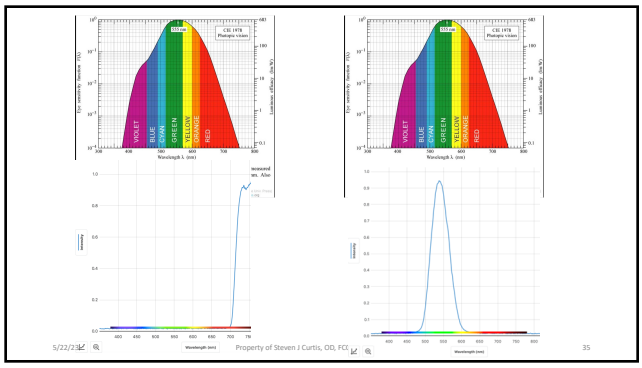

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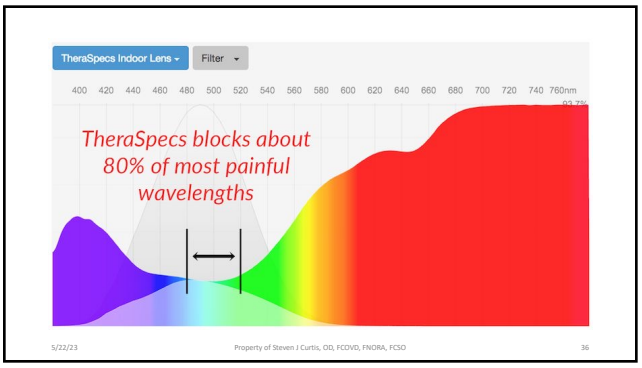


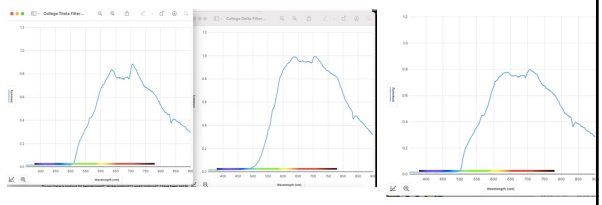
36

NORA Polytrauma Filter Kit

- See handout

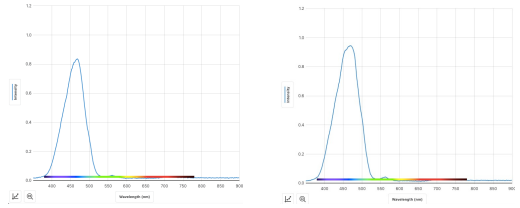
37

Clinical Decision - Substitute Filter Choice



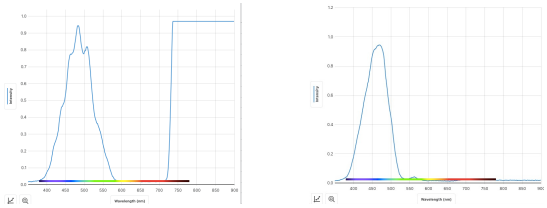
38

Clinical Decision – Substitute Filter Choice



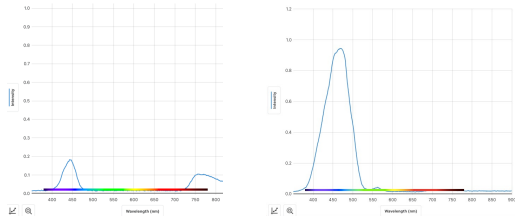
39

Substitute for Upsilon?



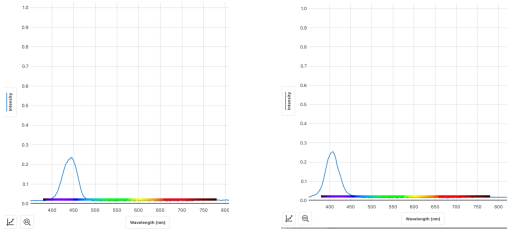
40

U/O-Dep U/O



41

U/O-D U/O-N

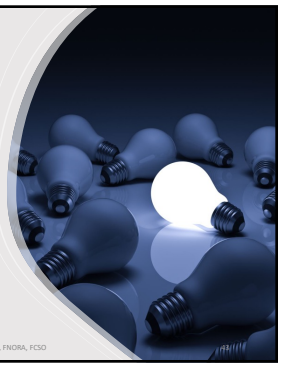


42

Light Sources Vary in Spectral Transmission

Thus, intensity of light may need to be adjusted to get same effect.

- Incandescent
- Halogen
- Xenon
- LED and their many variances



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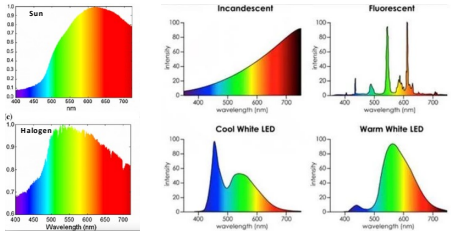
43



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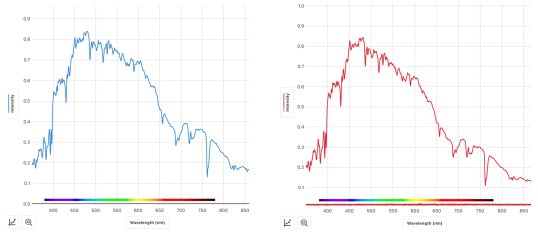
44

Sun



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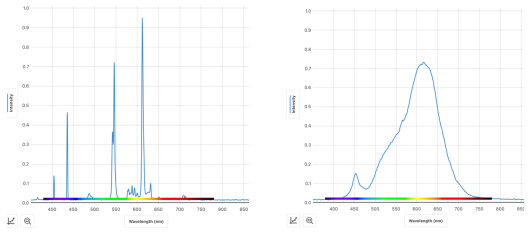
45

Fluorescent

Warm LED



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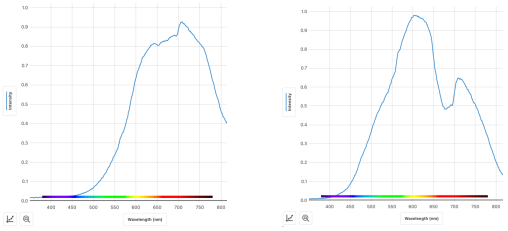
46

Halogen

Xenon



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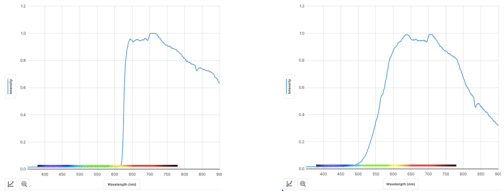
47

Alpha - College

Delta - College



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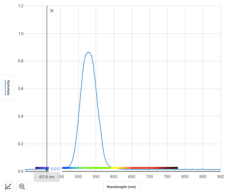
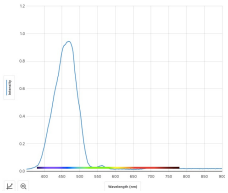
48

Mu - College

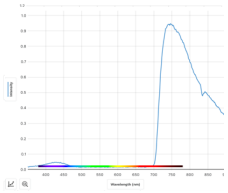


Upsilon - College

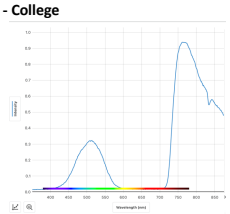


49

Omega - College

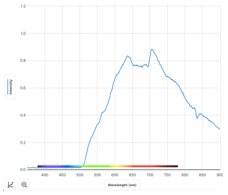


Pi - College

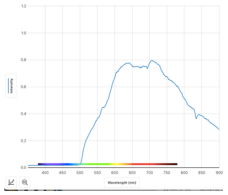


50

Theta - College

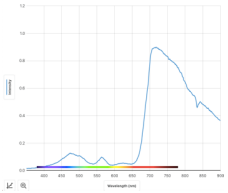


Stimulant - College

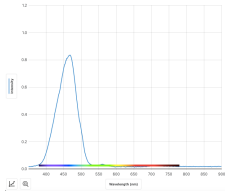


51

Depressant - College

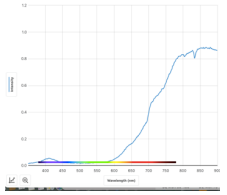


Lambda - College



52

Neurasthenia - College



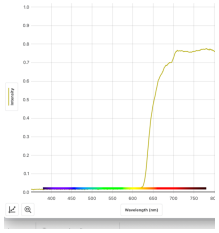
The only single syntonic filter not in the ROYGBIV

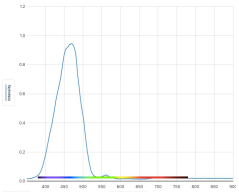
The only single syntonic filter that is a combo filter while being a single filter.

The only single syntonic filter that incorporates both sympathetic and parasympathetic.

53

Nascentization Filters – Look Familiar?





54

So...What Again Do All These Curves Represent?

- …that we are providing energy therapy (vs color therapy)
- …by manipulating the electromagnetic spectrum very specifically and universally
- …via optical filters to apply specific wavelengths of the visible spectrum
- …to affect the energy flow of the nervous system….Syntonic Phototherapy, or should we rename it
- …Visible Spectrum Wavelength Therapy (VSWT), haha!

55

Optical Filter Ingredients

- Colored glass or plastic filters include elements, compounds, dyes, or other colorants to a base substrate to manipulate the filter's spectral properties.
- The goal being to have the filter be able to transmit or absorb light at targeted wavelengths without the material degrading or weakening after prolonged exposure to environmental and application stresses. Glass meets these criteria and has always been preferred in syntonics.

56

Chemistry

GLASS SYNTONIC FILTER	ALPHA	DELTA (THETA)	MU	UPSILON (LAMBDA)	OMEGA
CHEMICAL NAME	Proportion of Weight (%)				
Antimony Trioxide	<1	0	0	0	0
Arsenic Trioxide	0	0	<1	<1	<1
Boron Oxide	<1	<1	1-10	0	0
Cadmium Oxide	1-10	1-10	0	0	0
Calcium Oxide	0	<1	0	0	0
Cobalt Oxide	0	0	0	<1	<1
Copper Oxide	0	0	<1	1-10	0
Chromium Oxide	0	0	<1	0	0
Lead Oxide	0	0	10-20	0	0
Potassium Oxide	1-10	1-10	1-10	1-10	1-10
Selenium	<1	<1	0	0	0
Sodium Oxide	10-20	10-20	1-10	1-10	1-10
Silica	70-80	70-80	50-60	60-70	60-70
Sulfur	<1	<1	0	0	0
Zinc Oxide	10-20	10-20	1-10	1-10	1-10

Schott Glass Company, Technical Safety Information following the format of the Safety Data Sheet according to 1907/2006/EC (REACh), Annex II, version 5.2.

57

Syntonic Filter Analysis

Larry B.Wallace,O.D., Ph,D.
2023

58

Chemical Man According to Dinshah

Oxygen 72%
Carbon 13%
Hydrogen 9%
Nitrogen 2.5%
Calcium 1.3 %
Phosphorus 1.25%

Water 84 pounds
Carbon 44 pounds
Ammonia 8 pounds
Calcium carbonate 53 ounces
Phosphors 28 ounces
Sodium chloride 9 ounces
Sulphur,fluorine,magnesium 3 oz
Many trace elements in grains

59

Determining filter factors according to Dr Spitler

Full spectrum incandescent source, of certain temperature, gases consumed by source,, distance from source. Filter thickness,dyes and metallic oxides, type and degree of diffusion of collimating lens, lumens or number of electrons present , primarily has Argon Gas (spectral color is scarlet)

Considerations:

Increased temperature increases high frequencies which are filtered by the air

Difficulty in filtering out the low frequencies

Gels change transmissions so glass is needed

Presence or absence of infrared and ultraviolet in collimating lens

Increase voltage with transformer to boost high frequencies

60

Primary Chemicals and Spectrums in the Filters

Alpha: Cadmium oxide(red), potassium oxide(magenta),
Sodium oxide(yellow-blue), Zinc oxide(indigo), silica
Delta/theta: same as Alpha
Mu: Boron oxide(orange),potassium oxide(magenta), Sodium oxide(Y-B),Zinc oxide(indigo)
Upsilon: Copper oxide(orange),Sodium Oxide, Zinc oxide

61

Silica is most Common Element in Universe by Mass

Silica oxide (red-blue)

Clarifies bone and tissues by imprinting the structure of molecules by resonance

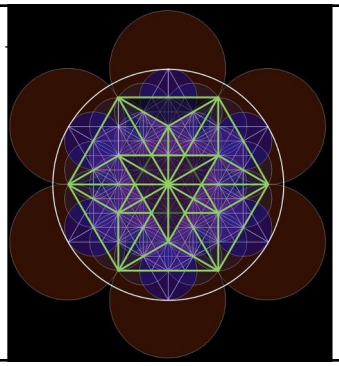
Geometry : tetrahedron: 4 sided pyramids with faces and 6 edges, icosahedral (C60)

Sacred geometry : The **tetrahedron** shape helps visualize the balance of oxygen, heat, and fuel that come together through the chain reaction to create the spark that ignites fire. Produce a unity in nature.

Buckminster Fuller : Tetrahedron, is major shape for his Synergetic models of space using topology, vector geometry, to mathematically measure chemically, crystallographically, the energy-quantum-wise our universe. The tetrahedron is the most basic shape in energy absorption and transmission in his systems theory .Everything is geometry and connected

Tetrahedron is called " The Vehicle of Light "

62



63