



“Since 1954”

Los Angeles,  
California

Vancouver,  
Canada

Manila,  
Philippines



- Sales
- Rentals
- System Integration
- Lens Service
- Filter Manufacturing



*Ronald D.  
Engrvaldsen*

**Ron** is an Emmy Award winning degreed chemical engineer with 25 years experience in the design & manufacture of cine filters for Schneider Optics USA. His Emmy award was presented in 2012 for the development of IRND filter technology which was an industry changer in the eyes of the television academy.

Ron has also designed high profile filters such as Hollywood Black Magic, Classic Soft, Black Frost, Lowcon, Radiant Soft, Rhodium FSND as well as the graduated version, the first cine 1-Stop Circular Polarizer, Rainbow & Confetti Streak filters.

He currently holds the title of Director of Optics Technology at Birns & Sawyer Inc. in Los Angeles where specialized filter development continues.

Ron's expertise in filtration has resulted in a long history of having a profound effect on the outcome & look of many movies & television shows – most recently, custom filtration for films like Gemini Man, Ad Astra, The Lighthouse, The Northman, NOPE and Dune 2 (in post) & Nosferatu (in post.)

His greatest satisfaction comes from the education of students and aspiring cinematographers across the globe of the importance of the use of filtration in the cine, video & broadcast setting.



@ronengvaldsen



@birnsandsawyer



# Motion Picture/TV Standard & Custom Filtration

# Categories of Filters For Cinematography & TV



- Technical Filters -
  - Clear and Ultra-Violet Protection
  - Neutral Density
  - Polarizing
  - Diopters (Close-up)
- Diffusion Filters –
  - Resolution
  - Contrast
  - Flare
- Effect Filters –
  - Stars
  - Streaks (Flaring)
  - Kaleidoscope

# Why Use Filters?



- Capture image information that would otherwise be lost
- Enables camera operators to retain more control over the final result
- Save time and expense over post processing
- Considered a more “organic” look
- A comprehensive tool bag with filters = sell yourself

# How to Mount a Filter in front of the Lens?



Matte  
Box on  
Rails

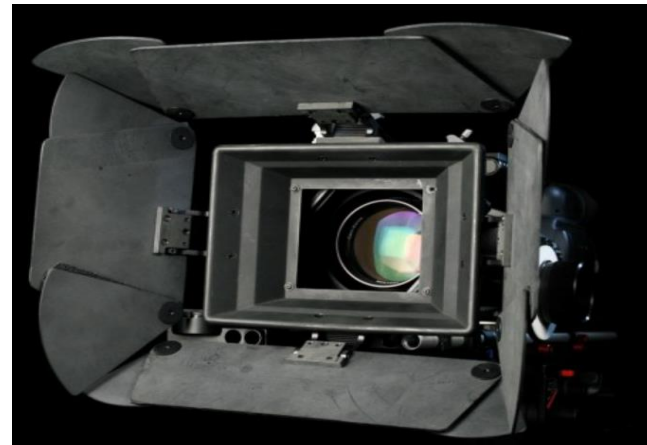


# Matte Box Features

Filter Frame



French Flags



Multiple Stages



# Clamp or Rods





# 1) Technical Filters



## Clear and Ultra-Violet Filters for Lens Protection



- Protection filters are less costly to replace than a lens front element
- Clear filters have Anti-Reflection coatings for maximum transmission
- Ultra-Violet Absorbing filters reduce haze when imaging through a lot of atmosphere

# Example of UV Suppression



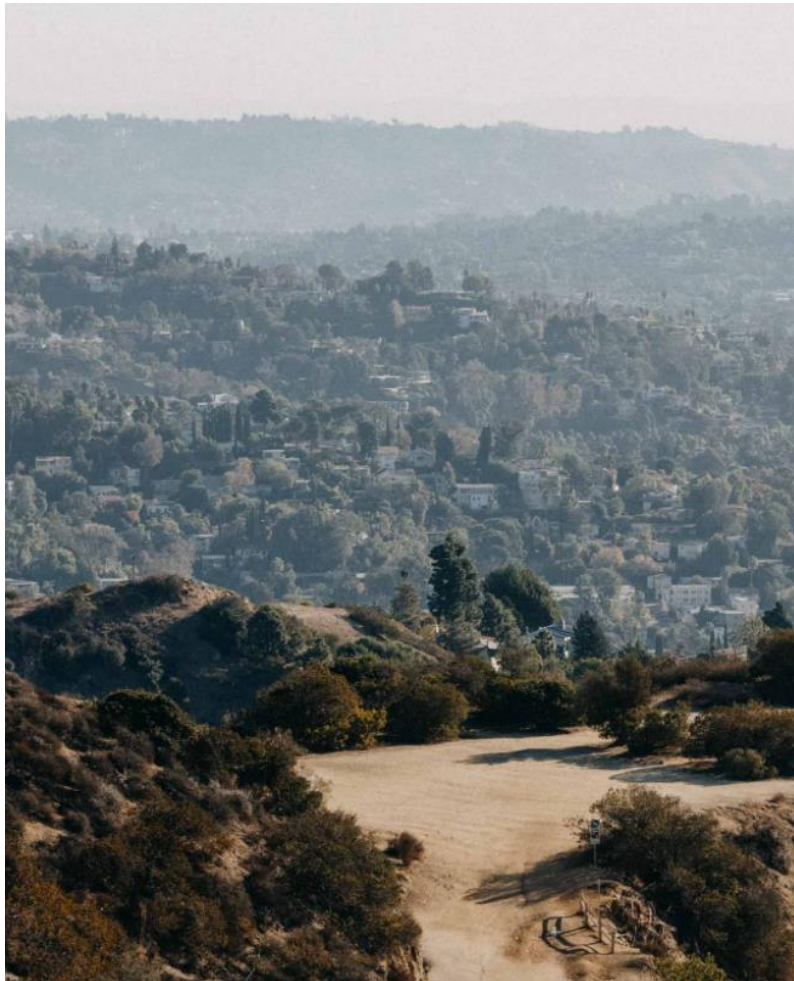
No Filter



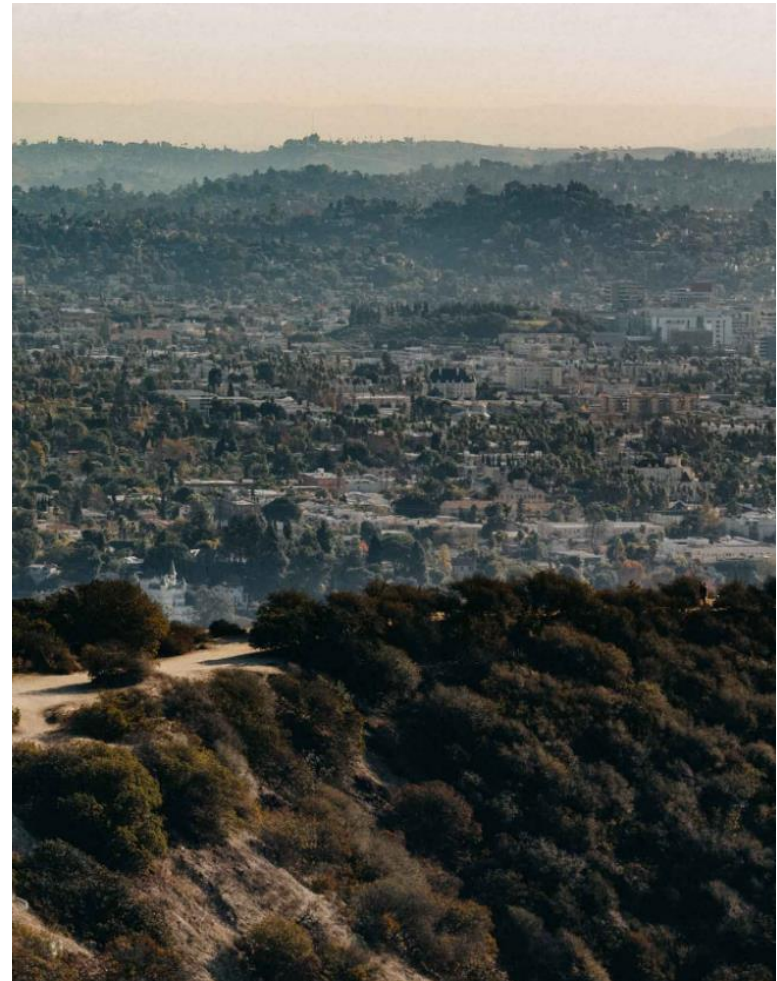
With UV Filter



# Example of UV Suppression



No Filter



With UV Filter



# Neutral Density Filters

Neutral Density Filters reduce the amount of light entering the lens - Used for exposure & depth of field control

Available in:

- ND.3 = 1 stop
- ND.6 = 2 stops
- ND.9 = 3 stops
- ND1.2 = 4 stops
- ND1.5 = 5 stops
- ND1.8 = 6 stops
- ND2.1 = 7 stops
- ND2.4 = 8 stops
- ND2.7 = 9 stops
- ND3.0 = 10 stops



# ND Filters used to Reduce Depth of Field

***Without Filter***

***F-11***



***With 3-Stop ND Filter***

***F-4***



# ND Filters used to create motion blur – Long exposure + ND





# More Blur....





# ND Graduated Filters

- Compliment to Solid ND
- Attenuates the background – foreground unaffected
- Available in two gradation types...
  - Soft edge: for most situations
  - Hard edge: for longer lenses and straight transitions



Soft Edge



Hard Edge

# ND.6 Soft Edge Grad

*Without Filter*



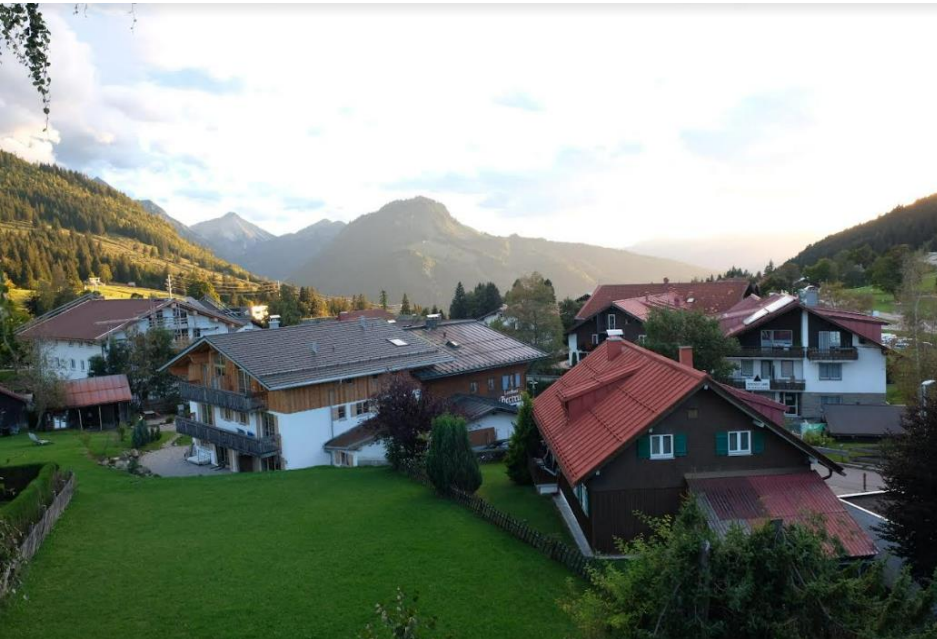
*With Filter*





# ND.9 Soft Edge Grad

*Without Filter*



*With Filter*

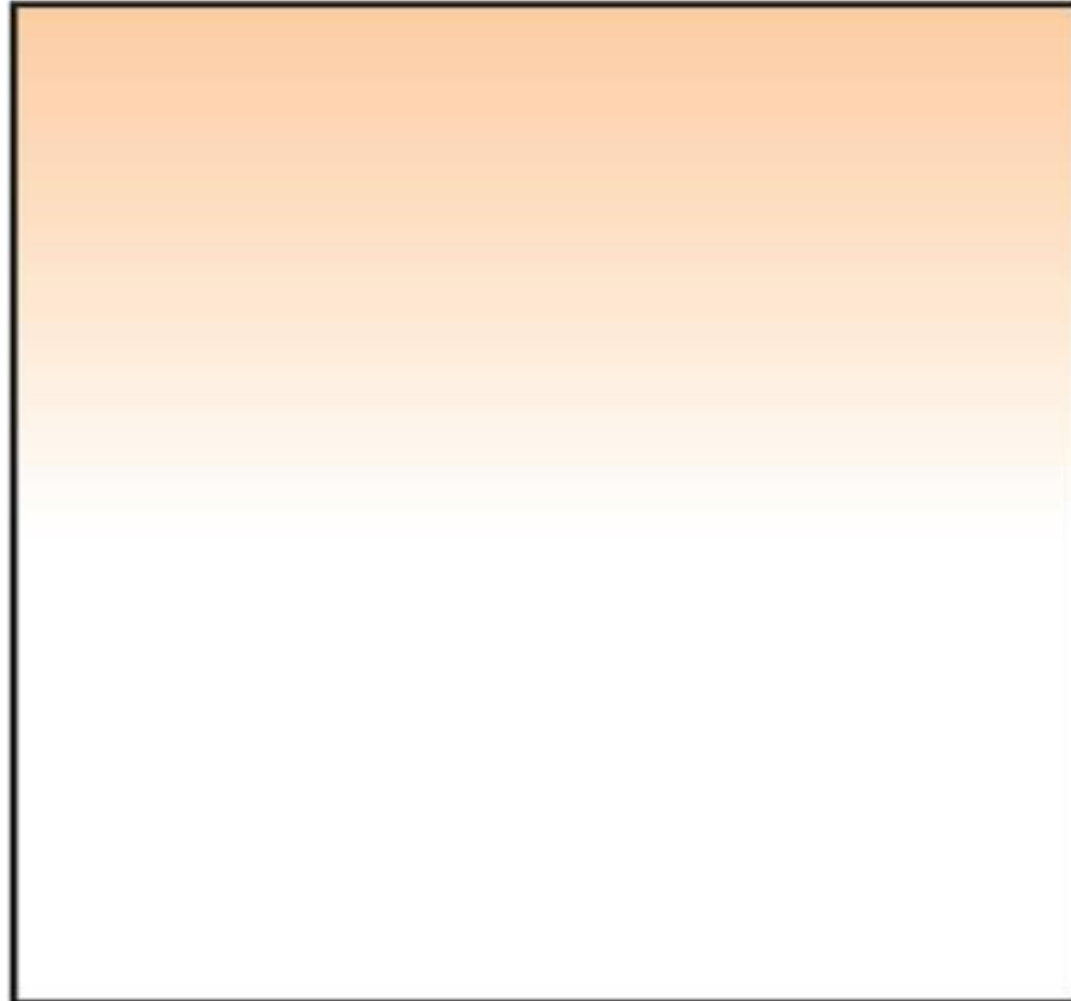




# Graduated Colors



# Graduated Coral





# Graduated Coral







# More Coral...



# Day for Night





# Polarizing Filters

- Absorb unwanted reflected glare
- Deepen blue sky
- Remove reflections from windows and water
- Available in Linear or Circular Polarization – 1 & 1.5 Stop Light Loss



# Polarizers Increase Color Saturation in the Sky

*No Filter*

*With Polarizer*





# Polarizers Reduce Reflections from Glass

***No Filter***



***With Polarizer***





# Polarizers Reduce Reflections from Water

*No Filter*



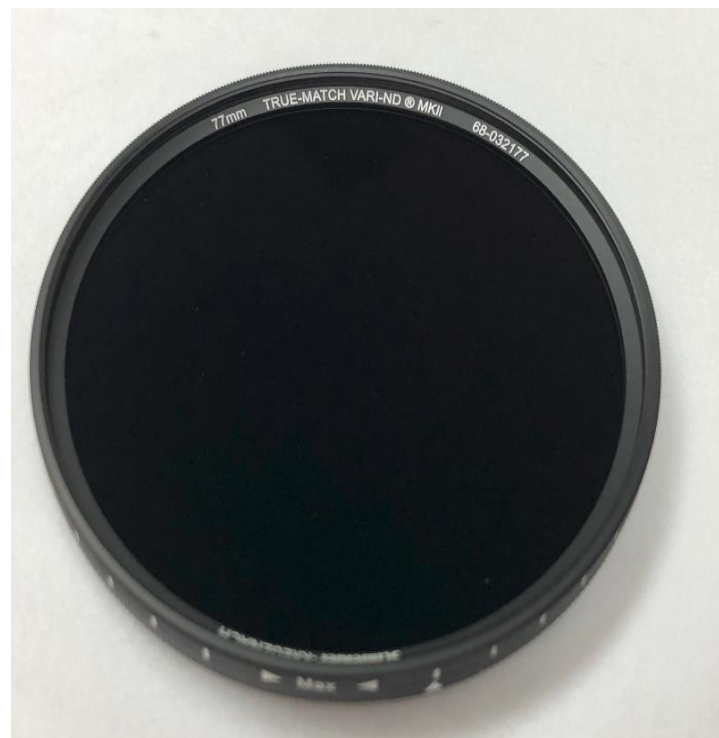
*With Polarizer*





# Variable Neutral Density Filters

- Variable ND filters work by crossing two polarizers
- 2 to 8-10 stops of density range in one filter
- Available in screw-in sizes





# Rotary Polarizers tray mount)





# Close-Up Lenses (Diopters)

- Close-Up Lenses are like a magnifier for your camera lens - for closer focus
- Series 9, 4.5", 6" Available in +1/2, +1, +2, +3
- 138mm Available in +1/8, +1/4, +1/2, +3/4, +1, +2, +3



$$\text{Focal Length} = \frac{1000}{\text{diopter strength}}$$

Examples: FL of +2 =  $1000/2 = 500\text{mm}$

FL of +1/2 =  $1000/.5 = 2000\text{mm}$

# With Close Up Lenses



**Without Close-Up Lens**



**+1**



**+2**



**+3**



# Split Field Diopters

- Used for magnifying half the scene while leaving the other half unaffected
- Series 9, 4.5", 6" Available in +1/2, +1, +2, +3
- 138mm Available in +1/8, +1/4, +1/2, +3/4, +1, +2, +3





# Example of Split Field Diopter

Without Split Diopter



With Split Diopter





# Example of Split Field Diopter

Split Diopter Down



Split Diopter Up



# Strip Diopter



∩ Diopter  
Strip

# Slot Diopter

Diopter  
∠ Slot



For variable focus or double vision effects



# Tray Mounted Diopters





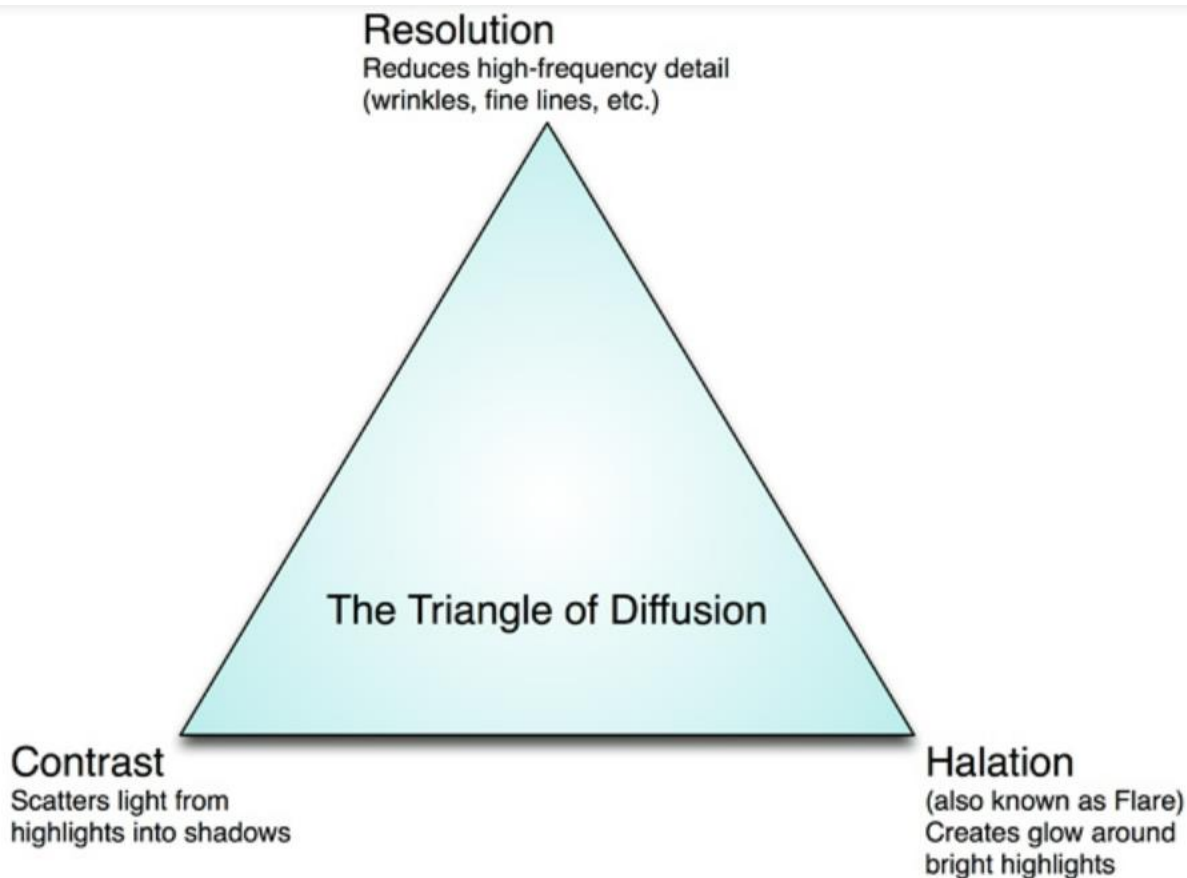
## 2) Diffusion Filters

- Help set the mood
- Reduce fine detail  
(Resolution)(cut video edge)
- Reduce contrast
- Flare highlights (halation)





# Diffusion Triangle





# Example of Loss of Resolution (Softening)



No Filter



Classic Soft 2

## Example of Loss of Contrast



No Filter



Low Contrast Filter



## More Loss of Contrast



Smoque® no filter



Smoque® filter

Tiffen Smoque®

# Example of Flare/Halation



***No Filter***



***GlimmerGlass 4***



# More Halation....





# More Halation....







There are dozens of diffusion filters available in today's market.

Most cinematographers will test filters along the way and develop "favorites" for certain circumstances.

I will attempt to list some popular diffusion filters and what you can expect from them.

**Note:** We must all understand that diffusion filters will perform differently as you alter:

- Lens Focal Length - - - **Longer FL = Stronger Effect !!**



**Hollywood Black Magic – Subtle softening, slight halation, no contrast loss, makes digital look like film**

**GlimmerGlass – Smoothing of detail, great highlight blooming, some contrast loss, glittery look looks wonderful on the camera**

**Black Pro-Mist – time honored softening with mild halation. Some contrast loss**

**Black Frost – soft filter with high clarity resulting in very little contrast loss, mild halation**



**Radiant Soft - Subtle softening, very little halation, no contrast loss, makes glittery blue look very appealing on camera**

**Smoque – Heavy halation filter, very low contrast and loss of resolution**

**Classic Soft & Soft FX – decades old diffusion, designed for film. Even softening with mild flare – no contrast loss**

**Black Pearlescent – soft filter with silky smooth resolution loss, moderate halation, some contrast loss**



## 3) Effect Filters

- Streak Filters
- Star Filters
- Confetti
- Swirl Flare
- Kaleidoscope
- IBE Effects

# Streak Filters



**With Pink-Streak 1mm**



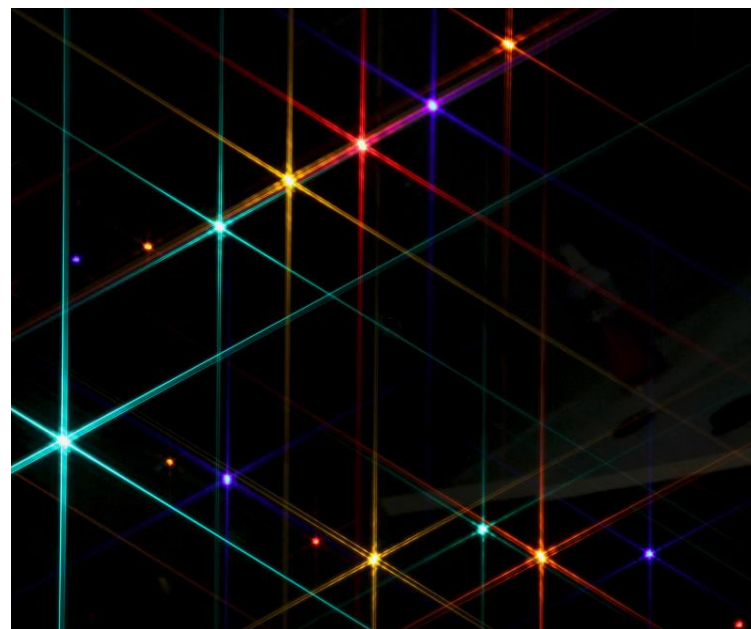


# True-Streak® Special Effects

Star Filters 6point Red/White/Blue

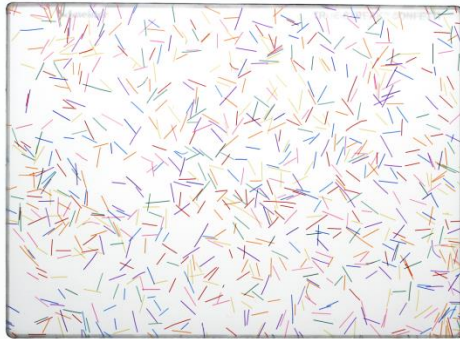


Clear on Colored Lights

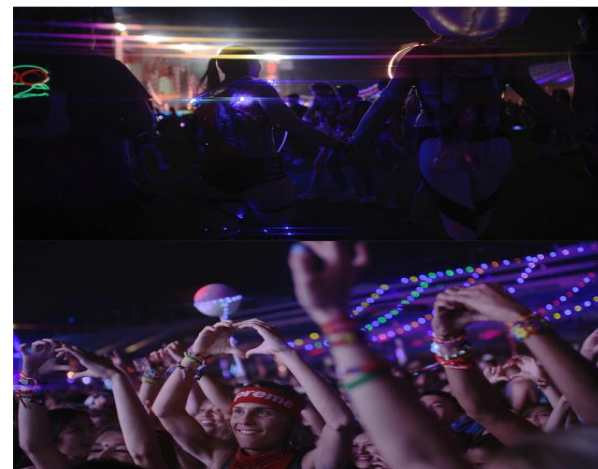
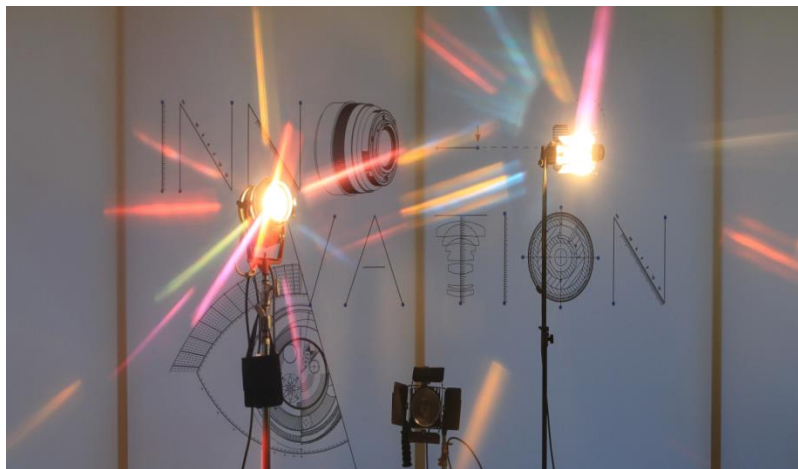


# True-Streak® Special Effects

Confetti

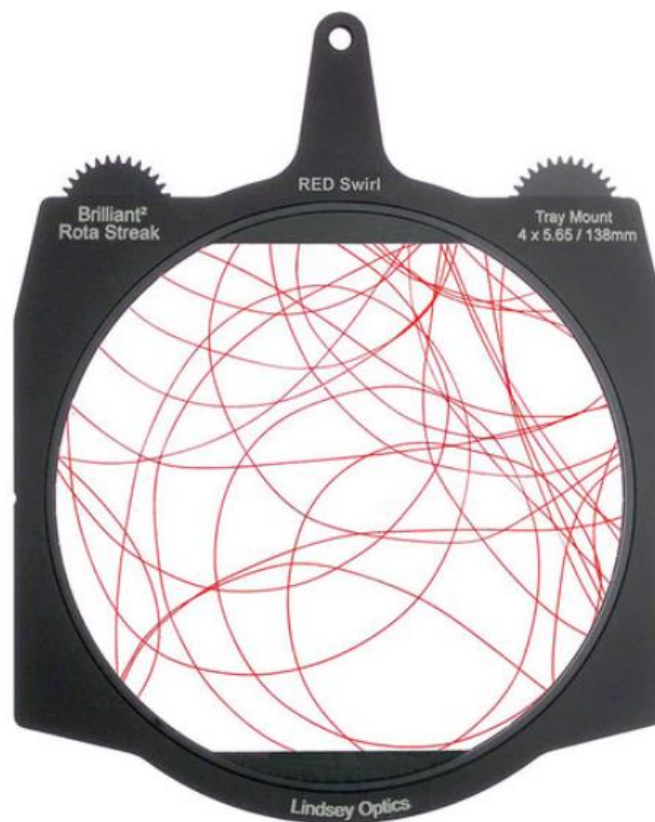
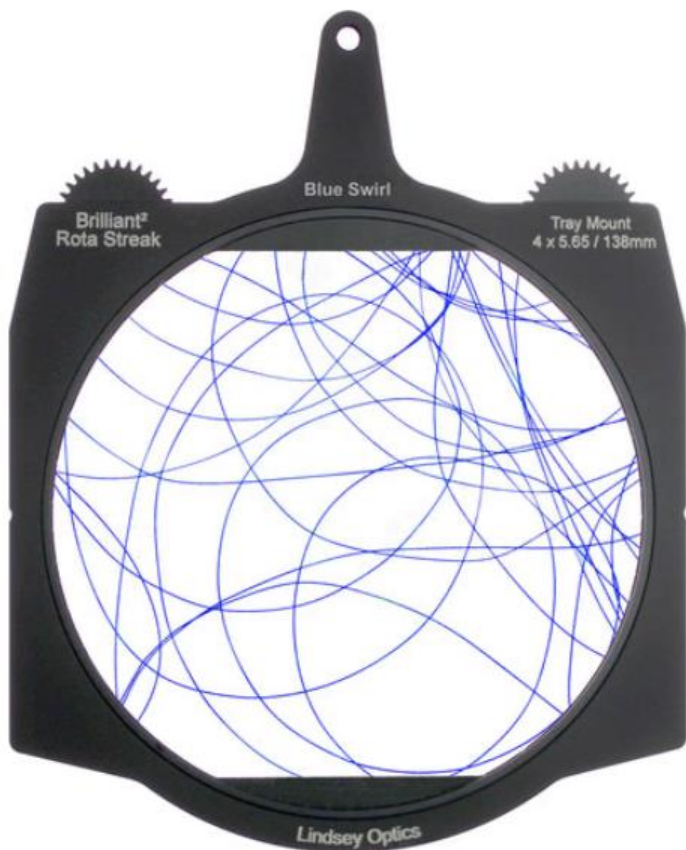


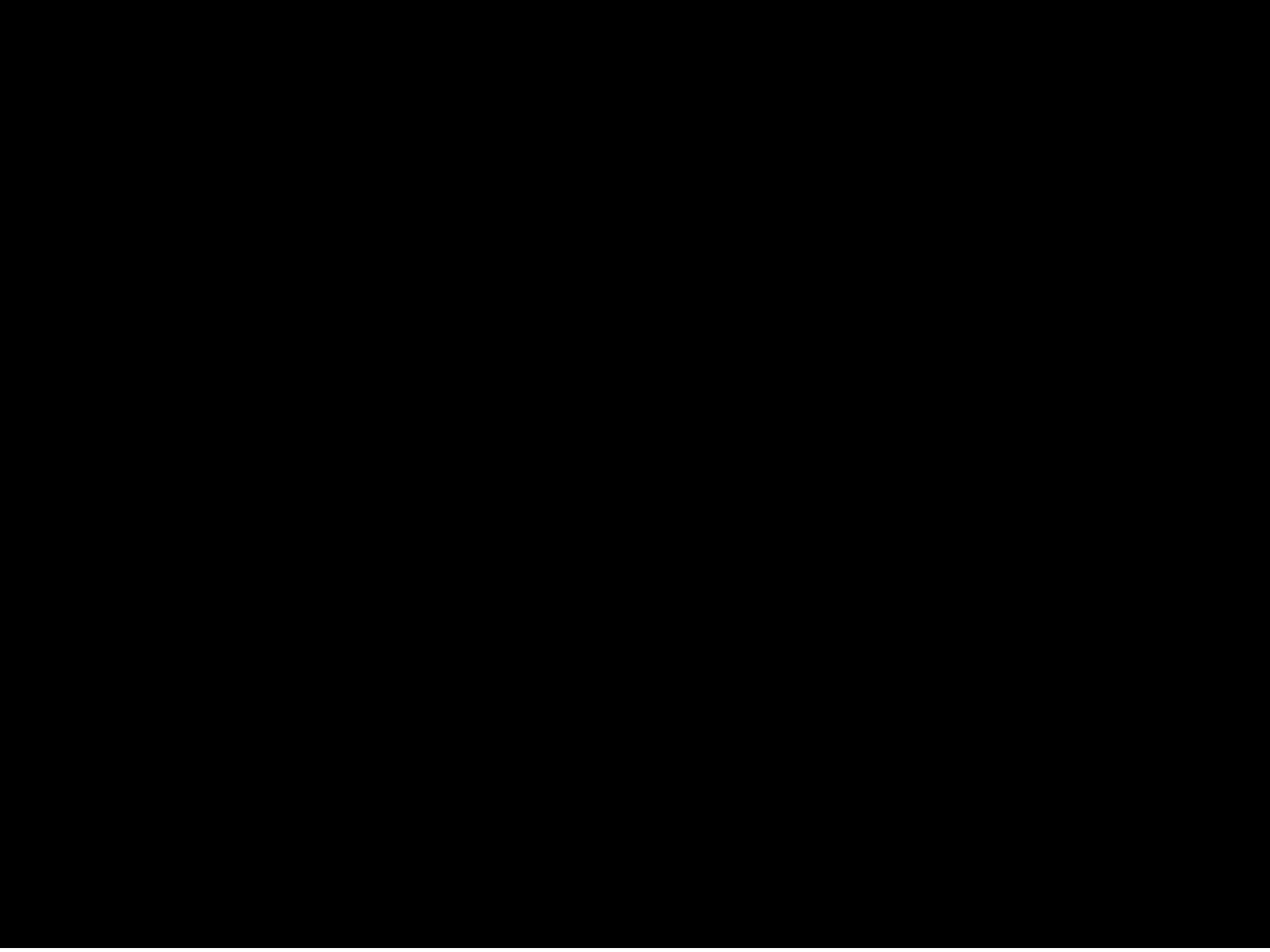
Rainbow





# Swirl - Flare Effects





# Kaleidoscope Effects



# IBE Flare Filters

## Impressive 4



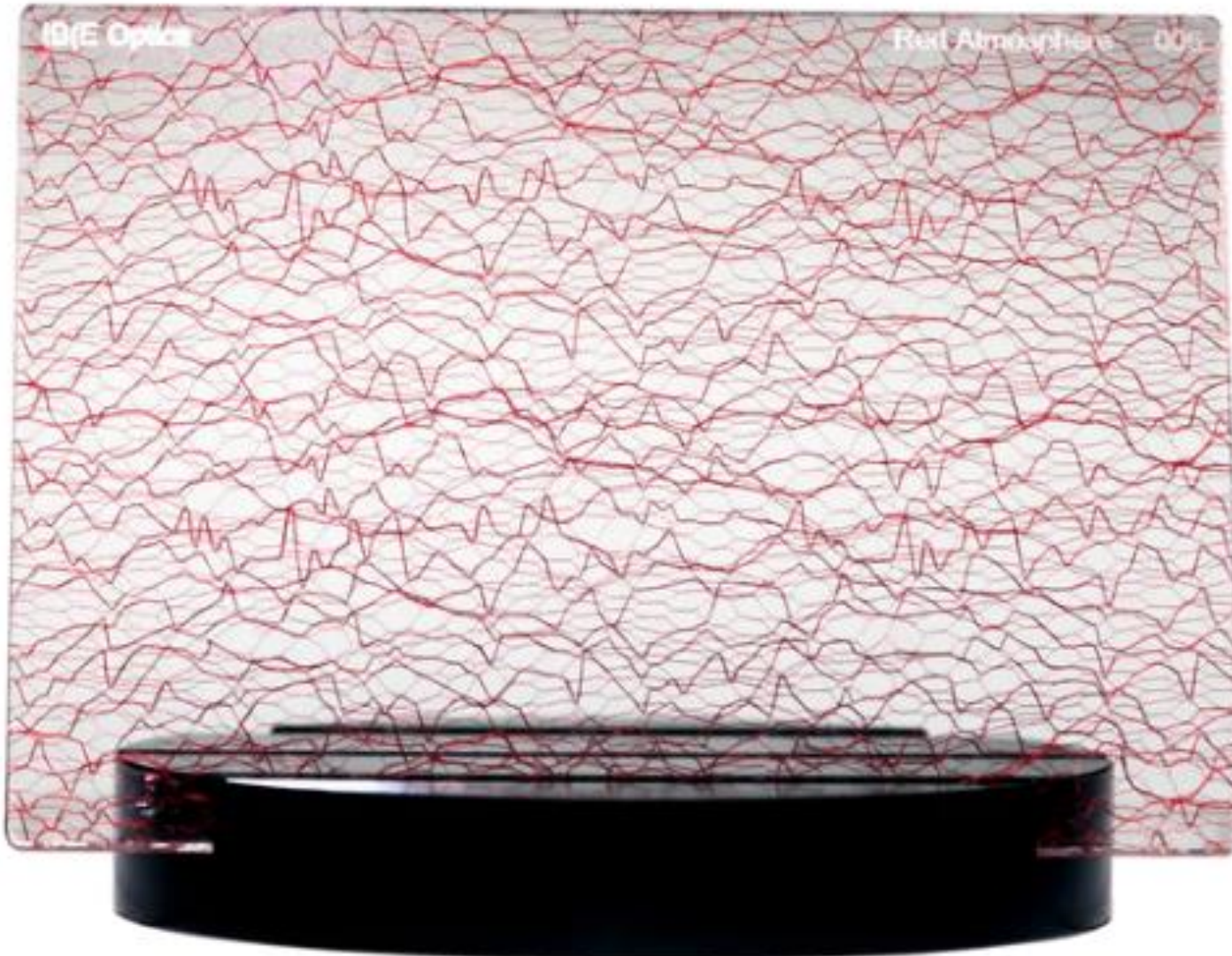


# IBE Flare Filters Impressive 3





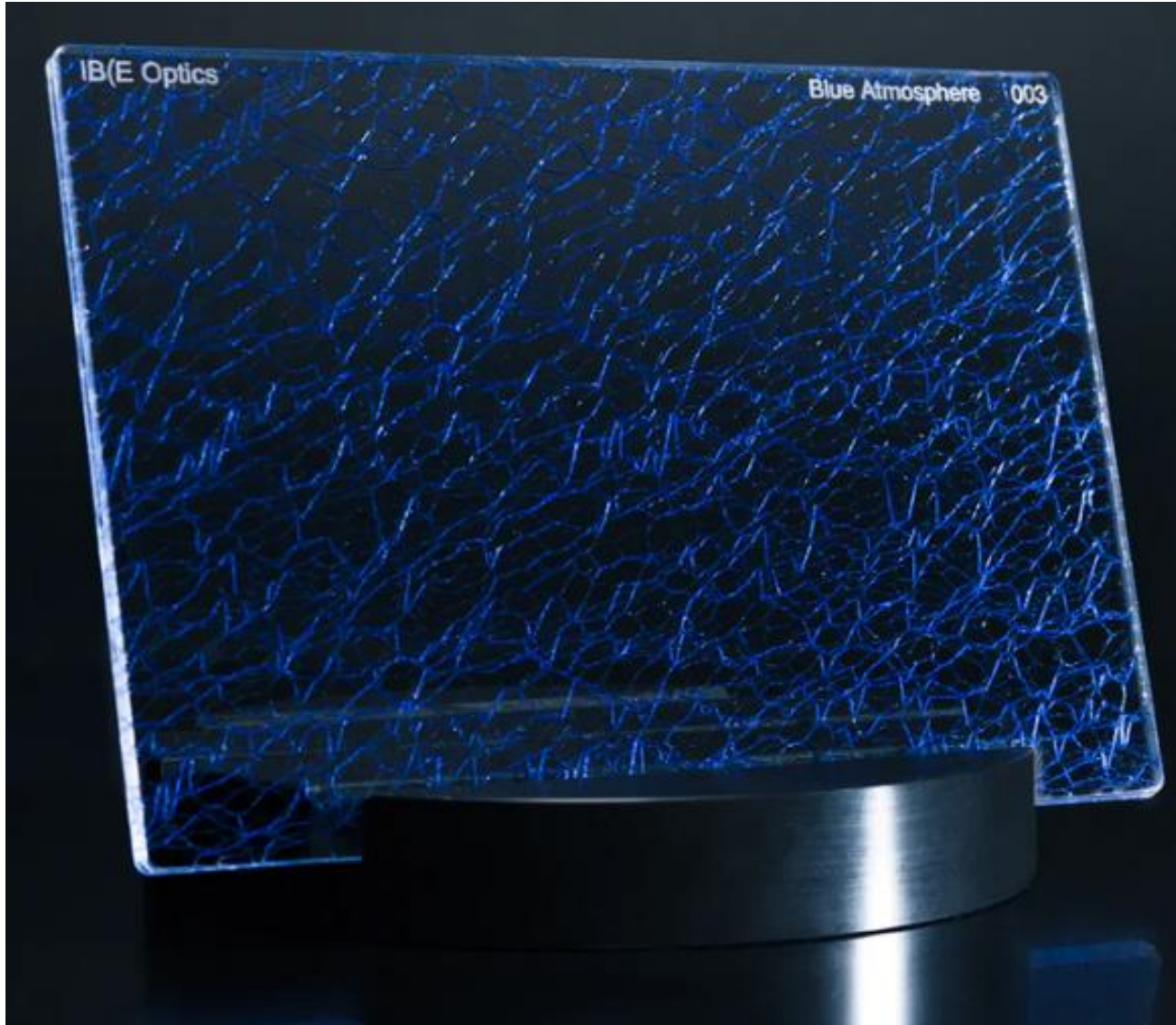
# IBE Atmosphere Effect Red







# IBE Atmosphere Effect Blue







# Planned Distortion

**Birns & Sawyer**

**Crazy Glass - Set of 8**

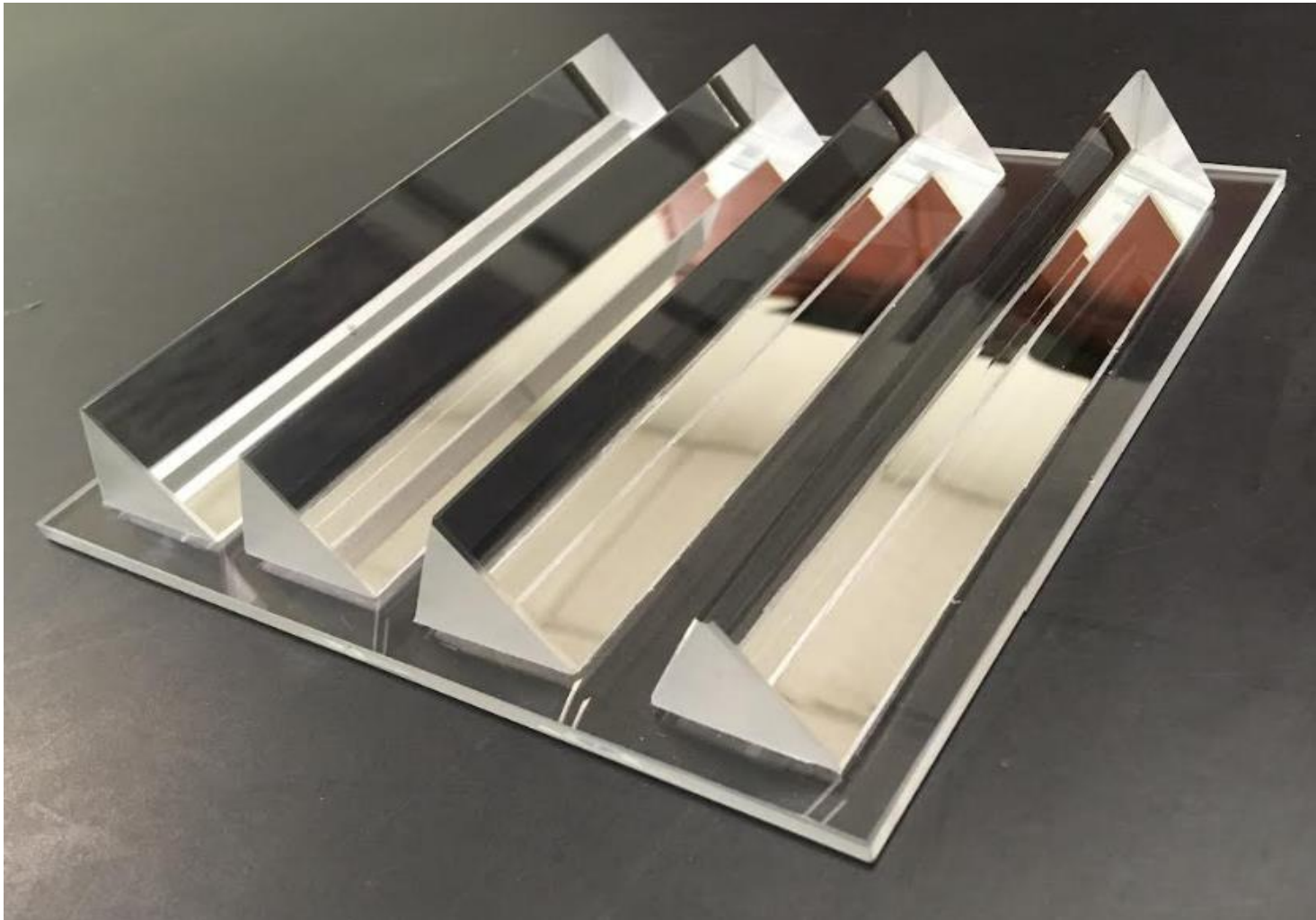




# Shifting gears ....



# A Crazy Idea?



Prism Filter – Crescenzo Notarile, ASC/AIC  
Star Trek Picard, Star Trek Discovery, Gotham,  
Your Honor etc...





# 4<sup>th</sup> of July Filter

## 6 point Red/White/Blue Star





Mardi Gras Star  
Only at Birns &  
Sawyer





## Birthday Filter

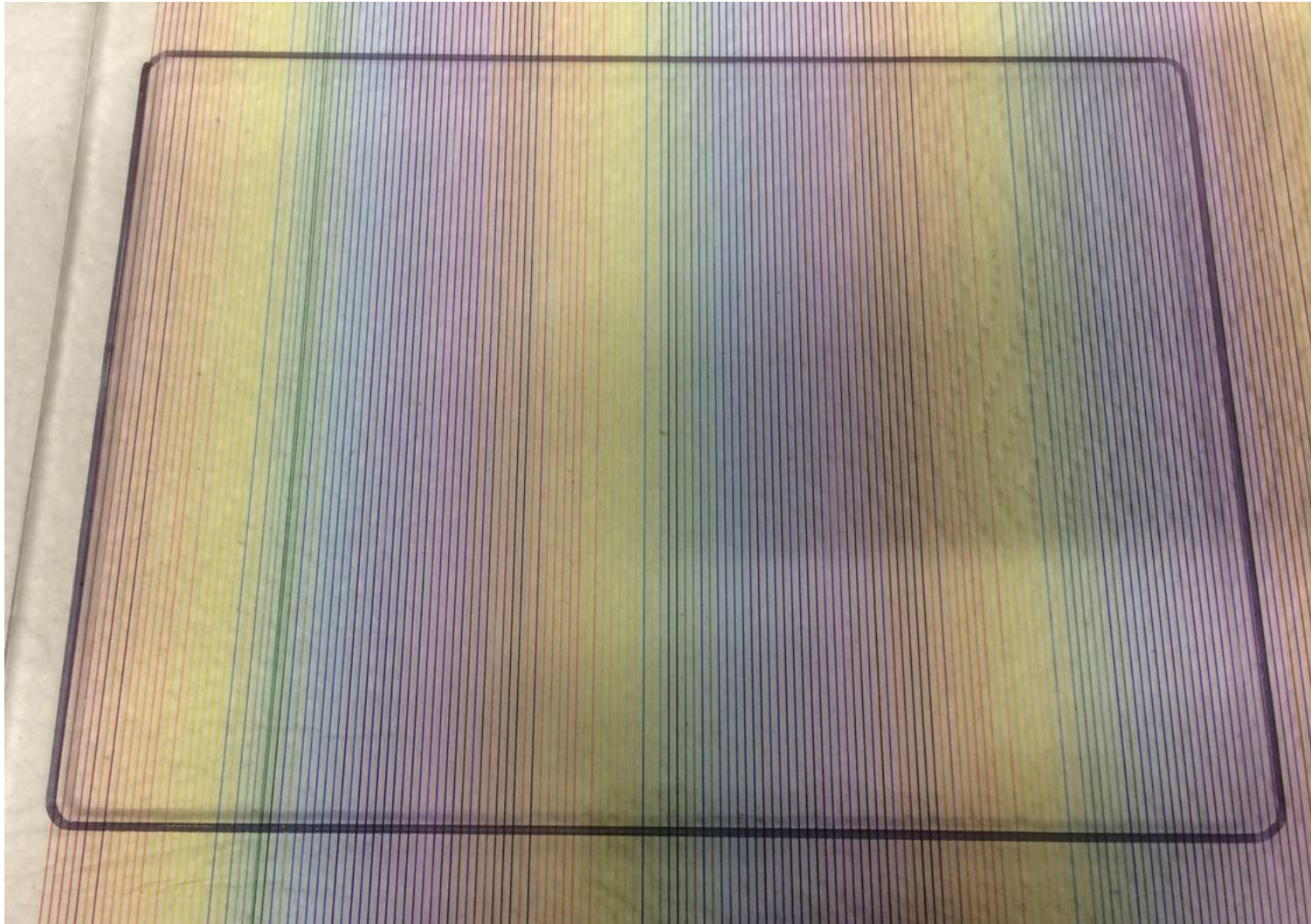


**Craig Boydston  
for Thais Castralli**

**December 2016**



## Rainbow Streak



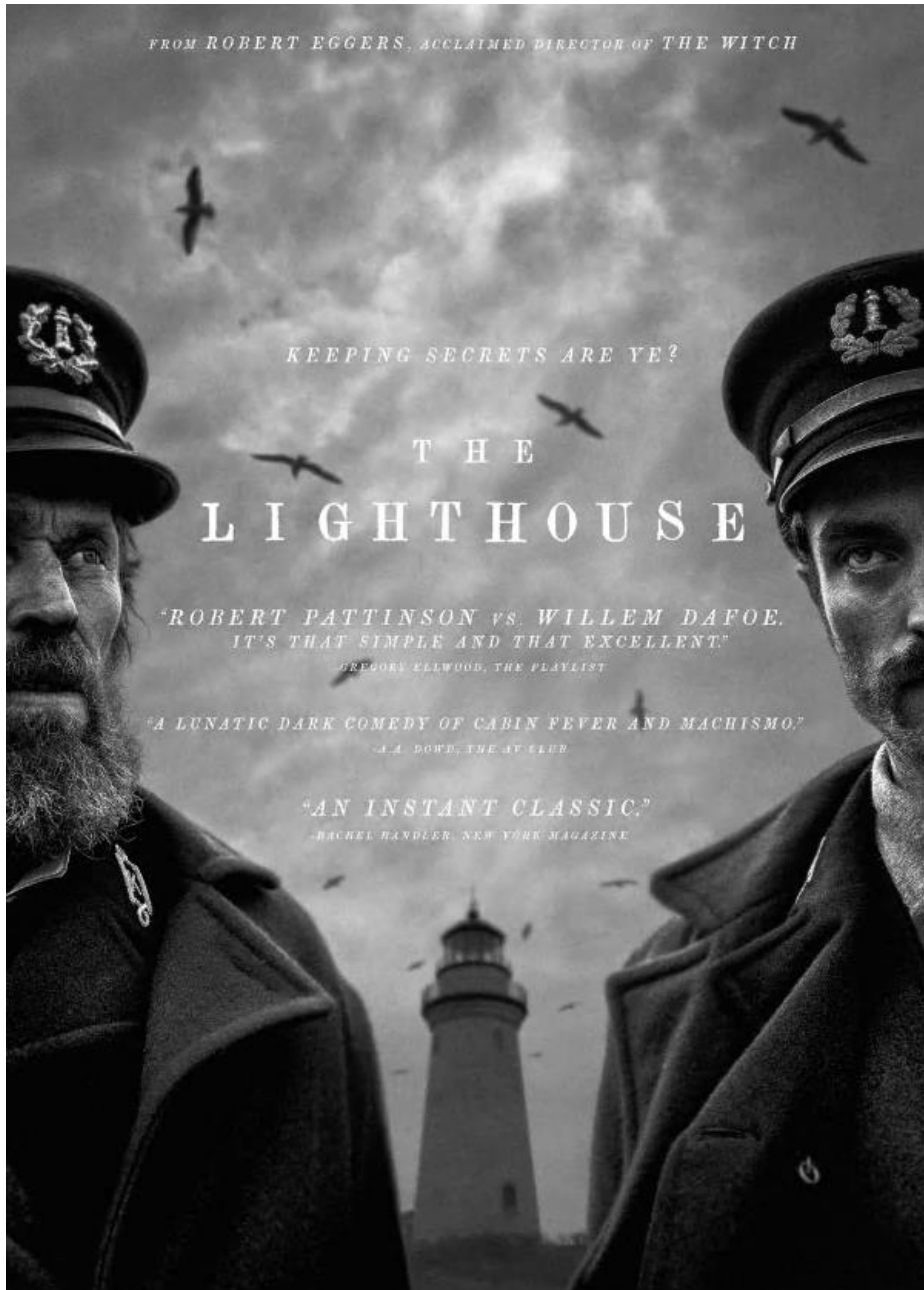
# Adam Beck, DoP - Rainbow Streak





# Custom Filtration for Films

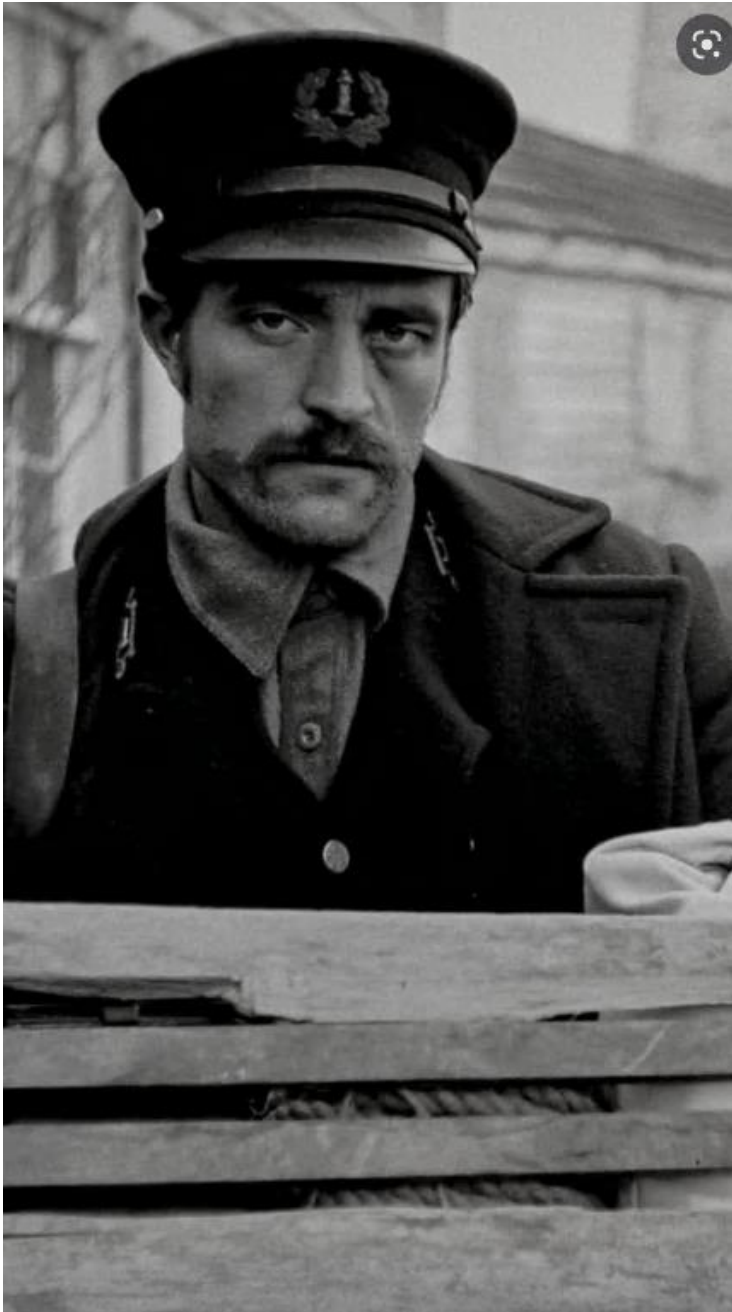




2019 – Jarin Blaschke, DoP

Set in 1890's

Emulate orthochromatic film







## The Lighthouse (Orthochromatic)



No Filter



Low Pass  
570

This filter attenuates the yellow,  
orange & red colors.



No Filter

Scotopic Filter





2022 – Jarin Blaschke

9<sup>th</sup> Century Vikings

Low Pass – **Scotopic** Filtration



# The Northman









# The Northman



Along comes February 2023...and  
the toughest challenge of my  
career as a filter designer.

“Does not this word sound like the  
call of the death bird at midnight.”



The name "Nosferatu" has been presented as an archaic Romanian word, synonymous with "vampire". However, it was largely popularized in the late 19th and early 20th centuries by Western fiction such as *Dracula* (1897), and the film *Nosferatu* (1922).







**Bill Skarsgård**  
as  
**Count Orlok**  
**2024**



Clear



Mesopic





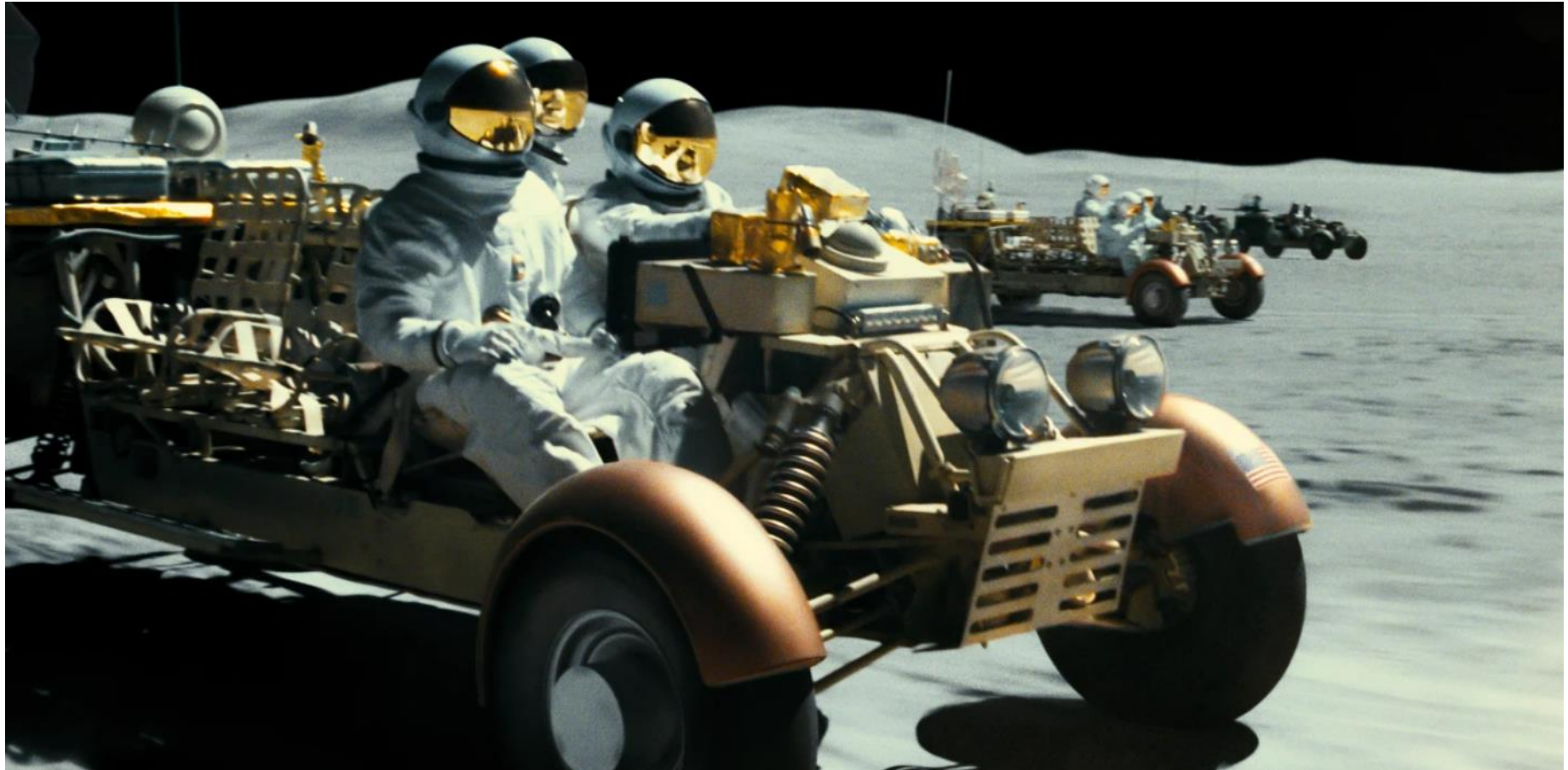


**Look for “Nosferatu” – coming to a theatre near you early 2024.**

**And don’t forget to watch the credit roll... you might recognize a name...**



**Ad Astra (2019)**  
**IR-1000nm**





Jordan Peele – Hoyte van Hoytema, ASC



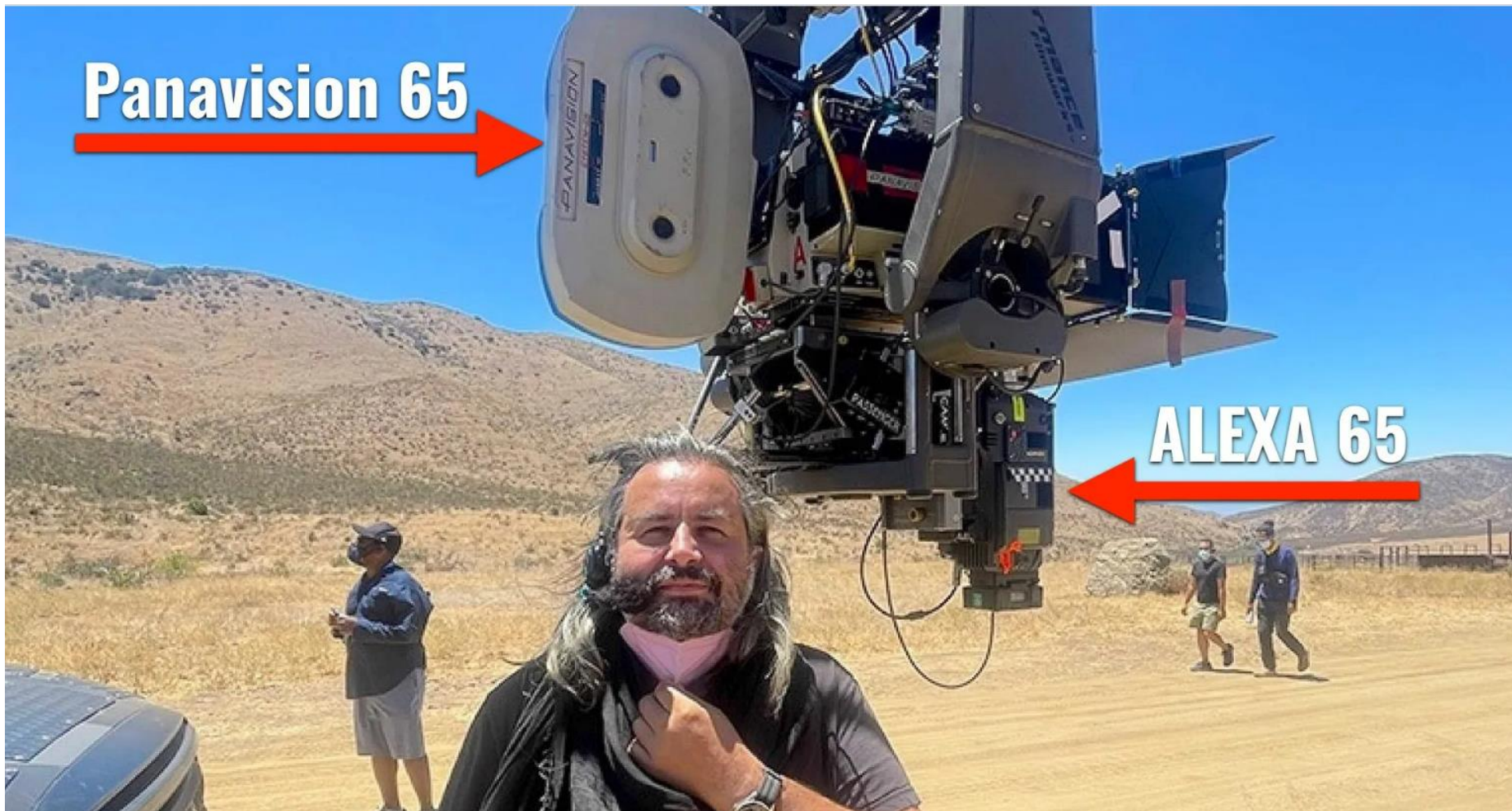
# NOPE (2022) IR-1000nm



**Panavision 65**



**ALEXA 65**





Day for Night with Infrared 1000nm









Dune 2

November 2023

IR-1000nm

...more infrared...

We'll have to see....

Now in post...











Infrared imagery is a spectacular way to capture hauntingly beautiful images with fine detail, high contrast, glowing highlights, black skies and unsurpassed tonality.

Contact Birns & Sawyer for more info on sales or rentals of these and other custom filters.



Please visit us at Booth  
#19 for more personal  
discussions on cine filters.



# Thank You for Watching!

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