LIBRE hub
Latam Hub for Bioimaging through Open Hardware

Chan Zuckerberg Initiative

INSTITUTO DE INGENIERÍA BIOLÓGICA Y MÉDICA
PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

Extensión e integración de módulos LED

Vicente Parot, PhD
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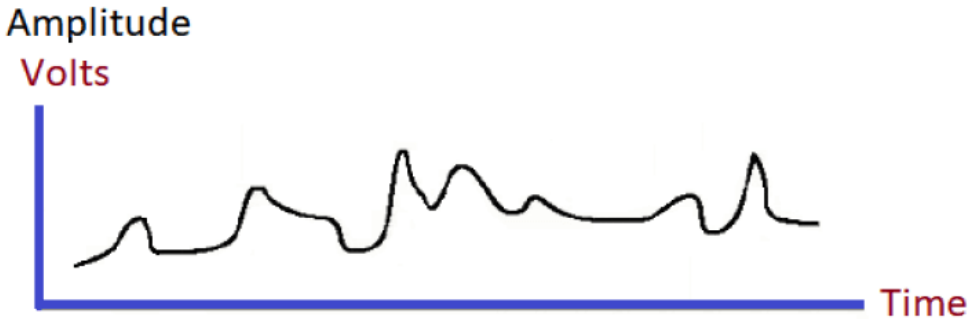
2024-10-11
16:30 – 17:15

Taller de iluminación LED de bajo costo

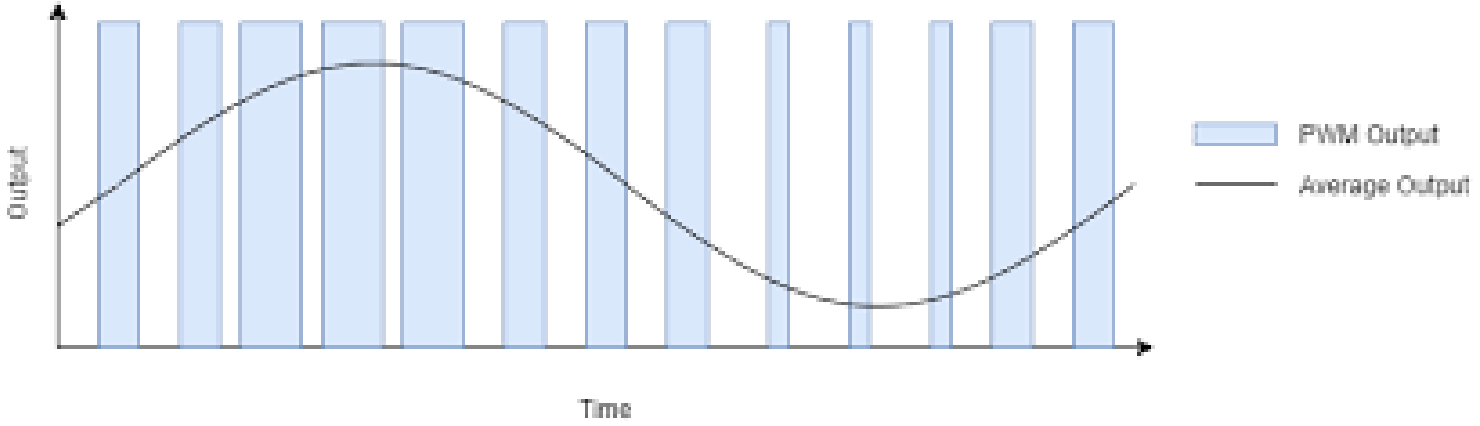
Modulación

- Digital: TTL
- Digital modulada: PWM
- Análoga



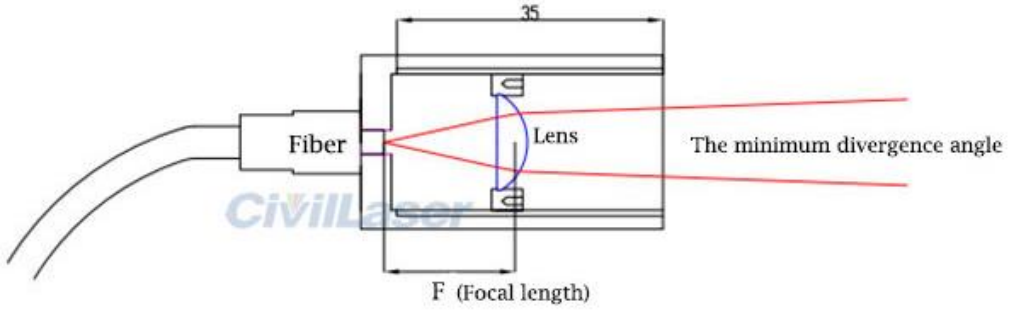
Análoga

Digital

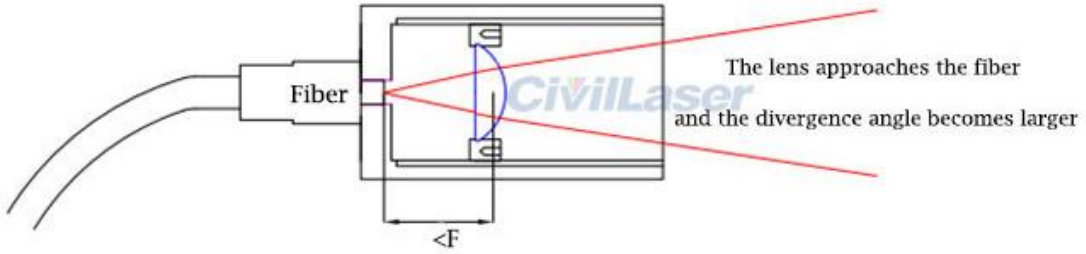


Posicionamiento de lente colimador

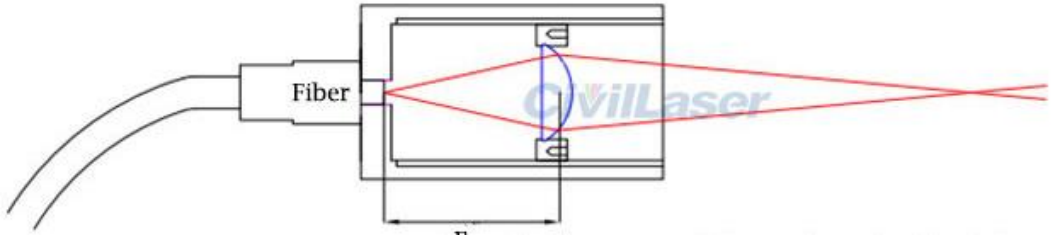
- Mínima divergencia



- Lente más cerca del LED
  → Aumenta la divergencia

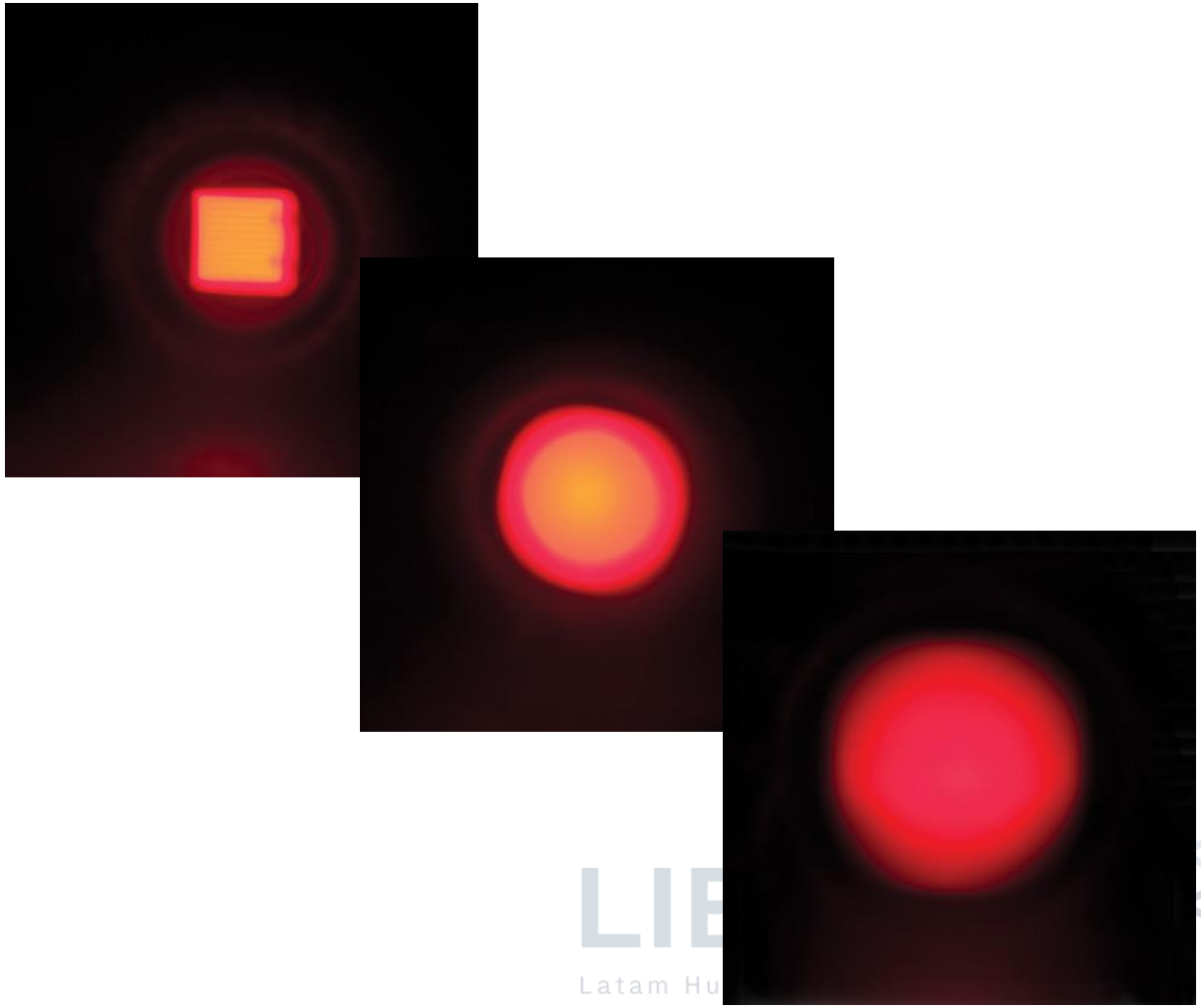


- Lente más lejos del LED
  → Enfoque más cerca



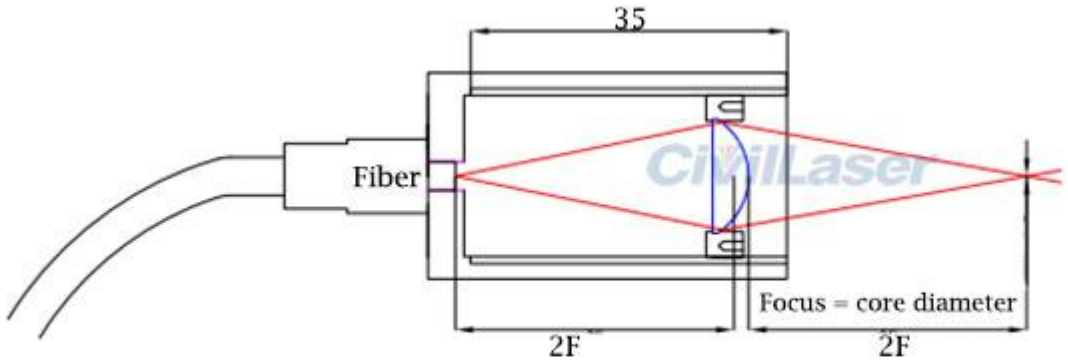
Posicionamiento de lente colimador

- Enfocar imagen del LED en pantalla a 30 cm
- Alejar pantalla y enfocar nuevamente
- Finalmente el haz estará colimado a 30 cm



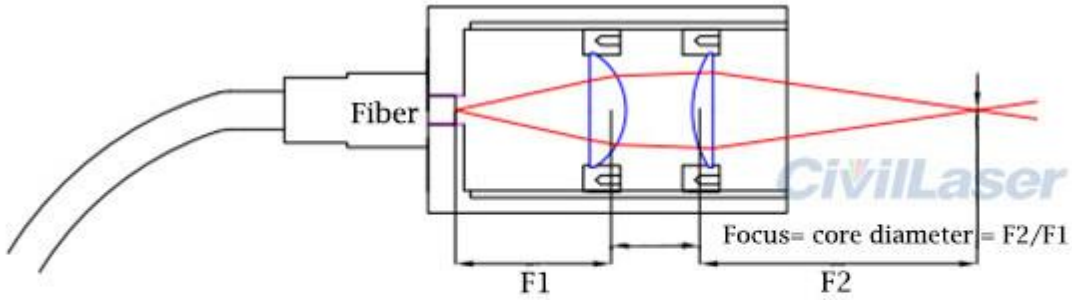
Posicionamiento de lente colimador

- Lente al doble de la distancia focal
  → Imagen del núcleo 1:1



The lens is placed at twice the focal length to get the focus = core diameter.
Recommended to choose F15

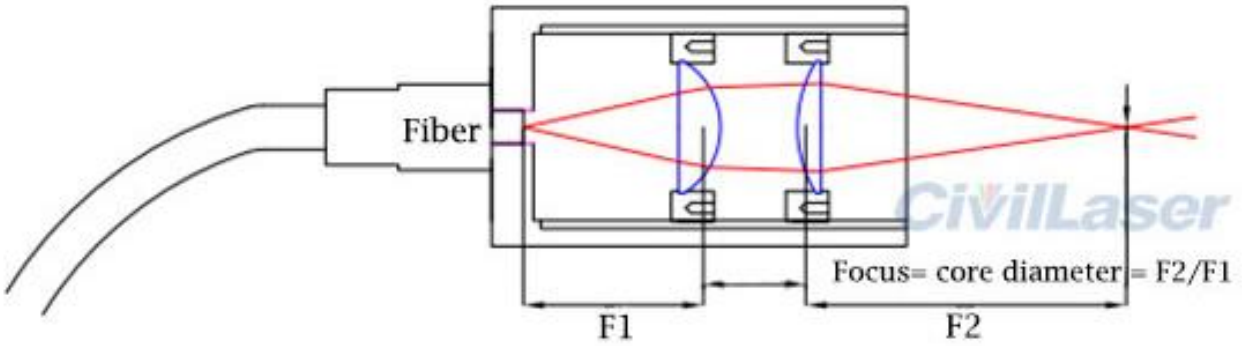
- Dos lentes de distancias F1 y F2
  → Magnificación F2/F1

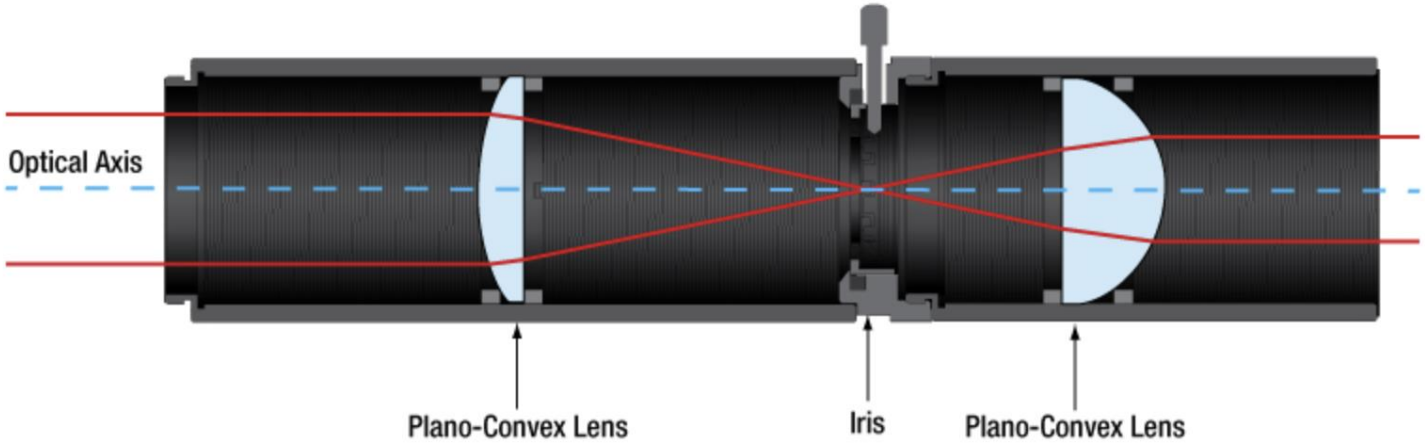


Add a lens. First collimator re focusing.

Acoplamiento

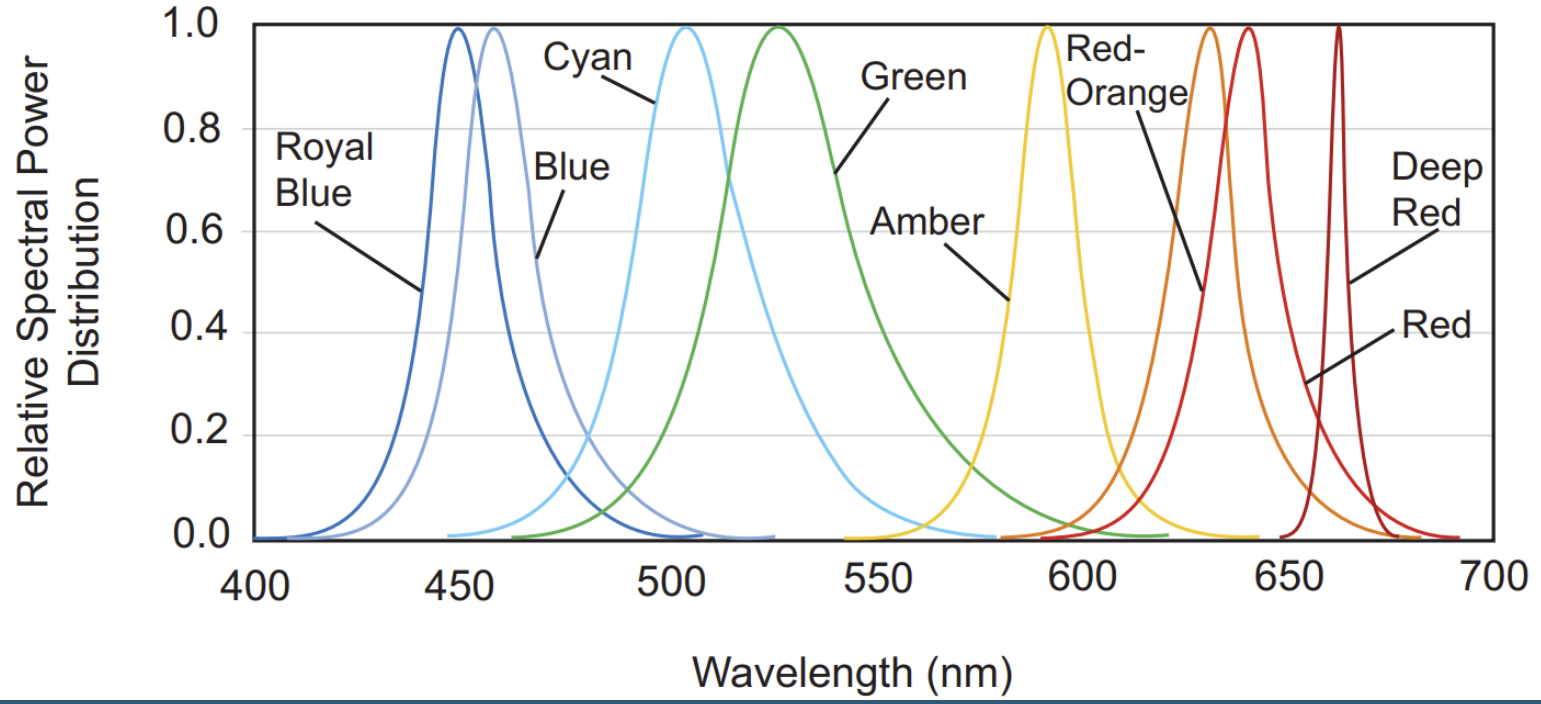
- Dos o más lentes
- Ajuste de distancias



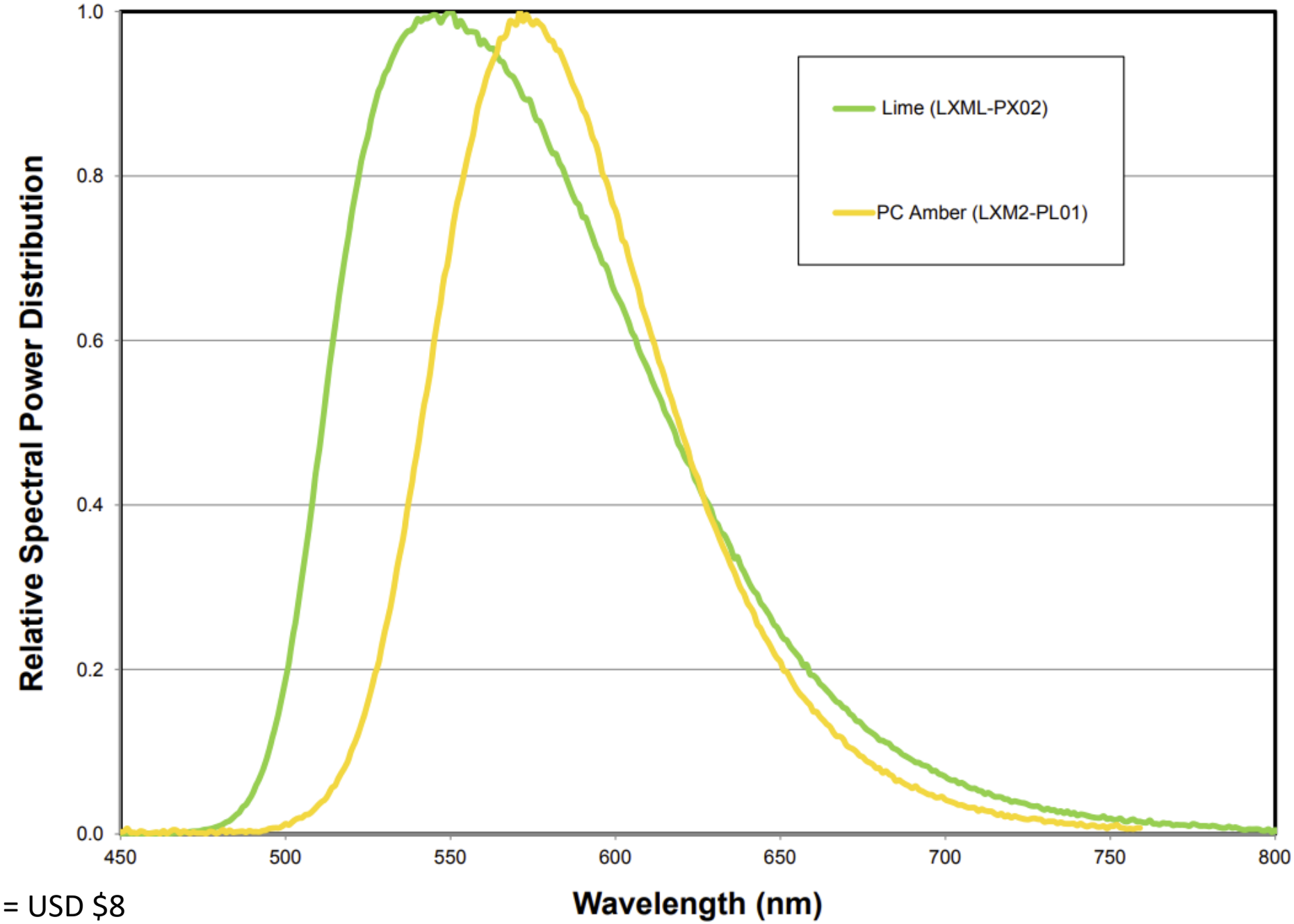


Integración: Características de luz LED

- Luz tiene espectro amplio
- No se puede enfocar en un punto
- Libre de interferencia y ruido granular (*speckle*)



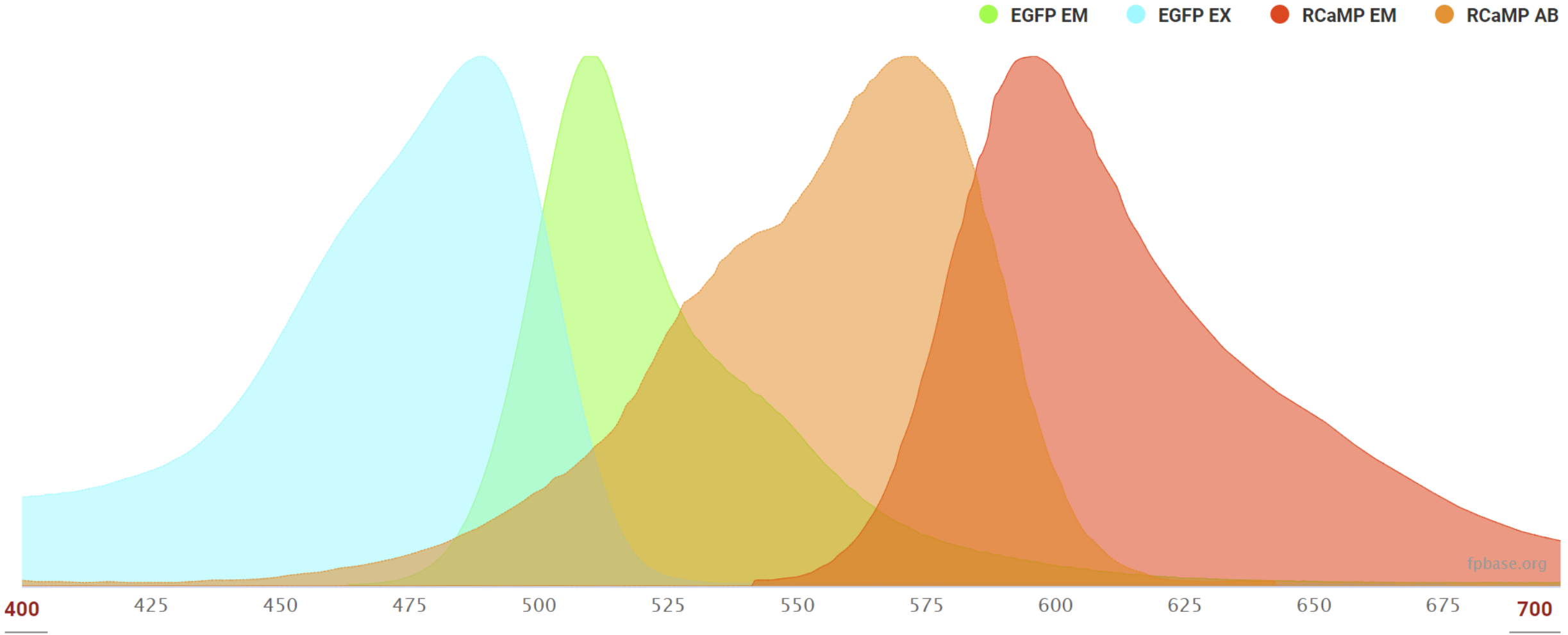
at 350mA, 25°C or 85°C



Luxeon Rebel LED = USD $8

Filtros para fluorescencia

- Necesidad de filtros de colores
- Variedad de especificaciones de desempeño
- Disponibilidad de opciones de calidad y precio
- Hechos a la medida



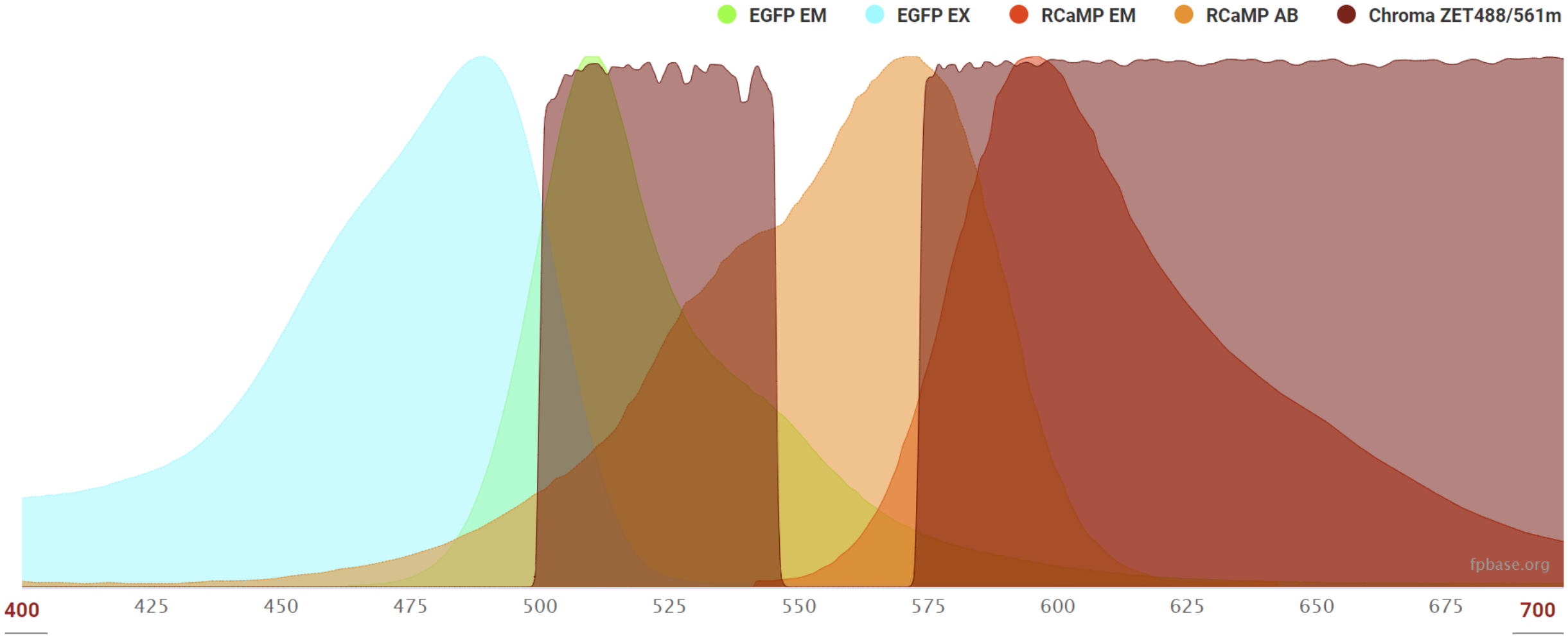
ALL ✶ FLUOROPHORES ✶ FILTERS ✶ LIGHT SOURCES ✶ DETECTORS EFFICIENCY

FLUORESCENT PROTEINS

EGFP (QY: 0.6 / EC: 55,900) 2P EX EM

2P AB EX EM

[Fpbase Spectra]



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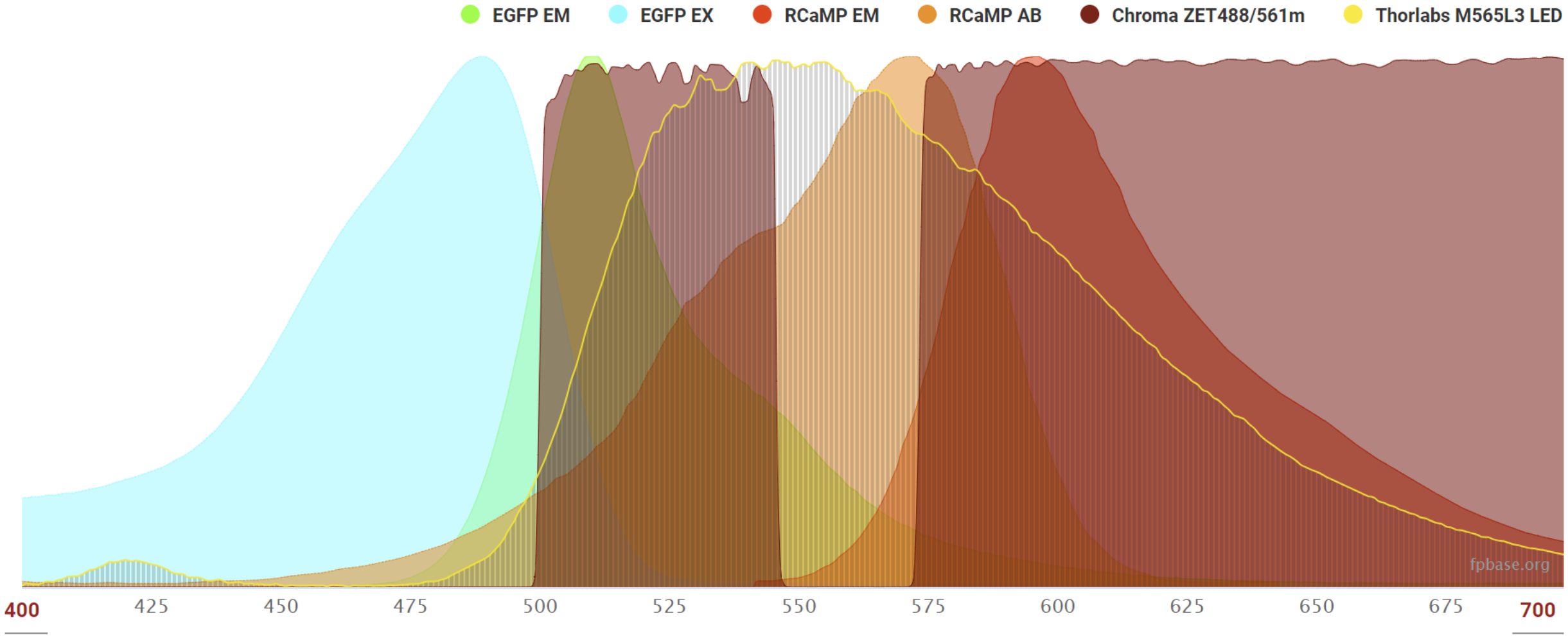

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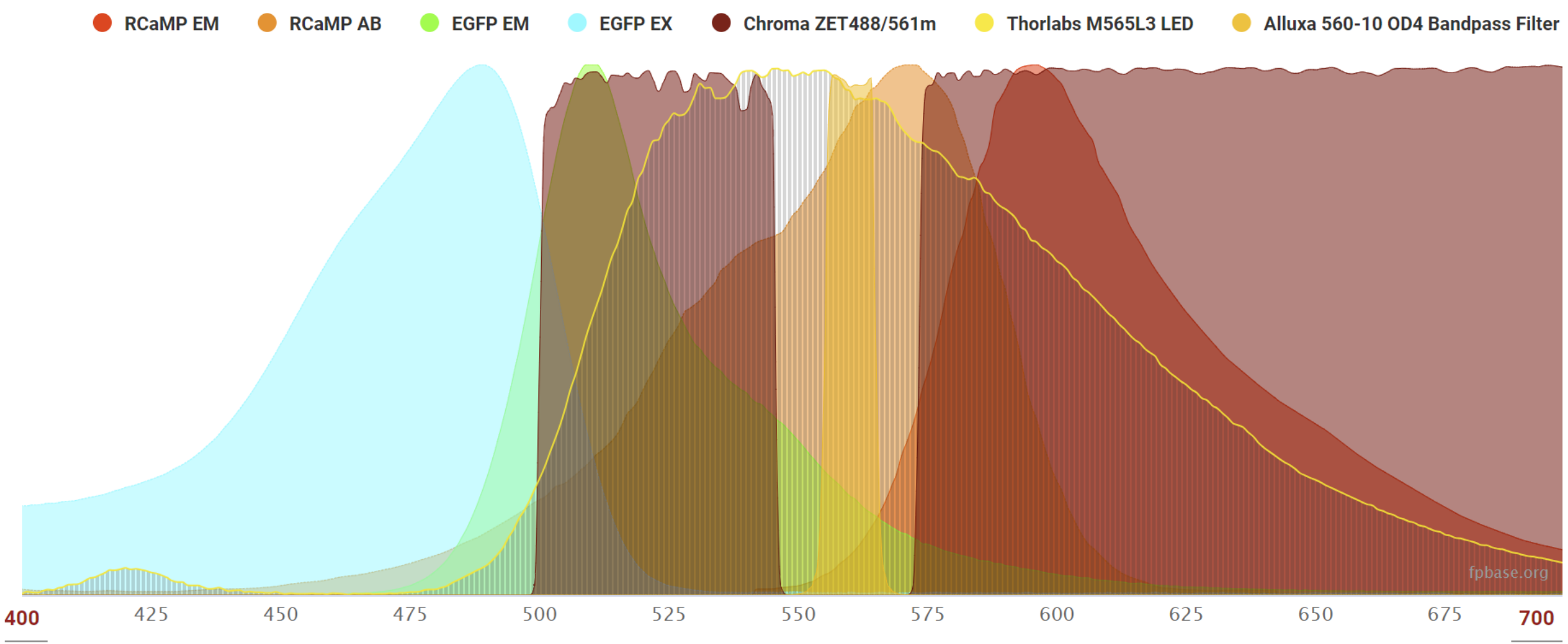

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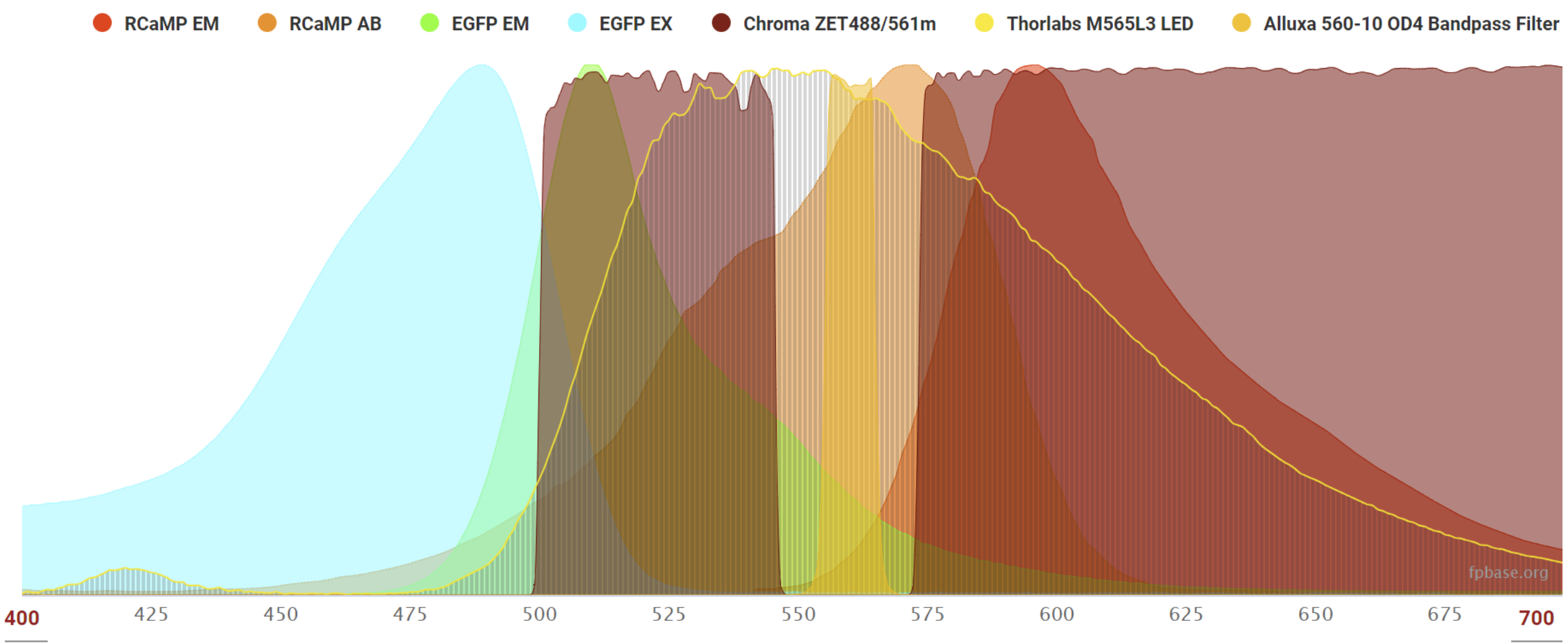

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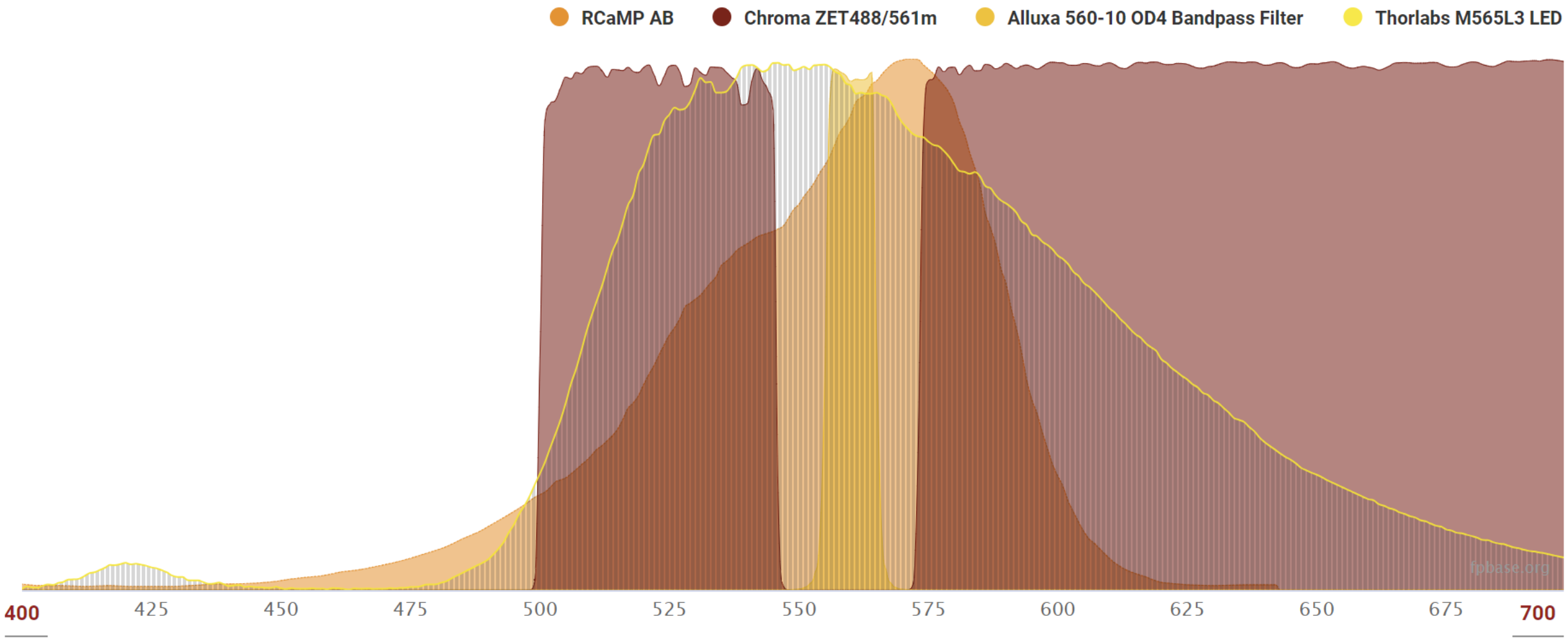

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