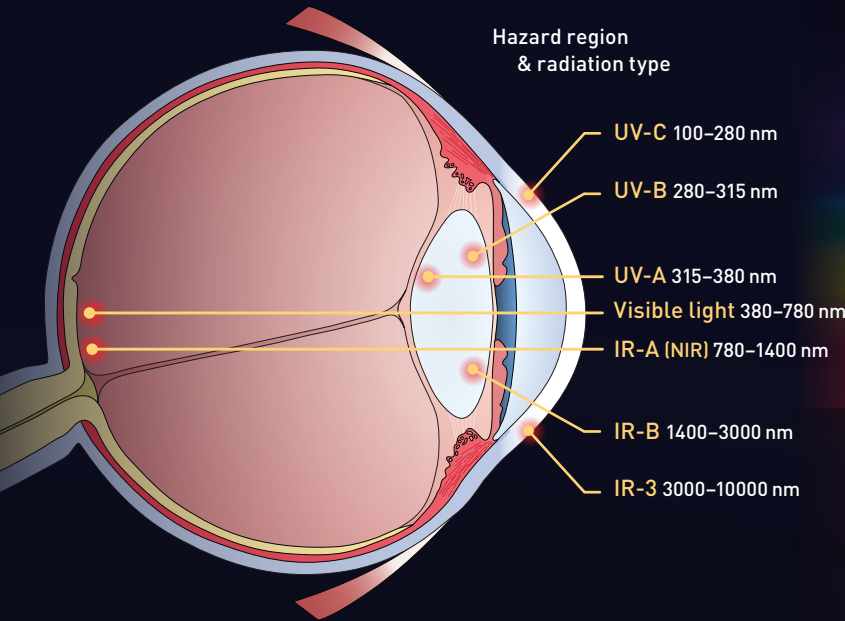


# Lasers & the Human Eye

Accidental exposure to a single direct or reflected laser beam can cause irreversible damage to the human eye—depending on the wavelength, output and exposure duration. Here we look at the potential depth of penetration in the eye for lasers operating at various wavelengths.

## DEPTH OF PENETRATION IN THE HUMAN EYE



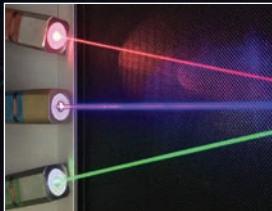
## ELECTROMAGNETIC SPECTRUM



## COMMERCIAL LASER WAVELENGTHS

- ArF 193 nm
- KrF 248 nm
- Nd:YAG (4<sup>th</sup> Harmonic) 266 nm
- Yb:YAG (3<sup>rd</sup> Harmonic) 343 nm
- Nd:YAG (3<sup>rd</sup> Harmonic) 355 nm
- InGaN 405 nm
- Argon 488 nm
- Nd:YAG (2<sup>nd</sup> Harmonic) 532 nm
- HeNe 632.8 nm
- AlGaInP 635 nm
- Ruby 694 nm
- Alexandrite 755 nm
- GaAlAs 785 nm
- Ti:Sapphire 700 – 1000 nm
- InGaAs 980 nm
- Yb:YAG 1030 nm
- Nd:YAG and ND:YVO<sub>4</sub> 1064 nm
- Nd:YAP 1080 nm
- InGaAsP 1550 nm
- Tm Fiber 2080 nm
- Ho Fiber 2100 nm
- Er:YAG 2.94 μm
- ICL 2.7 – 11.2 μm
- QCL 2.63 – 150 μm
- CO<sub>2</sub> 10.6 μm

## LASER POINTER WAVELENGTHS



- Red 630 – 670 nm
- Blue – Violet 405 – 488 nm
- Green 520 – 532 nm

Sources: Lasersafetyindustries.com / edmundoptics.com / Laser pointer image: Pangkakit, Wikipedia, CC BY-SA 3.0 / Eye schematic: Getty Images / Infographic: Alessia Kirkland