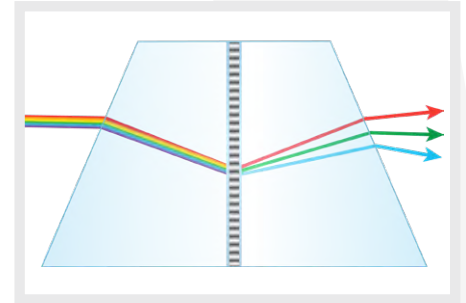


# Advantages of Grisms

*A grism is a compound optical element composed of a GRating and prISM(s). It is a dispersive element that permits an in-line optical layout by cleverly exploiting the differences between gratings and prisms. The prism deflects violet light more than red, while a diffraction grating deflects red more than violet. By combining the two, light can be separated into its components while canceling out the beam deviations caused by each element. Light is dispersed, but the impact to overall direction of beam travel is minimized, reducing impact on the optics of your system.*



## 1 ACHIEVE DISPERSION WITHOUT BEAM DEVIATION

A grism may be designed with one or two prisms such that light at a chosen central wavelength passes straight through. This property can transform a camera into an imaging spectrograph, and is widely used in astronomical telescopes to produce high resolution, spectrally selective images. It may also be integrated into a typical spectrometer layout to avoid turning of the beam, or for spectrally encoded confocal microscopy (SECM). These use cases often employ a prism on both the input and output surfaces to maintain alignment to an optical axis while still achieving dispersion from the grating for spectral selection or imaging.

## 2 GET EXACTLY THE GEOMETRY YOU NEED

A grism gives the optical designer more control over the input and output geometries of the dispersive optical element in their imaging system. We can combine this geometric leveraging with our ability to manufacture non-Littrow or non-symmetric gratings or prism configurations that differ in angle from input to output, and to avoid ghosting.

## 3 INCREASE GRATING DESIGN OPTIONS

In some uses of VPH gratings, the high line frequency or center wavelength required for an application limits the ability to get light into or out of a plano grating element, due to total internal reflection (TIR). The addition of a prism can improve the ability of light to enter or exit the grating volume, opening up design options.

## 4 OPTIMIZE YOUR GRATING EFFICIENCY

In some uses of VPH gratings demanding high dispersion, it is possible to take advantage of “in-glass” design criteria so as to optimize efficiency for either unpolarized light or a single polarization of light.

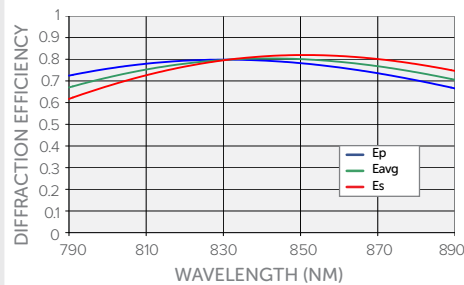
## 5 CORRECT FOR ABERRATIONS

It is possible to utilize a prism with a grating to help correct for the ‘smile’ observed in certain hyperspectral imaging designs. This helps in turn to improve both resolution and throughput.

## Flexible VPH grating designs for diverse applications

At Wasatch Photonics, we use volume phase holographic (VPH) technology to create transmission gratings with high efficiency over broad bandwidths and low polarization dependence – and so durable that they can be easily cleaned and handled. We utilize three distinct design technologies and a wealth of applications knowledge to optimize our gratings to your needs, backed by 15 years of manufacturing experience.

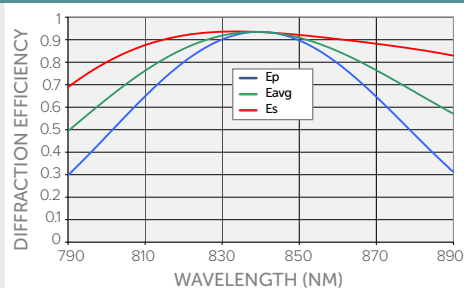
HD Grating 1800 l/mm 840 nm CWL 49.1 deg AOI =AOD



### HIGH DISPERSION & EFFICIENCY HD GRATINGS

- Exclusive, patented design available only from Wasatch Photonics
- Consistently high transmission over bandwidths up to 200 nm
- Low polarization sensitivity, smoothly varying efficiency
- Enables faster, smaller imaging instruments with greater clarity
- Increased full bandwidth throughput for hyperspectral imaging
- Customizable for AOI's >36° and wavelengths 300-2500 nm

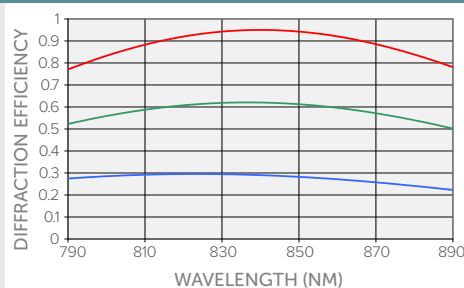
Efficiency vs Wavelength 1800 l/mm 840 nm



### HIGH TRANSMISSION DICKSON GRATINGS

- We are the original patent holders and experts on this design!
- Extremely high transmission over bandwidths of 20-60 nm
- Efficiency is high for both *s*- & *p*-polarization, and varies smoothly
- Ideal for astronomy: supports angle tuning & large dimensions
- Enables high dispersion spectroscopy with low polarization sensitivity
- Customizable for AOI's >36° and wavelengths 300-2500 nm

Efficiency vs Wavelength 1800 l/mm 840 nm



### STANDARD & SINGLE POLARIZATION GRATINGS

- Capable of exceptionally high transmission at a single polarization
- Can also be designed as broad bandwidth & polarization insensitive
- Can be manufactured in dimensions up to 300 mm or larger
- Good for astronomy, hyperspectral imaging, and laser filtering
- Ideal for laser pulse compression: minimal beam distortion & scatter
- Customizable for many AOI's and wavelengths 300-2500 nm

## OEM & CUSTOM GRATING DESIGN

At Wasatch Photonics, we apply our deep understanding of optical design to support our R&D and OEM customers in creating smaller, more sensitive, cost-effective instruments for a diverse range of applications. With over 15 years of manufacturing experience and extensive in-house processing & metrology capabilities, we have the resources to provide you with high quality, premier performance gratings customized and AR-coated to your specific needs. Contact us today to get started!