FOCASおよびMOIRCS用グリズム
Grisms for FOCAS and MOIRCS

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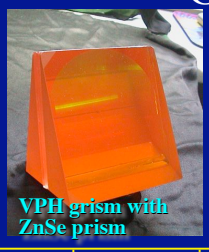
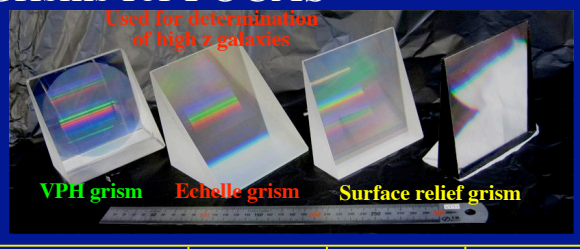
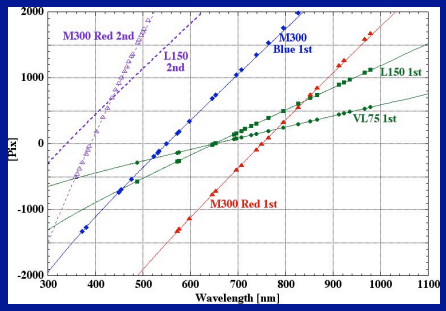
Grisms for FOCAS

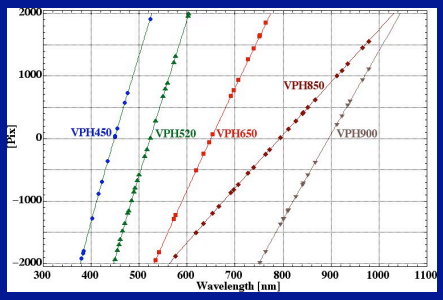




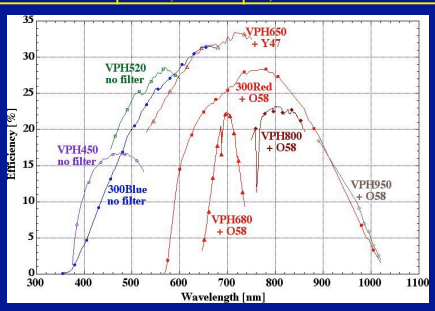
Grism name	[Groovs/mm]	Prism (deg., material)	1st order	2nd order	Grating	Assy
Very low	75	5.75, S-FSL5	284@650 nm		RGL	
Low	150	11.55, S-FSL5	571@650 nm	714@400nm	RGL	
Middle blue	300	19.7, S-FSL5	1,000@550 nm		Jovin Yvon	
Middle red	300	26.1, S-BSL7	1,426@750 nm	1,574@390nm	RGL	
Echelle	175	45.0, S-FSL5		2,498@972nm	RGL	
VPH450	1,000	20, PBM3 ×2	3,104@450 nm		JWU	Ebizuka
VPH520	990	20, S-BAH28 ×2	3,402@520 nm		JWU	Ebizuka
VPH650	665	20, PBM3 ×2	2,772@650 nm		Ralcon	Kadomi Opt.
VPH850	364	16, S-BSL7 ×2	1,655@800 nm		Ebizuka	Ebizuka
VPH900	560	20, S-BAH28 ×2	2,938@900 nm		JWU	Ebizuka
VPH680	1,572	20, ZnSe ×2	8,195@680 nm		JWU	Kogakugiken
VPH800	1,318	20, ZnSe ×2	7,365@800 nm		Ralcon	Topcon
VPH950	1,111	20, ZnSe ×2	6,944@950 nm		Ralcon	Topcon



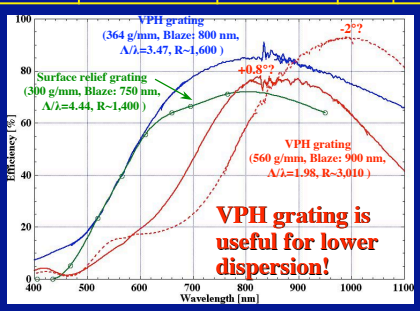
Dispersion of surface relief grisms



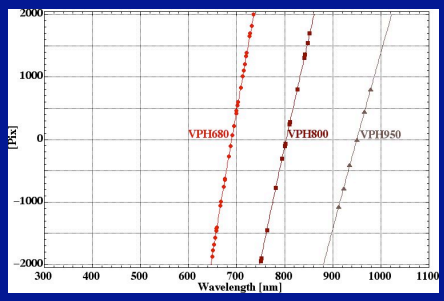
Dispersion of VPH grisms with glass prisms



Relative efficiencies of grisms with Subaru Telescope and FOCAS

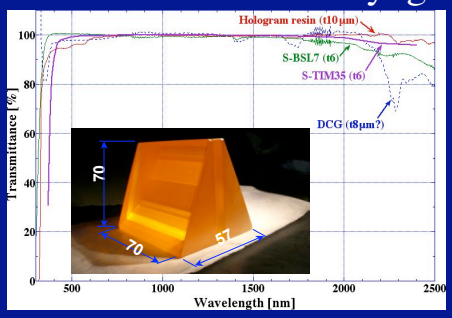


Diffraction efficiencies of new VPH grisms

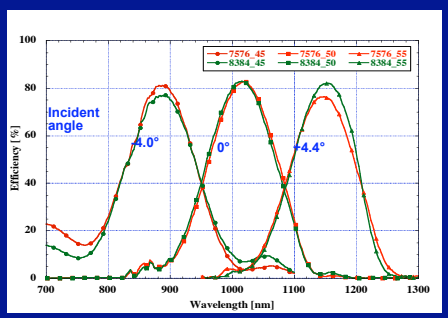


Dispersion of VPH grisms with ZnSe prisms

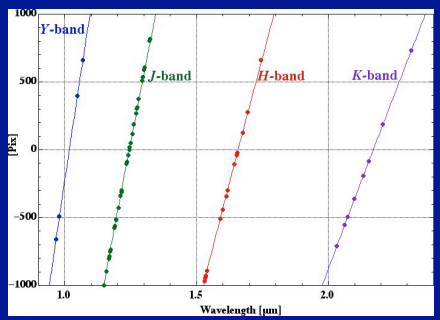
Cryogenic VPH Grisms for MOICR (Ebizuka et. al., PASJ, 63, 2011)



Transmittance of materials for cryogenic VPH grisms

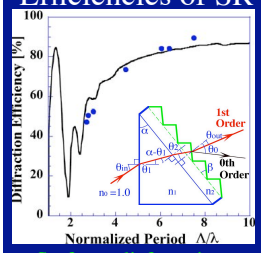


Diffraction efficiencies of Y band VPH grating

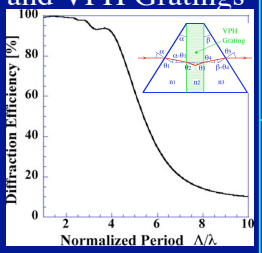


Dispersion of VPH grisms with ZnSe Prisms

Efficiencies of SR and VPH Gratings



Surface relief grating: Efficiency decreases steeply below 4 Λ/λ.



VPH (Volume Phase Holographic) grating (Δn ~ 0.02): Efficiency increase up to 100% below 4 Λ/λ.

(Oka et. al., SPIE 5005, 2003)

Grism name	[Groovs/mm]	Prism (deg., material)	1st order	Peak Efficiency [%]	VPH grating
Y band	1,025	20.0, ZnSe ×2	3,150@1,025 nm	78, 77	Soma opt.
J band	819	19.8, ZnSe ×2	3,000@1,250 nm	73, 82	Tohoku Univ.
H band	614	20.0, ZnSe ×2	2,950@1,650 nm	73, 70	Tohoku Univ.
K band	431	18.5, ZnSe ×2	2,640@2,200 nm	77, 80	JWU

Conclusions

- The second diffraction order of FOCAS echelle grism is used for long slit and multi-slit mode.
- VPH gratings are useful not only for high dispersion applications but also for lower dispersion applications.
- Hologram resin is transparent at K band.