

1. what is grating?

A **grating** is any regularly spaced collection of essentially identical, parallel, elongated elements.

2. what is the difference between diffraction and dispersion?

Diffraction is where light spreads out after passing through a gap or going around an obstacle, and can lead to interference patterns. And dispersion is the process by which **light of different frequencies**, or colors, refracts by different amounts.

3. what is essential condition for diffraction of light?

The essential condition for diffraction of light is given by, • **The wavelength of the light should always be comparable to the size of the object.**

4. advantage of reflective grating over transmission grating?

Transmission gratings are less effective if they consist of absorptive grooves. Thus, transmission gratings make sense to around 1000 lines/mm. There are also holographical transmission gratings, where the spatial variation is not seen in amplitude but in phase. Those gratings show - of course - a different behavior in its spectrum, but have higher light throughput/efficiency.

Reflective gratings, on the other hand, reflect all light and modulate only the "not-wanted" light. Thus they have better efficiency and - as said already - maintain the polarization in a better way.

5. difference between diffraction and interference?

Diffraction is the result of light propagation from distinct part of the same wavefront. While interference is the result of the interaction of light coming from two separate wavefronts. The width of the fringes in case of diffraction is not equal while the fringe width in case of interference is equal.

6.