

FINAL

You want to measure the wavelength of light λ with a precision $\Delta\lambda$ using a grating. Roughly, what size grating will be required to do it? Look for a quick and simple answer.

Consider a harmonic oscillator – a particle of mass m whose potential energy is described as $U(x) = Kx^2/2 = m\omega_0^2 x^2/2$. Using uncertainty principle, find the minimum allowable value of energy.

Consider two materials – GaAs and ZnSe. Using bond theory make predictions about their properties – which has large bandgap, large dielectric constant, larger mobility, and larger refractive index?