Title:	Diffraction of light by acoustic waves in liquids
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Abstract:	For the acusto-optic interactions in liquids, an equation for the diffraction light intensity was obtained in terms of Klein Cook parameter *Q*. With optimized parameters for *Q*, incident light wave length of _=633 nm, sound wave length of _=0.1 mm, acusto-optic interaction length *L*=0.1 m, and refractive index of the liquid in the range of 1 to 2, the existence of ideal Raman-Nath and Bragg diffractions were investigated in terms of phase delay and incident angle. The ideal Raman-Nath diffraction slightly deviated when the Klein Cook parameter was increased from 0 to 1 for low phase delay values and for large phase delay, the characteristics of the Bessel function disappeared. Higher value of Klein Cook parameter gave Bragg diffraction and ideal Bragg diffraction was obtained for *Q*~100. A slight variation of the incident angle from Bragg angle had a considerable effect on Bragg diffraction pattern. Klein Cook parameter with the change of acoustic wave frequency was investigated for liquids with refractive index in the range1.3-1.7 and their diffraction patterns were compared with practically applicable acusto-optic crystals. For acusto-optic diffractions in liquids, sound velocity plays an important role in Bragg regime with *Q* increasing with increasing acoustic frequency. As acoustic wave frequency exceeded 10 MHz most of the liquids reached Bragg regime before these crystals.