

# Optical second harmonic generation of oblique incident light in transmission in potassium dihydrogen phosphate crystal

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(Received 9 June 1993; accepted for publication 3 December 1993)

The intensity of the transmitted inhomogeneous and homogeneous second harmonic light generated from potassium dihydrogen phosphate (KDP) crystals immersed in an optically denser fluid 1-bromonaphthalene have been observed as a function of incident angle  $\theta_i$  of the fundamental beam of a mode locked neodymium glass laser. The laser pulses have the polarization in  $[1\bar{1}0]$  direction with respect to the KDP crystallographic axes. The transmitted second harmonic generation in the neighborhood of critical angle of incidence is performed. The phase matching of second harmonic generation in transmission is demonstrated. Furthermore, we observed that no transmitted inhomogeneous and homogeneous second harmonic light at normal incident angle when the nonlinear polarization  $P^{NLS}(2\omega)$  lies in the direction  $[001]$  along the crystal face normal. The experimental result agrees well with the Bloembergen and Pershan theory.