

USE OF WAVELET TRANSFORM FOR SIZING PARTICLE

Siriwat Soontaranon and Joewono Widjaja

*School of Laser Technology and Photonics, Institute of Science,
Suranaree University of Technology, Nakhon Ratchasima 30000 Thailand*

ABSTRACT: A new method for sizing particles from in-line Fraunhofer holograms by using wavelet transform is proposed. The amplitude transmittance of the holograms is a modulation of a chirp signal with an envelope function whose minima is proportionally equal to the product of the particle size and the spatial frequency of the chirp function. By wavelet transforming the hologram and taking an absolute value of its resultant transformation, the spatial frequency at the minima positions can be obtained. The particle size which is merely a function of this frequency can then be calculated. Feasibility study of the proposed method is done by conducting simulation and experimental verifications for line object.

KEYWORDS: Fraunhofer holography, particle sizing, wavelet transform