FAST SURFACE METROLOGY USING WAVELENGTH SCANNING AND DISPERSIVE WHITE LIGHT INTERFEROMETRY

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ABSTRACT

A new optical interferometery technique is to measure surfaces at the micro and nano-scales based on the wavelength dispersive multiplexing technique with high speed imposition. Interferometery is an important technique which can provide high resolution measurement of surface topography. In this paper an interferometer with a dispersive probe, sourced by a super-luminescent diode is considered. One important parameter for the effective operation of such an interferometer is the fringe visibility. In this paper the fringe visibility of the first order diffracted light is compared with the reflected (zero order) light from the grating. This is done by modulating the reference beam of the interferometer and recording the fringe modulation on a CCD array. The fringe visibility formed from the first order beam was found to be lower than the zero order, resulting from the efficiency of the diffraction grating.

Keywords surface metrology, interferometer, phase shifting, dispersive probing.