University of Huddersfield Repository

Hassan, Mothana A., Jiang, Xiang and Haydn, Martin

Fast surface metrology using wavelength scanning and dispersive white light interferometry

Original Citation


This version is available at http://eprints.hud.ac.uk/id/eprint/13484/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
FAST SURFACE METROLOGY USING WAVELENGTH SCANNING AND DISPERSIVE WHITE LIGHT INTERFEROMETRY

Mothana. A. Hassan, Xiangqian Jiang, Haydn Martin

University of Huddersfield, Queensgate, Huddersfield HD1 3DH, UK

ABSTRACT

A new optical interferometry technique is to measure surfaces at the micro and nano-scales based on the wavelength dispersive multiplexing technique with high speed imposition. Interferometry 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.