## ION FIGURING OF LIGHT-WEIGHTED ASPHERICAL MIRRORS

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*(Received on April 24, 2008)*

*High accuracy surface figuring of light-weighted aspherical optical mirrors using conventional polishingtechniques becomes increasingly difficult with size as problems such as tool footprint, edge turndown become severe. Hence, a non-contact polishing process called "ion figuring" was evolved where in material removal is done by energetic ion bombardment. In this paper the development of an ion figuring system based on ion beam sputtering process shall be described and demonstrated with a few examples.*

*Key Words: Ion figuring, light-weighted mirror, non-contact polishing, aspheric surface*

## PERFORMANCE ANALYSIS OF DELAY ISSUE IN DIFFERENTIAL OUTPUT-PORTS CHOOSING PROBABILITY SCHEME APPLIED OPTICAL BURST SWITCHING NETWORK

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*(Received on July 05, 2008)*

*Differential output-ports choosing probability (DOCP) scheme is a novel traffic outputting model for core router in optical burst switching (OBS) network. In this paper, the performance of delay issue in DOCP scheme applied OBS network has been proposed and simulated. In optical buffer equipped OBS core router, the average waiting time for buffered traffic and the total traffic queueing length in core router have been given out and discussed. Several results indicate that, under the same load condition, the two parameters will change along with the changeable ports choosing probability and the ratio between different length bursts.*

*Keywords: optical burst switching; differential output-ports choosing probability; delay; optical buffer*

## PRIMARY ABERRATIONS OF EMBEDDED DIFFRACTIVE LENS

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(Received on July 11, 2008)

*An embedded diffractive lens can be formed by two diffractive lenses on finite substrates with their matching diffractive profiles in contact. An analytical treatment pertinent to the study of primary aberrational characteristics of an embedded diffractive lens is presented. We take resort to the well known Sweatt Model within the framework of thin lens aberration theory for tackling the case of unequal object and image spaces. The variations of the primary aberrations with various design parameters viz. substrate curvature, optical characteristics of the substrates and the conjugate positions are illustrated.*

## A SINGLE ELEMENT BIREFRINGENCE-SENSITIVE INTERFEROMETER

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*(Received on September 25, 2008)*

*It is shown that a cube beam splitter can serve as a single-element birefringence-sensitive interferometer. The polarization-masked beam splitter is oriented as in Gate's Interferometer i.e., the beam splitting interface is parallel to the incident plane beam. The output consists of a pair of collinearly propagating orthogonally polarized beams which intercepts the birefringent sample placed before a linear polarizer. It is interesting to note that in the proposed method, measurement of birefringence remains unaffected by any phase non-uniformity that might be present in the sample.*

## MEASUREMENT OF MEMBRANE THICKNESS OF MEMS STRUCTURES BY OPTICAL TRANSMISSION

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*(Received on October 31, 2008)*

*This paper presents a simple, fast, and nondestructive technique for measurement of membrane thickness of MEMS structures using optical transmission of 1.31 μm wavelength IR light. The method involves the exposer of membrane from one side using IR source and detection of intensity of transmitted light from other side. Optical transmitivity vs membrane thickness obtained from SEM was plotted for a set of micromachined structures to generate the calibration graph. This can be used to find the thickness of an unknown membrane structure by measuring its optical transmitivity. A theoretical estimation has also been performed and compared with the experimental data.*