

Fabrication of advanced optics elements by using a direct laser lithography

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Key words : direct laser lithography, advanced optics elements, computer generated hologram

1.

DVD (pickup) /
 NA(Numeral Aperture)가
 (hybrid lens) 가

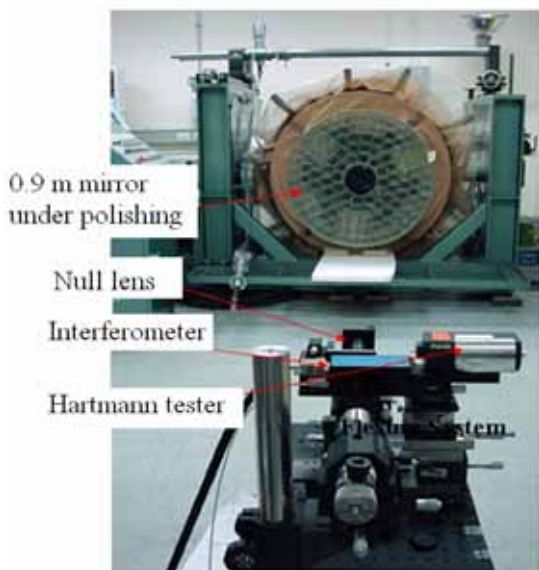


Fig. 1. 900-mm primary mirror

(Fig. 1) / 가
 Null CGH(computer generated hologram)
 [1].

300mm 100nm
 (reference wafer)가 [2]. 가
 300mm nm

DOE(diffractive optics element),

2. Direct laser lithographic system

Fig. 2 direct laser lithographic system
 Fig. 2 Ar+

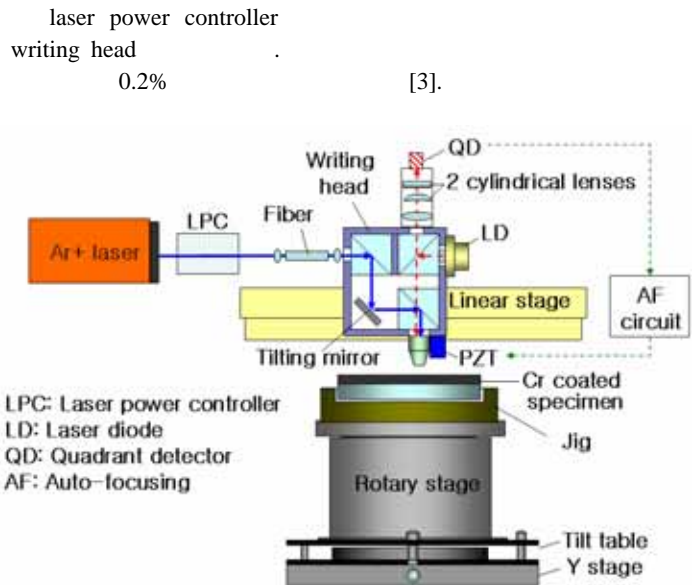


Fig. 2. Configuration of the direct laser lithographic system

Writing head 100
 (auto-focusing)
 Fig 3
 astigmatism
 400mm 1um (PV) 가
 150Hz z
 PZT

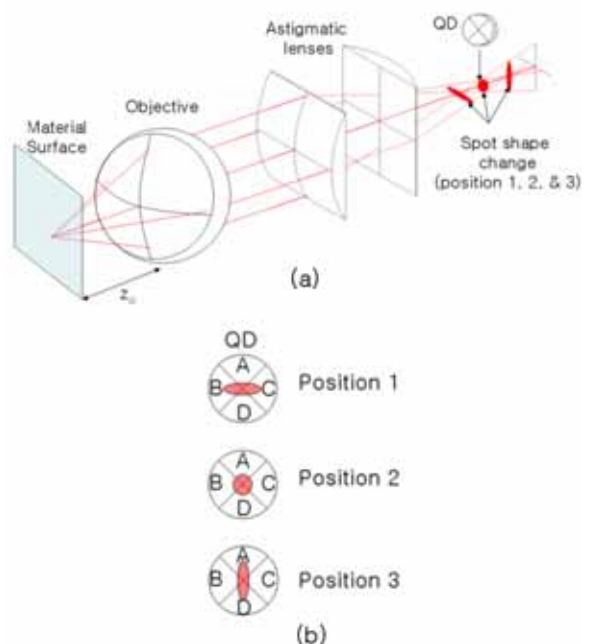


Fig. 3. Auto-focusing mechanism

rotary stage
 direct laser lithographic system
 direct laser lithographic system

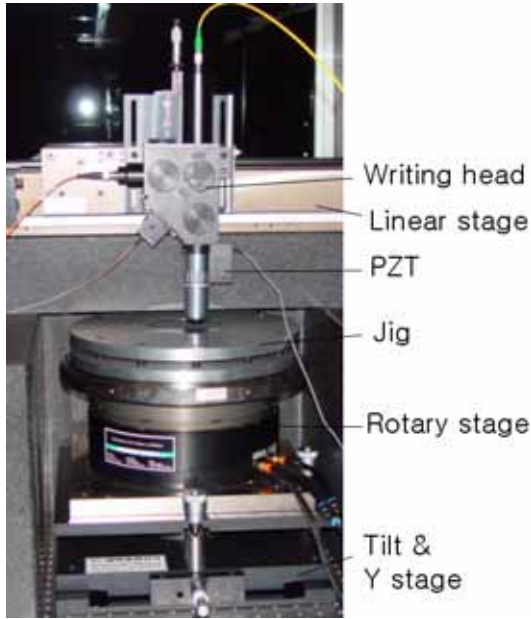


Fig. 4. Photographic view of the direct laser lithographic system

3.

direct laser lithographic system
 Fig. 5 100mm
 3um (line width), 7um
 (circular grating) Fig. 6 Fizeau
 collimator 100mm
 (zone plate) Fig. 7

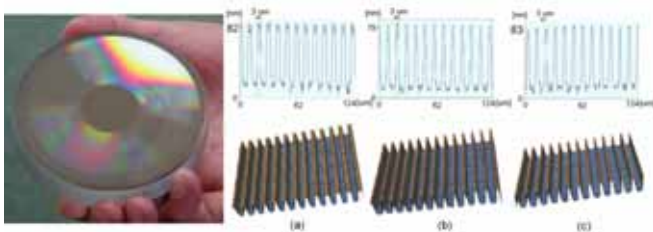


Fig. 5. 100mm circular grating

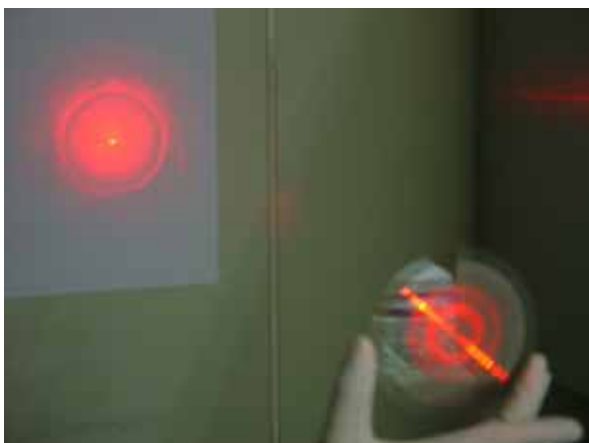


Fig. 6. 100mm zone plate

300mm

300mm
 100nm
 100nm
 Fig 8
 Fig

9
 [2].

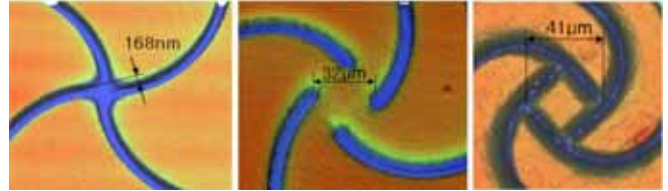


Fig. 7. Some spiral patterns

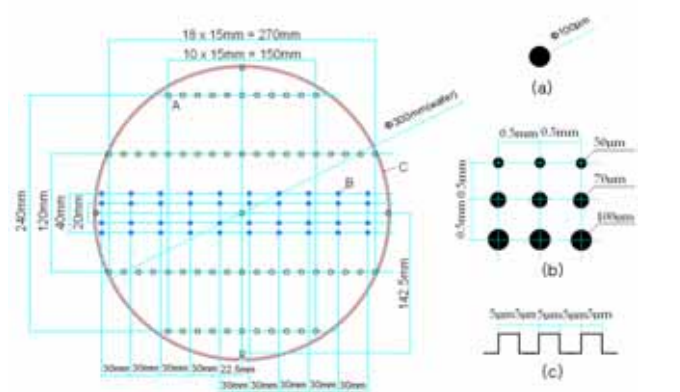


Fig. 8. 300mm Reference wafer pattern

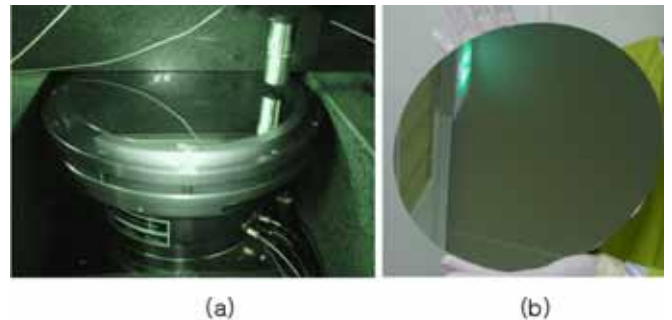


Fig. 9. Photographic view of the fabricated reference wafer whose diameter is 300mm

4.

direct laser lithography

100mm CGH,
 300mm

360mm

100nm

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