Fabrication of deformable mirror with polyimide substrate

by

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(Received on Sep. 29, 2004 & accepted on Jan. 25, 2005)

Abstract

A deformable mirror is a device for controlling the wavefront and beam shape by adjusting its surface shape. This device has been introduced into an astronomical telescope and a femtosecond laser. Conventional deformable mirrors are mechanically and thermally unstable due to their membranous structures. We fabricated a new type of deformable mirror with a polyimide substrate. Its structure is supported with aluminum rods to prevent instability. The device was fabricated by means of silicon processing and electronic packaging technology. We obtained the following performance characteristics: a maximum surface displacement of 10 μm and a minimum response time of 30 s.

Keywords: deformable mirror, laser, wavefront, polyimide

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