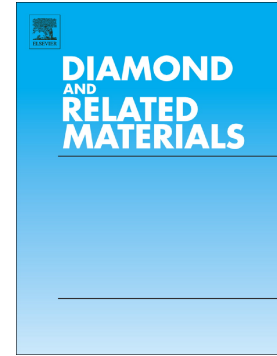


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Fabrication of diamond microlens arrays for monolithic imaging homogenizer

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Abstract

Compact microlens arrays (MLAs) have been fabricated on diamond substrates using thermal reflow and dry etching techniques for laser beam homogenization. Firstly, close-packed hexagonal photoresist pillars developed by photolithography were reflowed upon heat plate to form MLAs mask on one side of diamond substrate. Secondly, the mask pattern was transferred into substrate with inductively coupled plasma etching to form closely arranged diamond MLAs. Then, the same processes were utilized to fabricate MLAs on the other side of diamond substrate. The MLAs on both sides of substrate are aligned. Thirdly, the obtained diamond MLAs demonstrate compact arrangement, well-uniformity, and good imaging performance with projection experiment. Eventually, the double-sides MLAs-patterned diamond substrate was utilized as monolithic imaging homogenizer, exhibiting a good homogenizing performance.

1. Introduction

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