Direct formation of periodic parallel microgrooves on glass using CO2 laser irradiation

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ABSTRACT

Direct laser structuring is an interesting candidate for a rapid, large area and maskless method for formation of various microstructures pattern on glass substrates without the use of mold. Before the desired pattern shape and scale could be obtained, the relationship between the type of laser used, substrate material and laser irradiation parameters must be understood. In this work, direct formation of periodic parallel microgrooves on optical glass substrate using CO2 laser irradiation is proposed. The effect of the laser scanning speed and initial glass temperature to the formation of periodic micro-grooves with various width and height was investigated. As a result, smooth and crack-free parallel microgrooves were successfully fabricated on KPSFN214-P optical glass with dimension ranging from 287μm to 456μm in width dimension and 4.2μm to 11.9μm in height.

KEYWORDS: laser beam effects, microfabrication

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