

Nd –YAG Laser Carving of Flow-Field Channels in Polymer Graphite Composite Bi-polar Plates

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ABSTRACT

The present study is an attempt at developing a non-contact technique of machining flow-field channels in polymer graphite composite bi-polar plates for the purpose of prototyping miniature fuel cells. It was found that a pulsed Nd:YAG laser was capable of generating flow-field channels of acceptable quality. A design of experiment (DOE) methodology was applied to efficiently narrow down the most important processing parameters to this end. With such a non-contact technique, various flow-field designs can be prototyped on thin bi-polar plates before a commitment is made at mass production.

Keywords: polymer graphite composite and laser machining