

## **FOCUSING EFFECTS OF MULTI FOCAL LENGTH LENS ON ALUMINUM BY IR LONG PULSED Nd:YAG LASER**

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### **ABSTRACT**

Lasers are very important especially in research and industries. They offer directionality, high intensity, non-contact process, cleanliness and high precision. In this report, the researcher aims to investigate the focusing effects of long pulsed IR laser on aluminum target using wide range of lenses. A Nd:YAG laser was used as an energy source. It has wavelength of 1064 nm with pulse duration 4 ns. The pulse energy delivered is 290 mJ at frequency 1 Hz and peak power of 72.5 MW. Wide ranges of biconvex lens were used to focus the laser beam on an aluminum target. A video camera was used to visualize and record the event of laser-aluminum interaction. The interaction regions on the aluminum were magnified and visualized using metallurgical microscope and then analyzed with the aid of image processing system. The image recorded during laser-aluminum interaction shows the formation of aluminum plasma plume. Experimental results show that the hole size of the aluminum is increasing as the lens focal length gets longer.

*Keywords: laser; plasma; focus; aluminum, lens*

<http://journal.masshp.net/wp-content/uploads/Journal/2012/Ahmad%20Hadi%20Ali%2011-19.pdf>

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