Abstract

In this thesis, five design of Nitrogen laser at atmospheric pressure are design experimentally with Blumlein circuit work as pulse forming network. Printed circuit Board is used instead of charge and discharge capacitors. Spark gap switch with different designs is used.

The distance of spark gap separation, laser channel distance and total capacitance of One Stage Blumlein circuit, Two Stage Blumlein circuit, Three Stage Blumlein circuit, Four Stage Blumlein circuit and Five Stage Blumlein circuit respectively is (9mm, 4mm) with total capacitance 6.44nF,(9mm,3mm,4.5mm)totalcapacitanceis7.42nF(8mm,5mm,3.5mm,5 mm) and total capacitance 7.61nF,(7mm,5mm,3mm,1.5mm,5.5mm), total capacitance which is 10.1nF (9mm,8mm,5mm,3.4mm,1.5mm,5.5mm) total capacitance 11.2nF.

Five Stage Blumlein circuit is chosen as best design. Nitrogen laser is implemented at flow rate (3,6,10)NL/min produce UV laser 337.1nm with pulse duration of OSBC 8ns, TSBC 6.4ns, TSBC 5.6ns, FSBC 4.6, FSBC 3.2ns. The electrical performance of Blumlein circuit is explained by using ORCAD program. The obtained result was as number of stage increase the voltage required of discharge decrease.