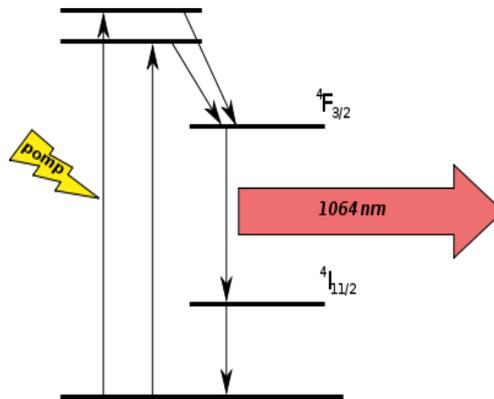
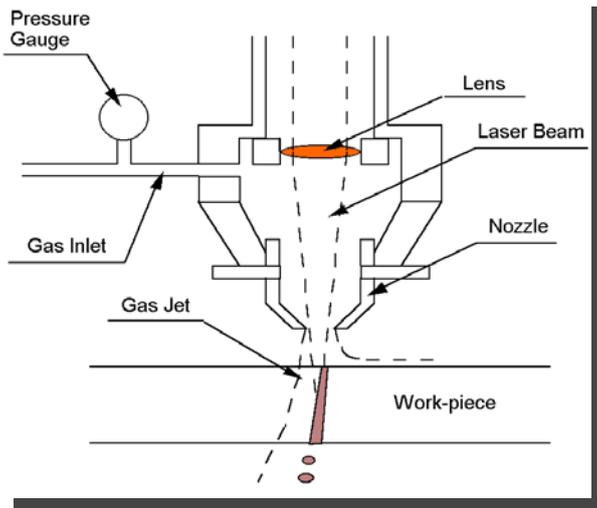


## INTRODUCTION FOR YSD YAG LASER

### 1. What is YAG LASER?

**LASER:** Light Amplification by Stimulated Emission of Radiation.

**Nd:YAG :** Neodymium-doped Yttrium Aluminium Garnet; **Nd:Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>**



[http://en.wikipedia.org/wiki/Nd:YAG\\_laser](http://en.wikipedia.org/wiki/Nd:YAG_laser)

Laser operation of Nd:YAG was first demonstrated by J. E. Geusic at Bell Laboratories in 1964.

**Nd:YAG** is a crystal that is used as a lasing medium for solid-state lasers. The dopant, triply ionized neodymium, Nd(III), typically replaces a small fraction (1%) of the yttrium ions in the host crystal structure of the yttrium aluminium garnet (YAG), since the two ions are of similar size. It is the neodymium ion which provides the lasing activity in the crystal, in the same fashion as red chromium ion in ruby lasers.

**Nd:YAG lasers** are optically pumped using a flashtube or laser diodes. These are one of the most common types of laser, and are used for many different applications. Nd:YAG lasers typically emit light with a wavelength of 1064 nm, in the infrared. Nd:YAG lasers operate in both pulsed and continuous mode. Pulsed Nd:YAG lasers are typically operated in the so-called Q-switching mode: An optical switch is inserted in the laser cavity waiting for a maximum population inversion in the neodymium ions before it opens. Then the light wave can run through the cavity, depopulating the excited laser medium at maximum population inversion. In this Q-switched mode, output powers of 250 megawatts and pulse durations of 10 to 25 nanoseconds have been achieved. The high-intensity pulses may be efficiently frequency doubled to generate laser light at 532 nm, or higher harmonics at 355 and 266 nm.

### 2. For which industry? (Application for YAG Laser)

Sheet metal fabrication, Machinery, hardware, Auto parts, electrical cabinet, Kitchen ware, elevator, craft gift, toys, metal art, lighting fixture, advertising, nameplate, glass frame, Jewelry, metal pipe processing, marking/lettering, digital products, electrical components etc

### 3. Cutting material for YAG Laser?

Carbon Steel, Titanium, Stainless Steel, Tungsten, Alloy Steel  
Spring Steel, Aluminum, Copper, Galvanized Sheet, Brass