

Investigation of a Solid State Dye Laser.

Investigation of solid state dye lasers by modifying the lasing medium allows us to determine characteristics of specific hosting mediums. The hosting mediums employed are poly(methyl) methacrylate, polyester, and polyurethane. Doped with Rhodamine 6G, an organic dye, the plastics mediums – molded and laboriously polished in the form of cylindrical disks - are optically excited by a frequency doubled Nd: YAG laser. The lasing medium (disk) is held within a unique drive system. The disk is placed in an air bearing mount. Orbital motion (of disk) occurs by allowing directional air flow through the bottom of mount. The system is driven longitudinally by a frequency generator. The drive system extends the lifetime of plastics. The light output is measured to determine various characteristics – threshold of lasing, material durability, power output, bandwidth, and tuning range. Dye molarity is varied to determine optimal medium excitation.