

## Third Laureate Applied Research

26<sup>th</sup> Khwarizmi International Award (KIA)



- **Project Title:** Prostate Surgery laser
- **Executive Organizations:** Iranian National center for laser science and Technology.
- **Representative:** Bazyar, hossein
- **Collaborators:** Modiri, Ali – Nazemi, Siamak – Mirnezami, S. Abbas – Bagherzadeh, Seyed Morteza – Rajaei Jafarabadi, Mahdi – Aghaie, Mohammad – Moslehian, Mojtaba – Ghaedzadeh, Amir – Naghibzadeh, Amir – Majidof, Mohammad Mahdi – Esmaeili Erami, Masoud – Ghasemi, Seyed Hamed – Bagherian, Saeed.
- **Collaborators Organization:** Nasr Pardazan koosha Co.

### ● Abstract:

This project aimed at designing and manufacturing a frequency-doubled solid state laser for urologic surgeries. The main plan is divided into three sub projects: laser resonator, which is the main part of the whole project, mechanics and electronics. All procedure of producing the laser e.g. simulations, cavity design (including pumping module and opto-mechanics) and stability optimization were carried out by the team. Mechanics of the system is comprised of design and develop of the mechanical structure and package of the machine and also cooling system. The machine has a user friendly control interface. Its smart self-control design guarantees accurate power stability as well as safety of both the system and the user. Adjustable output power of (-30 80) Watt at 532 nanometer wavelength is delivered in the form of pulses with repetition rated of (15- 10) KHz and (150-100) nanosecond duration, requiring 220 VAC, single phase 25A electrical input

