

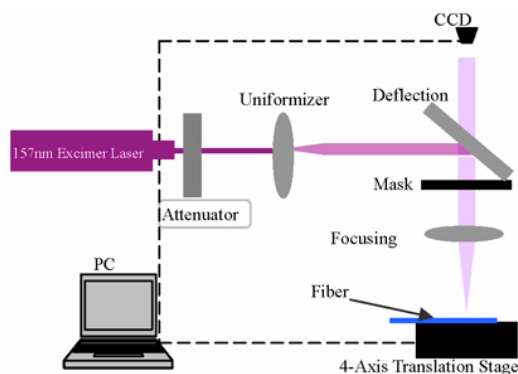
Excimer Lasers

The excimer (exciplex) laser is the main component of most region specific delicate surgeries of the modern day. Lasik eye surgery is the most common operation affiliated with the excited dimmer. The excimer laser is an ultra-violet beam which can generate enough focused energy to separate the surface bonds in organic materials. I.E: the central cornea of the eye. In turn allowing for a very precise incision without damaging or burning the delicate regions (cornea). This is useful because damage to regions like the eye may permanently effect a persons day to day life.

Excimer laser are used for a variety of delicate surgeries, most commonly the eye. It can also be used in the manufacturing of semiconductors. Typically a combination of inert and reactive gases are combined to initiated a reaction. Then they are electrically stimulated to further create a pseudo-molecule commonly refereed to as a excimer. The excimer created is a noble gas which is always in an electrically stimulated state forming laser light in the ultra-violet range. This ultra-violet light from the excimer is easily absorbed into biological matter and/or organic compounds. This excimer does not hurt the targeted area at all, it essentially disintegrates the bonds threwh a very controlled process referred to as ablation or vaporization. This allows for the laser to be able to remove very small portion/layers of the surface, hence its important role during delicate surgeries like Lasik.

Lasik Lasers have been around for a for a few decades. The first was created in moscow in 1970, it used an xenon beam which was excited by a electron beam enabling the generation of a 172 nm wavelength ultra-violet beam. Improvements are consistently being made due to safety and quality concerns. Most excimer lasers today make use of the excited noble gases which were previously described because it is the most recent/effective way to generate the cold UV wave beam.

There are unique factors which determine effectiveness per individual in these delicate surgeries. In Lasik, a major discussion



point is the size of pupil. Size can help determine how effective a Lasik operation will be. As the corrective surgeries evolve, physicians are now able to use the excimer laser to accommodate to each patients unique optic components. Excimer laser accuracy is within fractions of mm's. This precision allows for the ideal treatment zone and a more effective surgery; opening the door to a larger patient chiental.

A custom wavefront system works directly with the excimer laser, taking a 3D measurement of the how each eye processes images. It guides the beam in the reshaping of the frontal cornea. This combination outputs the ideal precision/ accuracy attainable to date.

Specific excimer generation sequence and focus of the excimer beam are more easily explained in detail during the presentation using pictures, any questions also will be answered at the end of the presentation.

Sources

<http://www.lasikplus.com/lasik-plus/pupil-size.asp>

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