

## Glossary

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| Catalysts             | Carbon monoxide (CO) oxidation catalysts for use in carbon dioxide (CO <sub>2</sub> ) laser applications to increase the lifetime of the laser gas load  |
| Continuous tunability | The ability of a CO <sub>2</sub> laser to access wavelength region between the vibrational lines by increasing the gas pressure of the laser. The increase in gas pressure broadens the gain spectrum of the gas medium, resulting in the overlap of the gain profiles of adjacent vibrational lines. At pressures above 10Bar the gain spectrum becomes essentially continuous. (See line spectrum) |
| EUV                   | Extreme ultraviolet. A part of the electromagnetic spectrum blue shifted beyond the ultraviolet region.  |
| Line spectrum         | Typical emission spectrum of molecular lasers where the spectrum is determined by the vibrational structure of the molecule. This results in an array of discrete wavelengths.   |
| Grating               | An optical component with a regular pattern, which splits (diffracts) light into several beams travelling in different directions. The directions of these beams depend on the spacing of the grating and the wavelength of the light.   |
| IR                    | Infrared. A part of the electromagnetic spectrum red shifted beyond the visible region.  |
| Jitter                | An indication of the shift in time of the output laser pulse versus a fixed point determined by the triggering of the laser.   |
| Micron(μm)            | Wavelength unit equivalent to 10 <sup>-6</sup> m   |
| Multimode             | A laser beam where several concurrent Hermite-Gauss modes are contributing to the spatial profile of the laser beam.   |
| Nanometer (nm)        | Wavelength unit equivalent to 10 <sup>-9</sup> m   |
| Output coupler (OC)   | A partially reflective optical component used in lasers to extract a portion of the laser beam from the optical resonator  |

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| Output stability  | Variation in the pulse energy of the laser around a norm.   |
| PTS               | Paint stripping system  |
| Pulse compressor  | A magnetic material based electrical component that can convert low voltage, long pulselength electrical pulses to high voltage, short pulselength electrical pulses. Used in application to lengthen the lifetime of expensive switches. |
| Resonator         | An arrangement of mirrors that forms a standing wave cavity resonator for light waves   |
| TEM               | Transverse mode of a beam of electromagnetic radiation measured in a plane perpendicular to the propagation direction of the beam with no electric or magnetic field in the direction of propagation.                                     |
| TEM <sub>00</sub> | The lowest order, or fundamental transverse mode of a laser resonator with the same shape as a Gaussian beam  |
| Thyratron         | Gas filled tube used as a high energy electrical switch and controlled rectifier.   |
| THz radiation     | A part of the electromagnetic spectrum between 300GHz ( $3 \times 10^{11}$ Hz) and 3THz ( $3 \times 10^{12}$ Hz). Corresponds to the wavelength range between 100 $\mu$ m and 1 mm.   |
| TTC               | Thyratron Trigger Control. Electronic circuit that controls and drives the functioning of the thyratron.  |
| UV                | Ultraviolet. A part of the electromagnetic spectrum blue shifted beyond the visible region.   |
| Wavelength        | Distance between repeating units of a propagating wave of a given frequency   |