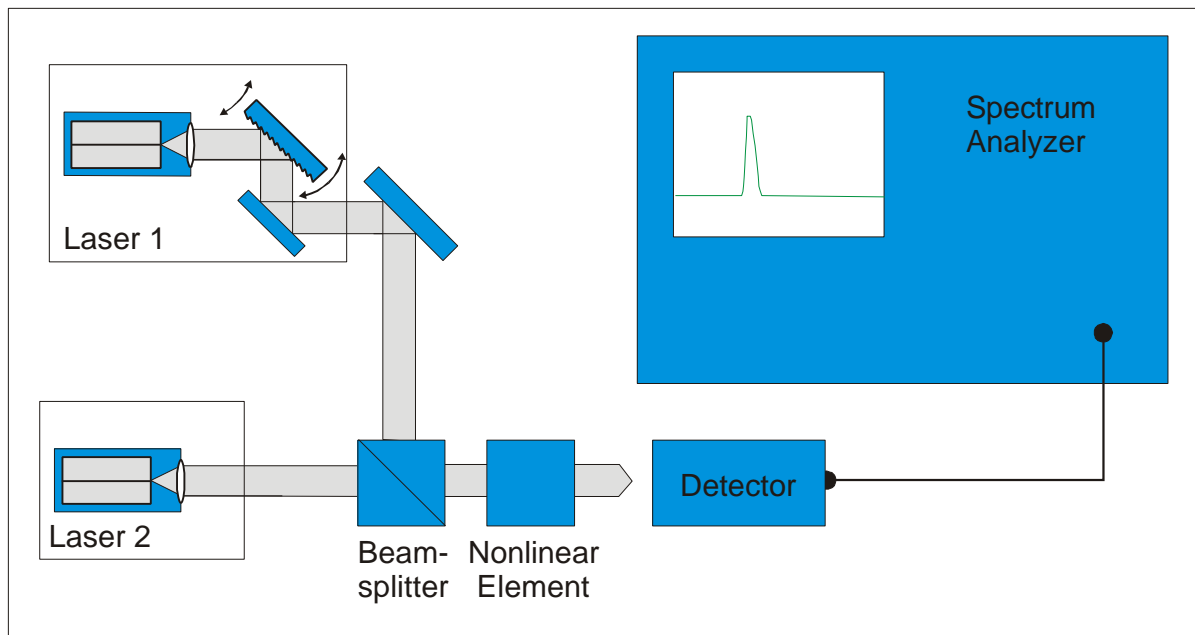


## Technical Note – No. 17

### Generaton of THz waves with external Cavity Diode Lasers

THz spectroscopy is a new method for investigating biological samples. It has the potential to be the bridge between X-ray and supersonic in medicine.



We suggest a simple scheme for the generation of THz radiation by using a tunable external cavity diode laser (Laser 1) and a single mode Fabry Perot Laser (Laser 2) as shown in this schematic setup.

Tunable external cavity diode lasers are commercially available with high output power like 100mW at 850nm, 100mW at 830nm or 100mW at 780nm, c/f <http://data.sacher.de/lw/lw085000.pdf>, <http://data.sacher.de/lw/lw078000.pdf>, <http://data.sacher.de/lw/lw083000.pdf>. Combining this laser with a fixed wavelength single mode Fabry Perot diode laser results in a easy to handle, high power, frequency tunable THz laser source.

The suggested setup allows a tuning of the beat frequency from 0THz up to more than 4THz. With choosing an initial detuning  $\Delta\nu$  between the border of the tunable external cavity diode laser and the Fabry Perot laser, the tuning range of the beat frequency will be  $(0 + \Delta\nu)$ THz up to  $(4 + \Delta\nu)$ THz.

Document: <http://data.sacher-laser.com/techdocs/THz.pdf>

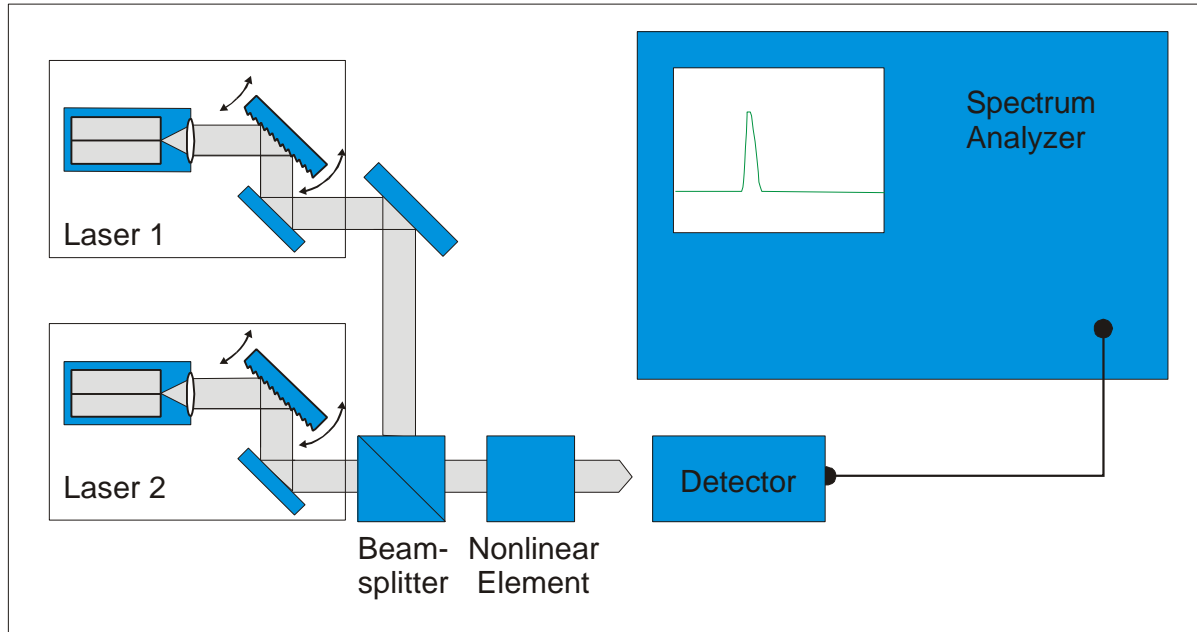
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An alternative setup would be to choose two tunable external cavity diode lasers in order to enhance the THz tuning range from 0THz up to more than 8THz as shown in this figure. For further details please contact us.

Document: <http://data.sacher-laser.com/techdocs/THz.pdf>

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