Lion (RAMAN Spectroscopy)

Fixed Wavelength External Cavity Diode Laser Littman/Metcalf Configuration High Brightness RAMAN Spectroscopy

Industrial Lasers



How does our Laser achieve high stability?





Dimensions





Physical Basis

State of the art RAMAN spectroscopy applications requires light sources with high wavelength stability as well as high brightness and pointing stability.

Technical Solution

Sacher Lasertechnik has realized a Littman/Metcalf laser design without any adjustable items inside the cavity. Due to this special method, we are able to ensure an excellent long-term stability. Both output power and sidemode suppression ratio is improved and also a good pointing stability is achieved by using a high efficiency grating and outcoupling the light of the rear facet of the laser diode. With this approach, we are able to increase the output power up to 1000mW at 785nm, 830nm, 980nm and 1064nm. Please contact us for the most current testdata.

Technical Realization

The drawings on the left hand side show the technical realization and the dimensions of the TEC-510 and the TEC-310 external cavity RAMAN diode laser systems. Due to an alignment insensitive cavity design and a high precise intelligent laser controller, our Littman/Metcalf laser diode systems is well suited for your special RAMAN spectroscopy requirements.

Key Features of our Littman/Metcalf Laser System



In-house manufacturing of AR-coatings, Patent 6,297,066

In house manufacturing of anti-reflection coatings for diode lasers guarantees the best performance for the complete laser system. for each type of application.

High passive stability, Patent 5,867,512

Realizing a alignment insensitive cavity concept and the high stable mechanical mounts ensures the highest passive stability of our Littman/Metcalf laser system. As a result, we achieve a robust and highly stable external cavity diode laser system with excellent values for the long term laser linewidth.

Option: Single-mode fiber coupling

Due to the excellent mechanical stability of our Littman/Metcalf laser system, we are able to performhigh efficiency fiber coupling with coupling efficiencies between 40% and 70% into single-mode polarization maintaning optical fibers. Optical isolators and angled fiber connectors (FC/APC couplers) are available upon request.

	Lion	<u>Tiger</u>
	TEC-510	TEC-310
Output Power	100mW, 150mW 300mW	Up to 1000 mW
Wavelength	760 nm 1080 nm	760 nm 1080 nm
Linewidth	500 kHz @ 20 ms	500 kHz @ 20 ms
Side Mode Supression	> 45 dB 55 dB	> 45 dB 55 dB
Tunability	No modehops during Power Tuning	No modehops during Power Tuning
Long-term drift (24 hours)	Typ.< 300MHz	Typ. < 300 Mhz
Beam Waist (2 w _o)	3 mm x 1.5 mm 1.5 mm x 1.5 mm	1.5 mm x 1.5 mm
Beam Quality M ²	< 1.5	< 1.7
Output Polarization	P - Polarized or S - Polarized	P - Polarized or S - Polarized

Specifications:



Application Example

RAMAN Spectroscopy

High resolution RAMAN spectroscopy requires laser features like narrow linewidth, high wavelength stability, good pointing stability as well as an excellent singlemode behaviour. The figure summarizes experimental data which has been determined with our Littman/Metcalf laser system in cooperation with Lightouch Medical, Inc. The graphic shows a Raman spectrum of human blood directly measured in-vivo without using a finger stick. The accuracy is comparable with conventional fingerstick glucose tests.

About Sacher Lasertechnik

Company Profile

Sacher Lasertechnik is leading manufacturer of tunable external cavity diode lasers (ECDLs) with more than 15 years of experience. The product range includes antireflection coated diode lasers, ECDLs in Littrow and in Littman/Metcalf configuration as well as driver electronics for the LD and sophisticated measuring electronics. Please contact us with your measurement requirements. We would be proud to support you with our competence.

Please contact us

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