

Recent advances in high-power and high-energy 2 μm medical lasers

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June 2nd, 2020, EPIC Online Technology Meeting on Medical Lasers

Outline



- History and core achievements
- Properties of 2 μm lasers
- Next generation's surgical laser
- Outlook

History and core achievements



Historical background and core achievements

- Since 1989 LISA is technology leader for surgical lasers at 2 μm wavelength
- Pulsed Holmium lasers, e.g. Sphinx product family
- Continuous wave (CW) Thulium lasers, e.g. RevoLix product family
- Number of lasers in field ~ 2000
- Number of peer-reviewed publications > 1000

RevoLix®
The RevoLution in Laser Surgery

RevoLix® DUO
The RevoLution continues

Sphinx®
Holmium Laser

RevoLix® jr.
2micron table top surgical laser

RevoLix® xp

LISA LASER PRODUCTS

Medical Laser	Industrial Products
RevoLix	Diode laser modules
RevoLix DUO	DioPow
RevoLix jr.	Laserpointer
Sphinx	Charging Power Supply
Sphinx jr.	
DioLix	
Medical Accessories	
Billing Systems	

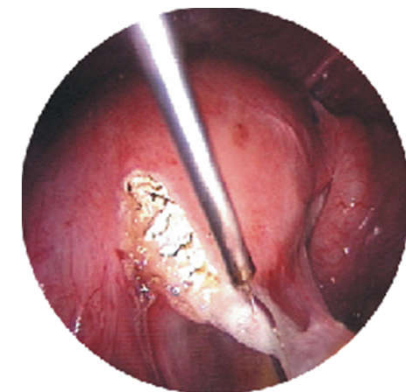
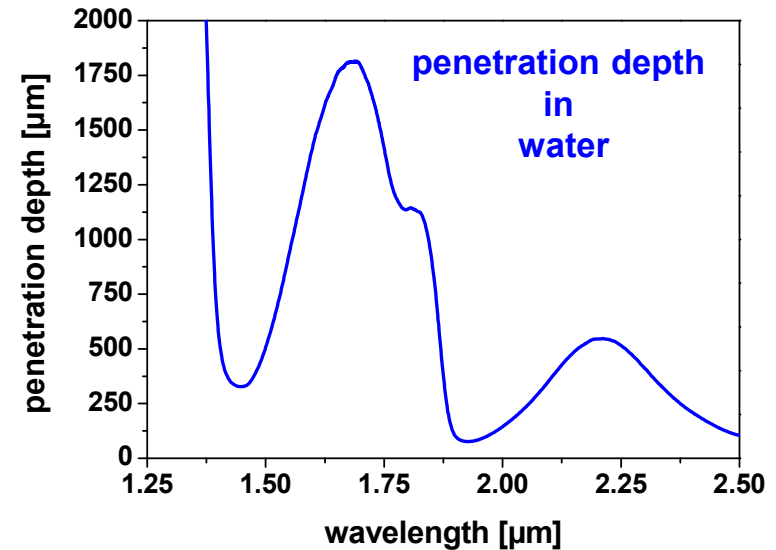
COMPETENCE IN MEDICAL LASERS SINCE 1989
LASER TECHNOLOGY - MADE IN GERMANY

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Properties of 2 μm lasers

Properties of 2 μm lasers

- Silica fiber guiding
 - minimally-invasive procedure
 - patient friendly
- High absorption in water
 - penetration depth $\sim 150 \mu\text{m}$
 - using the laser as a scalpel
 - excellent haemostasis at 2013 nm
 - nominally eye-safe

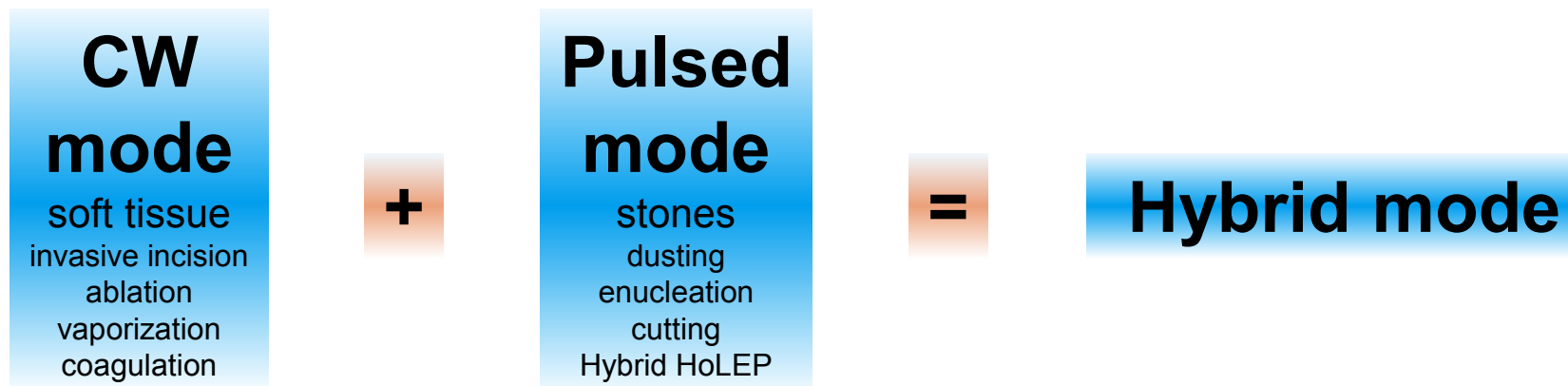


Next generation's surgical lasers



LISA's outstanding development path

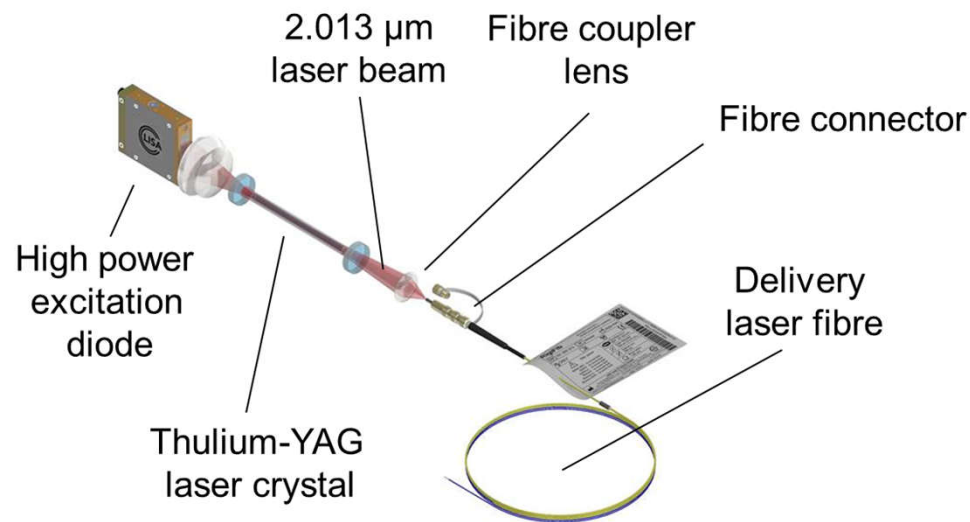
- Novel hybrid Thulium surgical laser
- Based on proven LISA Diode Pumped Solid State (DPSS) laser technology
- Next generation of RevoLix DUO
- High-power and high peak power performance
- One laser for both operation modes
 - Compact design & very low loudness level
 - Versatile use: cutting/vaporization of soft tissue & laser lithotripsy



Hybrid Thulium Laser

Unique features of RevoLix HTL

- Targeting 2 application fields: tissue & stone
- Providing 6 operation modes
- Best of CW and pulsed lasers
 - Broadened application fields
 - **Stimulation of new medical applications**



Hybrid Thulium Laser



Technological benefits

- Designed for surgeon's dual need
- Standard Power Plug
- Ultra silent: < 60 dB (Whisper Technology™)
- Full range of application fibres: 200 µm to 940 µm (single-use & re-usable)
- Compatible with laser resectoscopes, cystoscopes, flexible and rigid ureteroscope

	Max. power [W]	Frequency [Hz]	Max. peak power [W]
Competitors	60	1 - 2400	500
LISA	150	1 - 300	> 1000

Next steps

- Performance on tissue application
- Performance of stone application
- Stimulation of new medical applications
- Combination with imaging systems
- Apply for research projects





www.lisalaser.de