

# Hybrid 2 $\mu\text{m}$ Lasers in Urology

Samir Lamrini

R&D Manager, LISA Laser Products GmbH, Germany

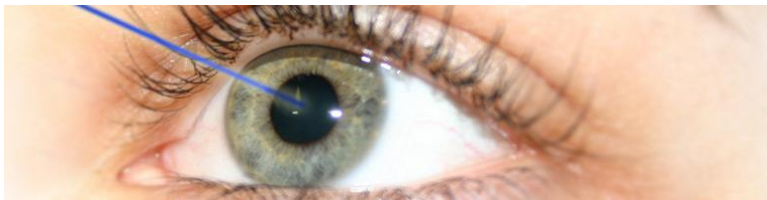
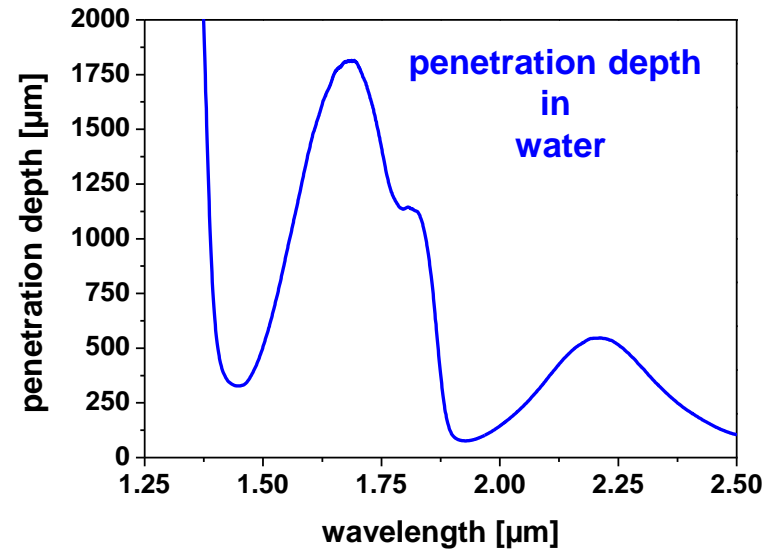


May 10<sup>th</sup>, 2021, EPIC Online Technology Meeting on Advanced Photonics in Urology

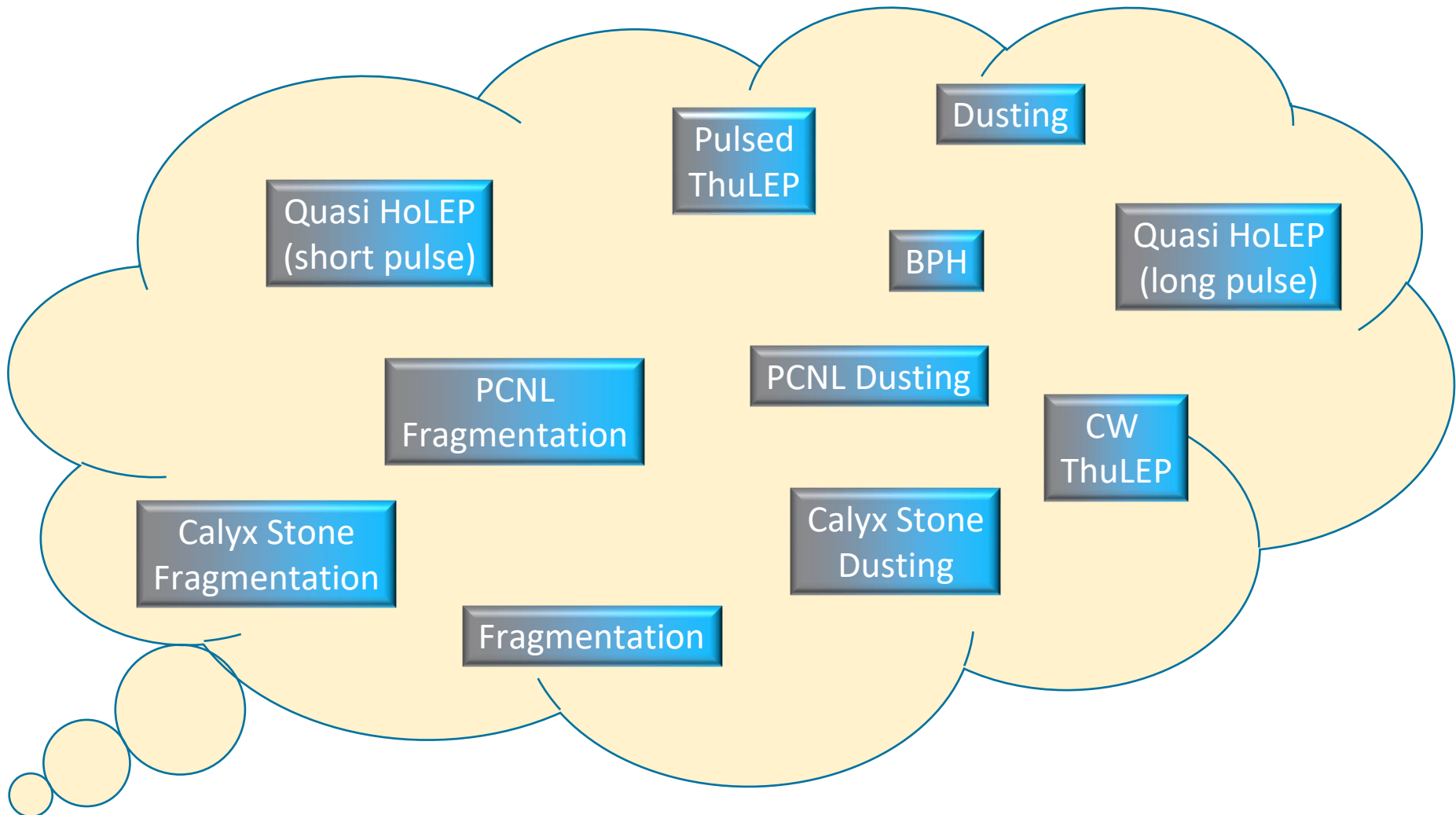
# Properties of 2 $\mu\text{m}$ lasers

## Properties of 2 $\mu\text{m}$ 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



## Doctor's Wishlist



## Our Approach

- Diode Pumped Solid State Laser (DPSSL)
- Advanced Tm:YAG crystal laser technology
- Evidence based for many surgical applications at 2013 nm
- Provides high-power and high peak power performance
- One laser for both operation modes
  - Compact design
  - Versatile use: soft tissue & urinary stones

### CW mode

Vaporization (ThuVAP)  
Vaporesction (ThuVaRP)  
Vapoenucleation (ThuVEP)  
Anatomical enucleation (ThuLEP)  
coagulation

+

### Pulsed mode

Dusting  
Fragmentation  
Enucleation  
PCNL Fragmentation  
PCNL Dusting  
Pulsed ThuLEP  
Quasi HoLEP

=

### Hybrid mode

## Clinical Performance: soft tissue (Prostate)

- Performed by Prof. Dr. Herrmann, Spital Thurgau AG, Switzerland
- ThuVEP, ThuLEP
- 70 W, 40 Hz, 1.8 J

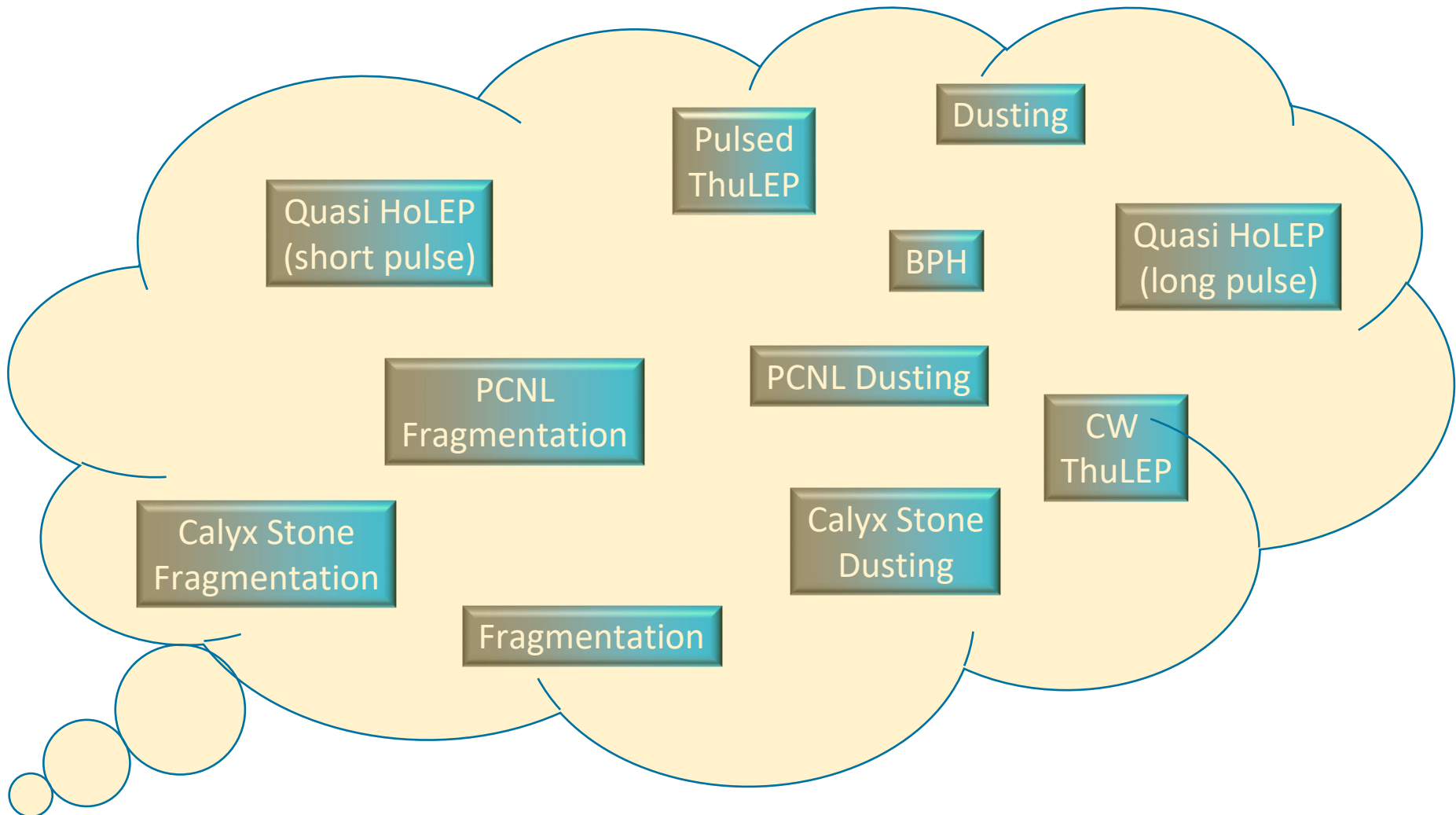


## Clinical Performance: urinary stones

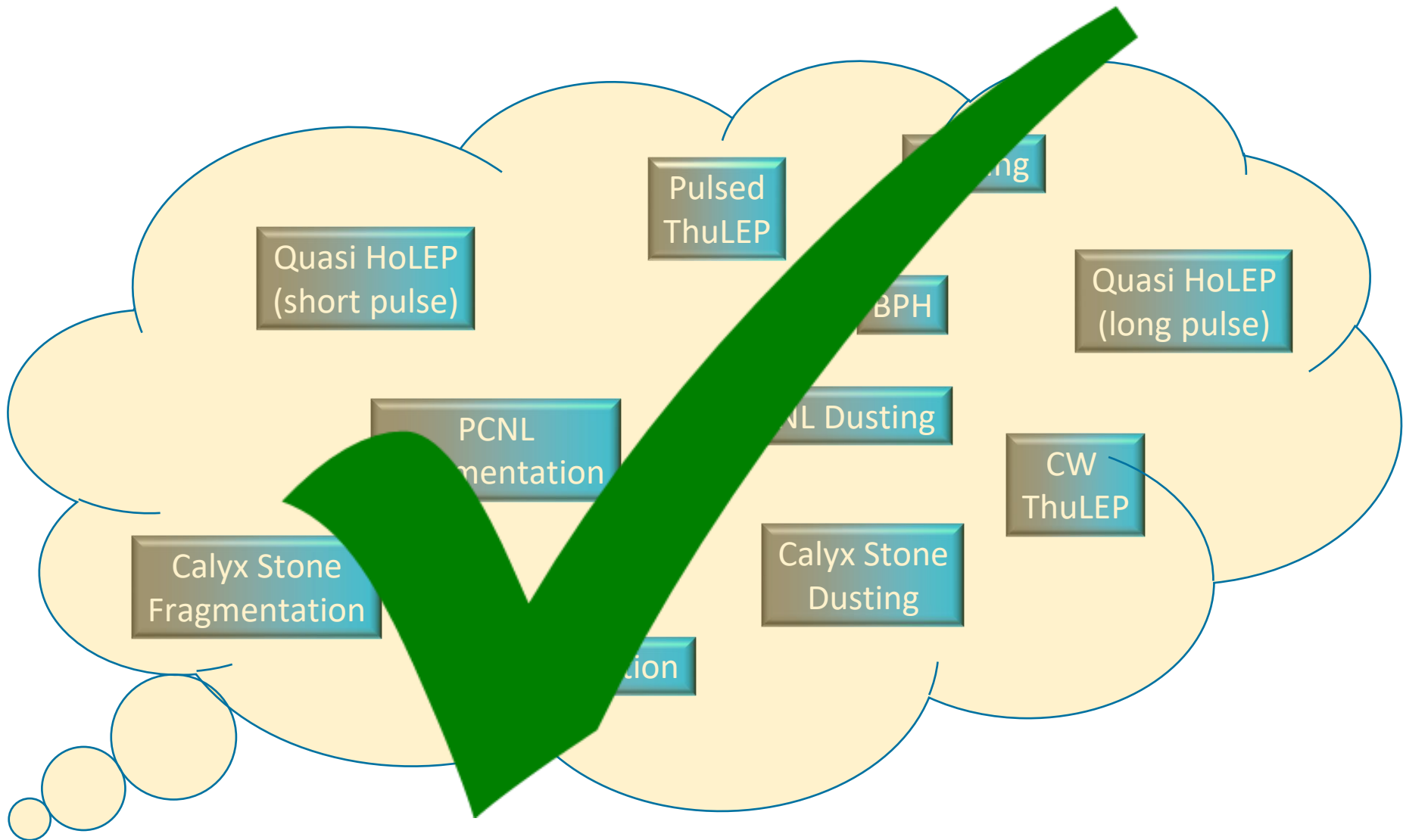
- Performed by Dr. Goumas, Istituto Clinico Beato Matteo, Italy
- Fragmentation and dusting of urinary stones
- 2 bladder stones
- 1,300 W peak power
- **25 min!!!**



# Take Home Message



# Take Home Message







[www.lisalaser.de](http://www.lisalaser.de)