Visit to FYLA LASER SL

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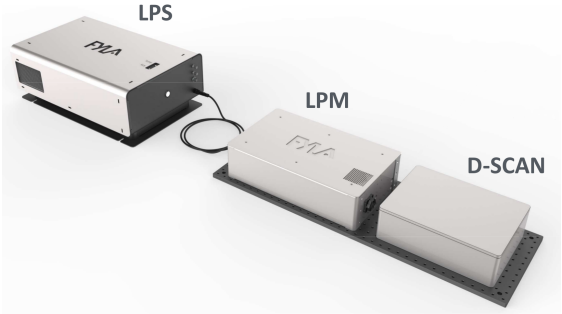
PixLab Meeting - 5^{th} September 2020

FYLA LASER SL

- Company focus on R&D for laser/photonics applications.
- Product development in close collaboration with clients.
- Declared intention to define new markets and applications.
- Exceptional activities associated to financing history.

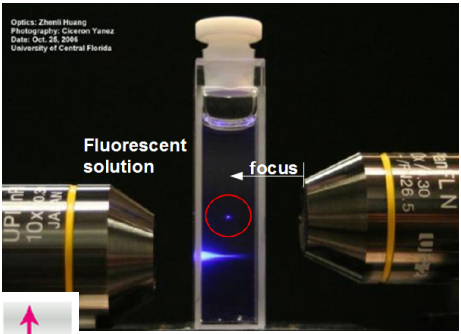
FYLA @ CERN

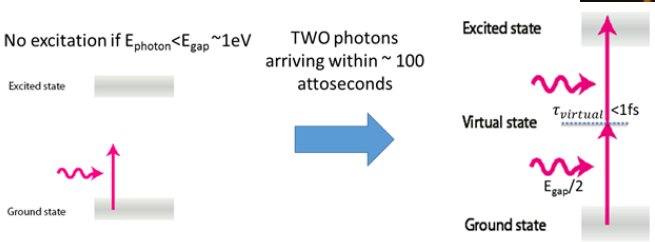
- Developed device for TPA-eTCT in collaboration with IFCA.
- Presented at CERN during 36th RD50 Workshop (link).
- 1550nm femtosecond fiber laser with attenuation and repetition control.
- Labview-based easy-to-use GUI with admin access for laser configuration.



TPA-eTCT

- New technique to generate free carriers in confined volume of silicon (CAPN X).
- High wavelengths assure penetration and avoid SPA carrier generation along beam.
- Er or ErYb doped material suitable.
- Very fast pulses to assure required intensity for TPA carrier generation.

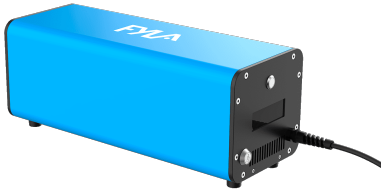


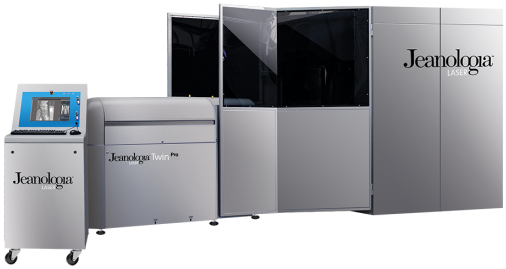


- Wavelength >1150nm.
- Pulse width $\mathcal{O}$(10fs).
- Beam waist $\mathcal{O}$(µm).
- Depth of field $\mathcal{O}$(µm).

Other products

- Supercontinuum white light laser.
- Wavelength controlled picosecond laser.
- High power laser for textile marking.
- Orange laser for microelectronics test.





Modification/Collaboration proposal

- Two options/models/applications according to use:
  - R&D: high-end device for sensor characterization and in-depth studies.
    - deep penetration with fine spot (~2µm),
    - amplitude and rate control with external trigger/veto,
    - optional neighbor pixel excitation (3x3).
  - QA: less stringent specs for production control, test time reduction.
    - spot size not so critical ($\mathcal{O}$(10µm))
    - multiple pixel excitation for faster testing.
- Opposed preference in terms of moving elements, to be studied.
- Fiber output suggested for additional flexibility in light access.
- External trigger/veto: defining laser phase externally not obvious.
- Frequency controlled burst function should be feasible.
- Couple of options suggested for matrix implementation:
  spatial light modulators (SLM) and microelectromechanical mirrors (MEMs).

Thanks a lot for your attention!