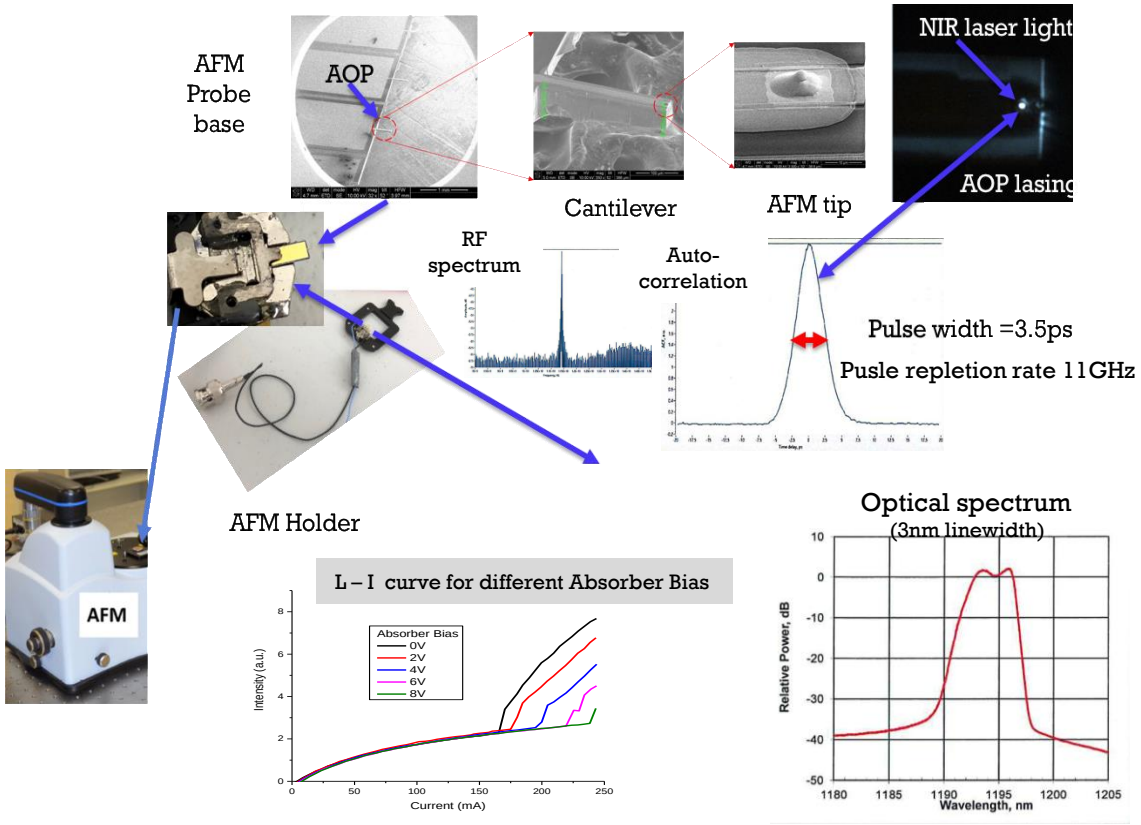
Our Solution

Atomic Force Microscopy(AFM) Active Optical Probe (AAOP)

Mode Locked Active Optical AFM Probe with pulse width less than 1ps for ultra-fast time resolved optical spectroscopy on single molecule scale



Competitive Advantage

Our patented technology* will provide your customers with information not available by other comparable techniques.

Improved quality, speed and convenience of measurements, which will also save significant time and costs

*US Patent, Ukhanov et al., No.:US9,482,691 B1, Nov. 1, 2016

TERS Problems / Solutions

Poor measurement quality:	Absence of integrated solution for light source and photo detector in the near-field region
Low speed of measurements:	It takes a long time (up to a few hours) to perform simple measurement using existing Near-Field Optical Microscopes (NSOMs)
Complex optical alignment:	To perform measurements now, customers need to use an external laser and photo detector and minimize the far-field background
High cost of measurements:	The need to purchase additional equipment for measurements

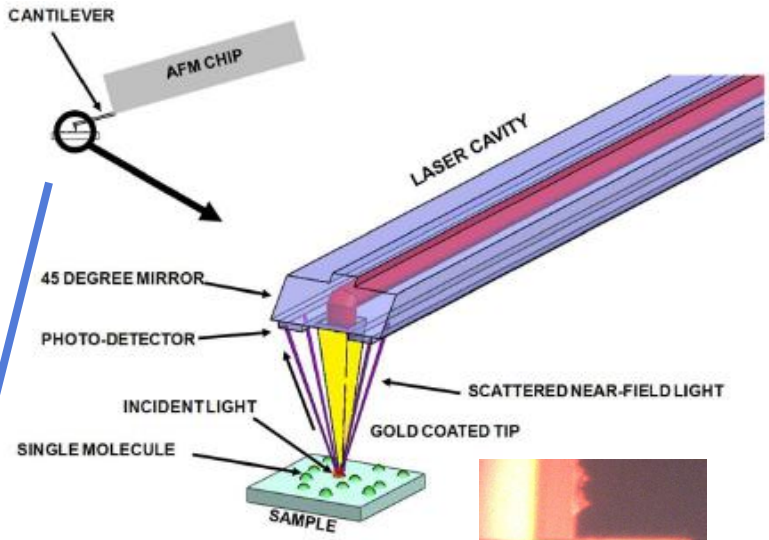
Our Solution: Active AFM Optical Probe (AAOP)

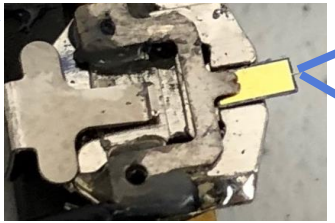
Benefits:

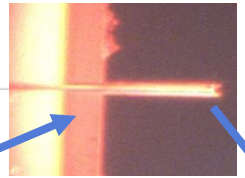
- **Improved quality of measurement: optical resolution and signal-to-noise ratio**
- **Improved speed:a single measurement can be completed in less than a second**
- **Convenient measurement and time savings: self-alignment**
- **Saving money: our customer does not need to spend extra money on a far-field optical microscope and its operation**

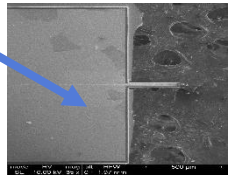
Our Solution

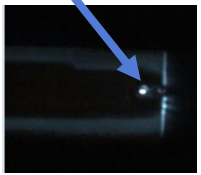
Actoprobe technology



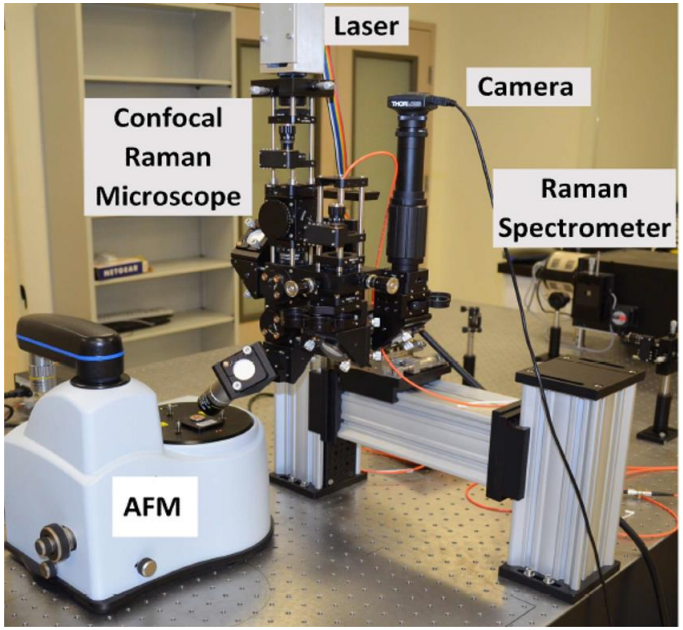






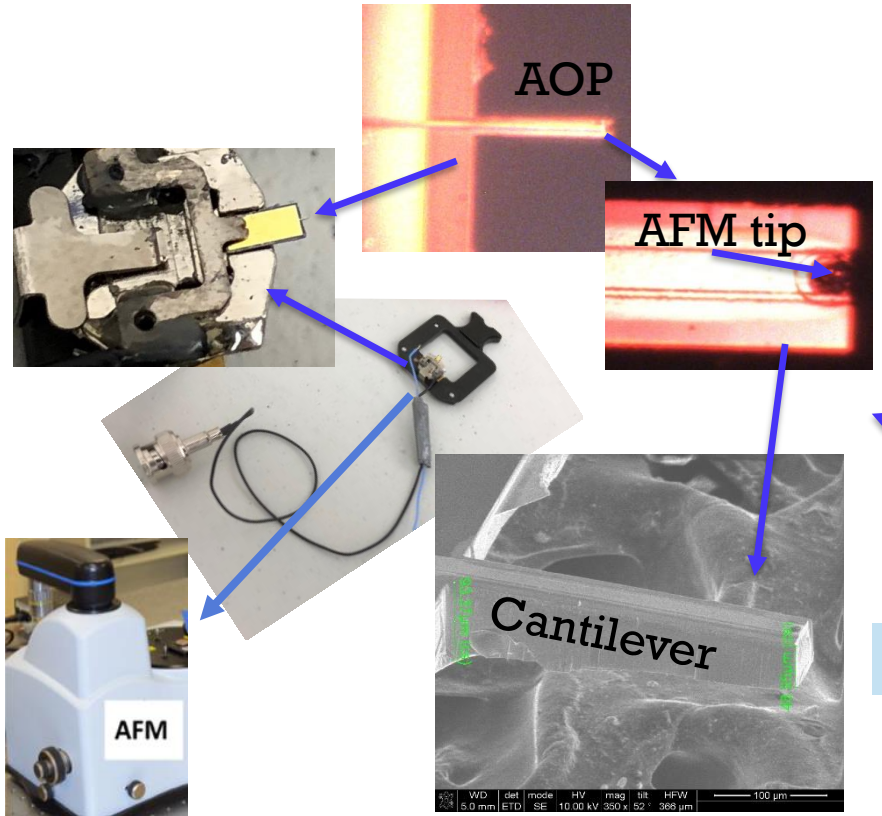


Conventional technology

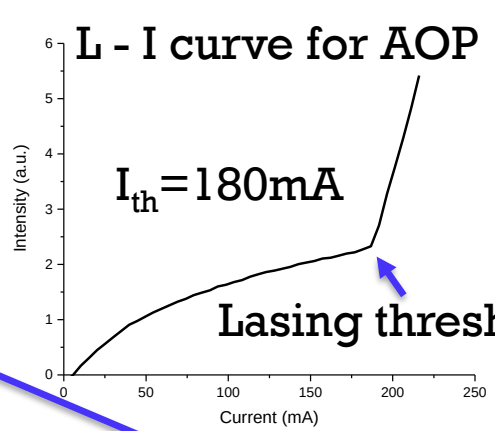


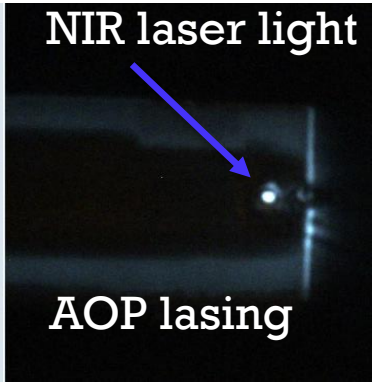
Our Solution

AFM active optical probe



Actoprobe technology

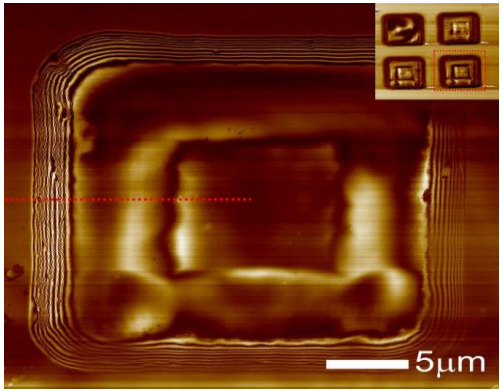


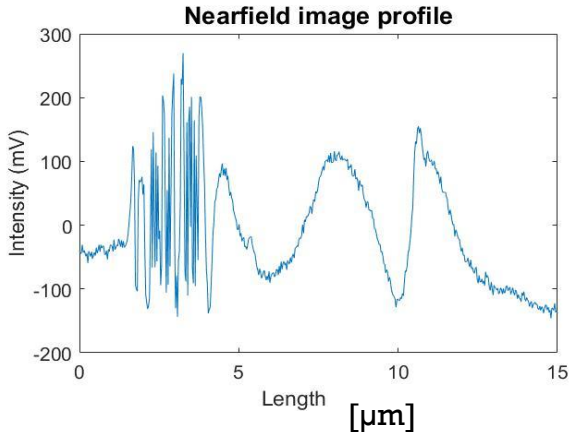


Near-Field optical probe with diode laser inside

Comparison of image quality

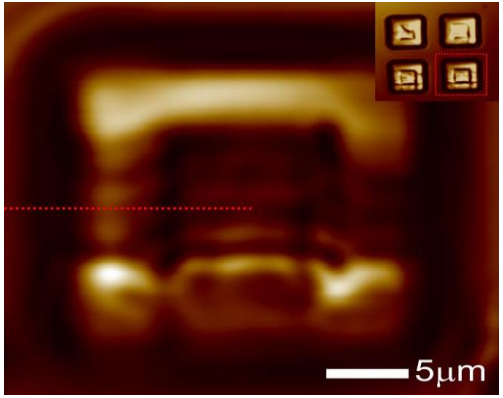
Actoprobe technology

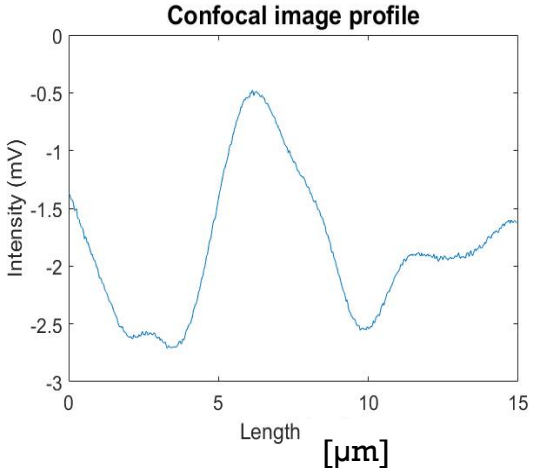




InAs/GaSb FPA pixel

Conventional technology

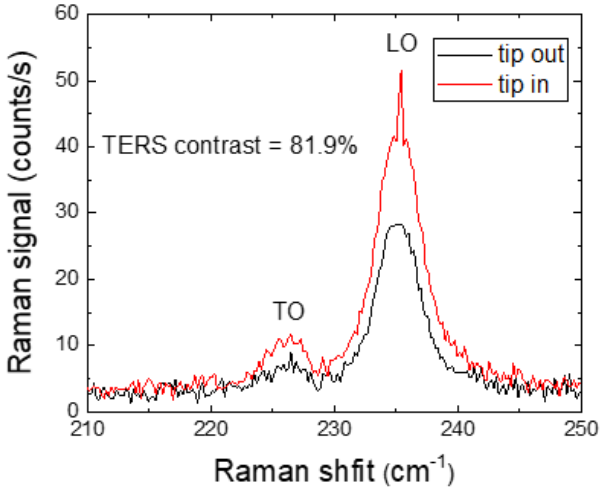


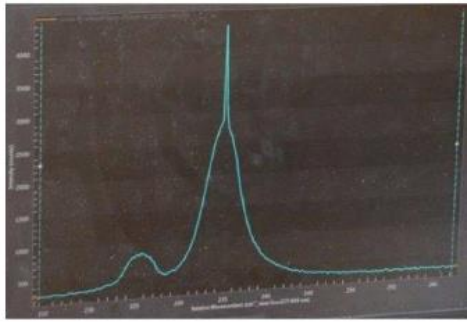


Comparison of TERS quality

Actoprobe technology

Stimulated Raman

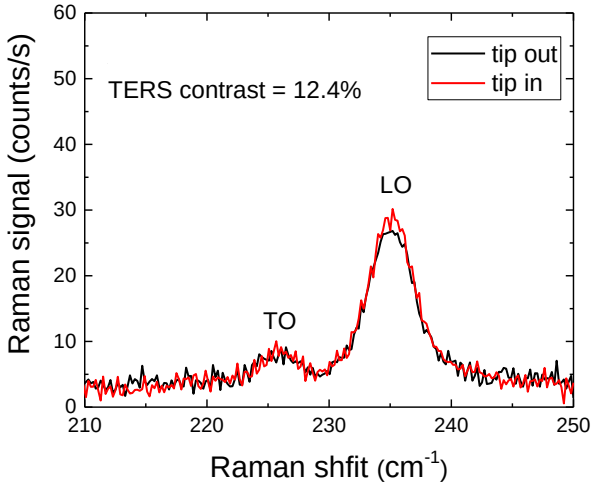




GaSb material

Conventional technology

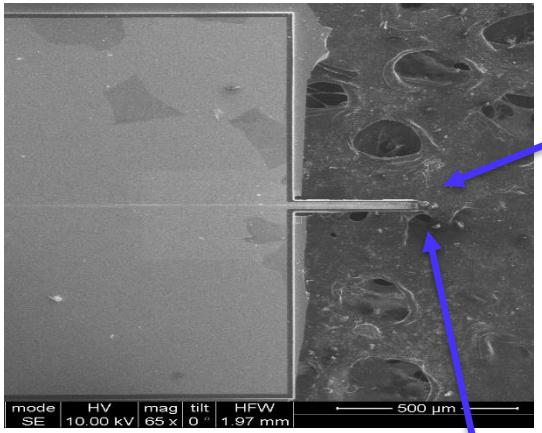
Spontaneous Raman

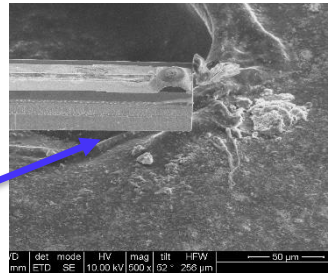


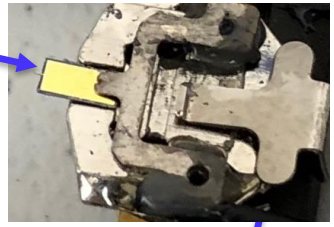
Better TERS data:

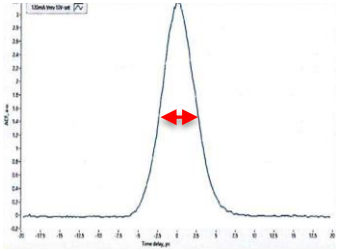
- 10 times larger contrast tip in /tip out
- Higher signal to noise ratio
- Need less integration time

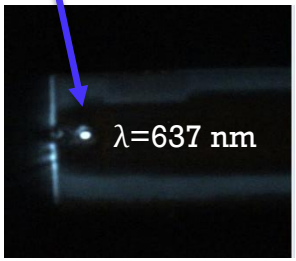
Two photon TERS

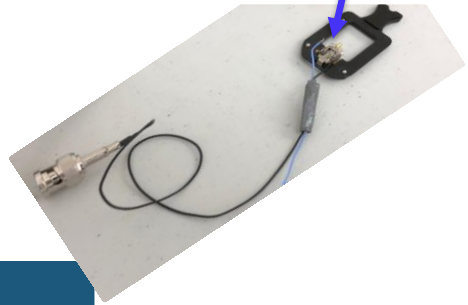










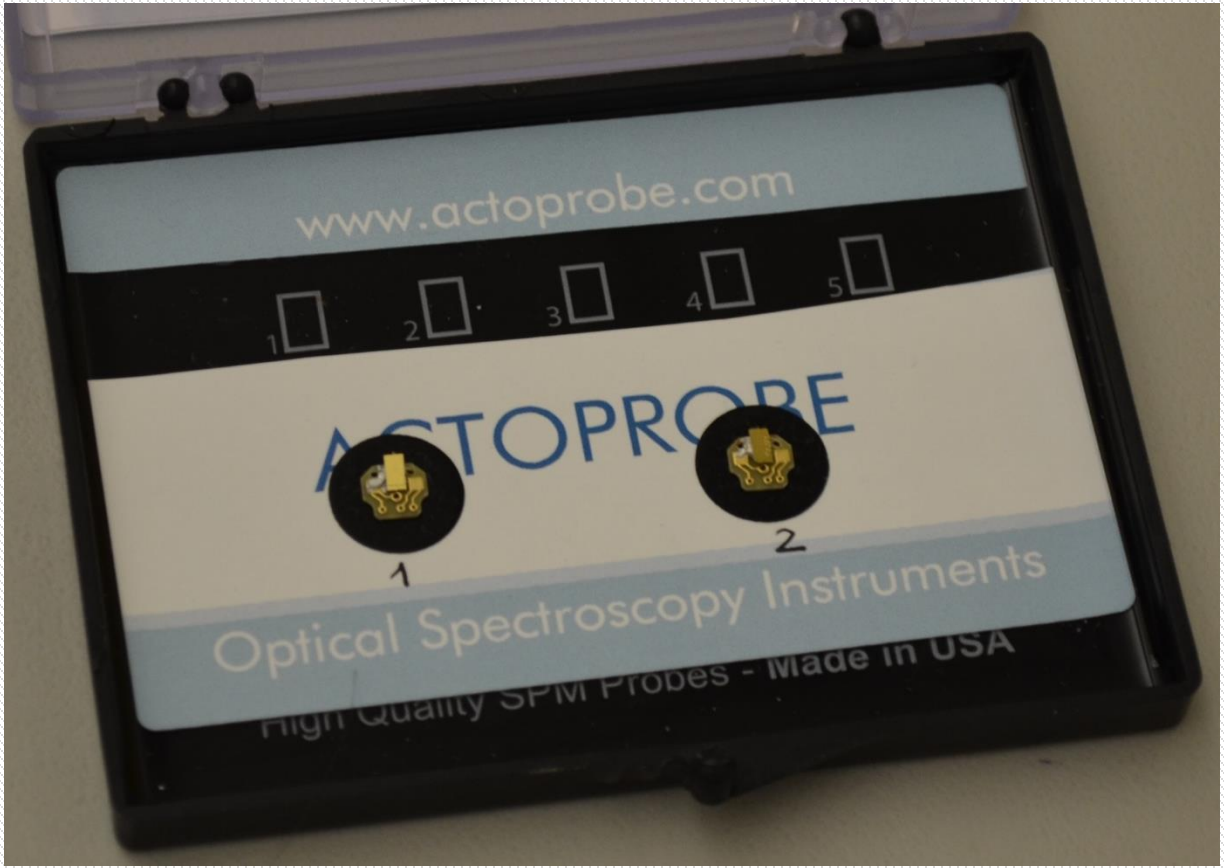


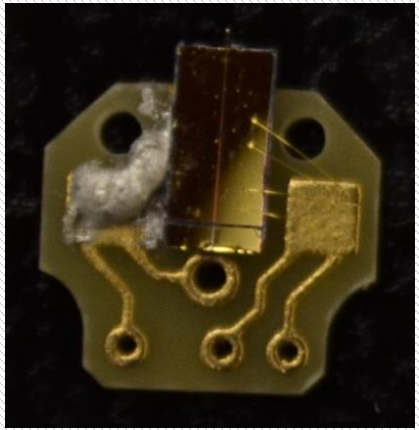
Laser Pulse width =3.5ps

Actoprobe technology

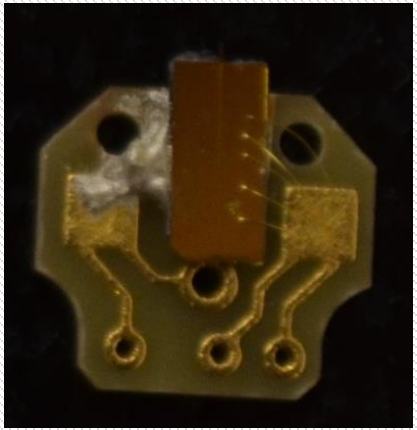
- Larger Raman signal
- Less damage for a specimen
- Unique optical transitions

AFM technology

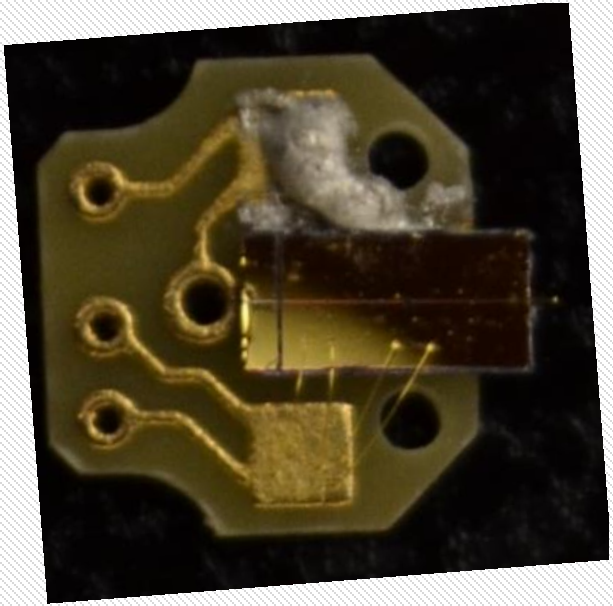


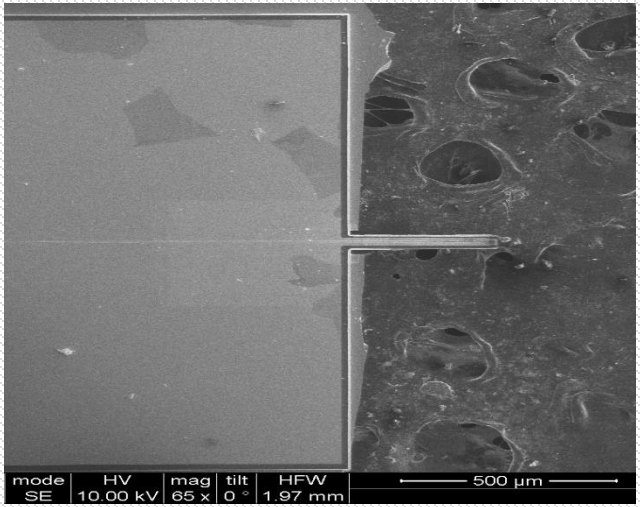


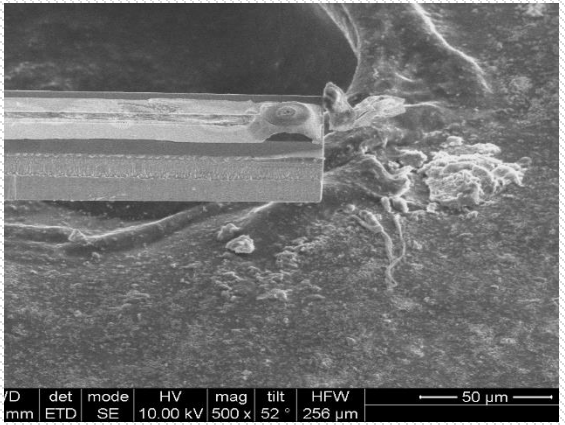
Ultrafast AAOP



CW AAOP

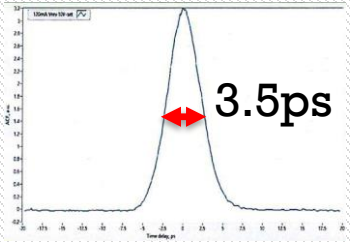


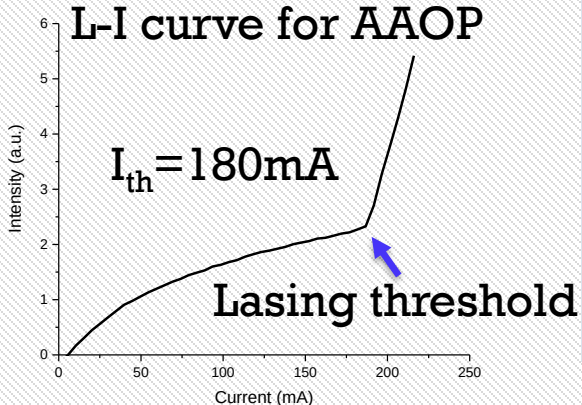


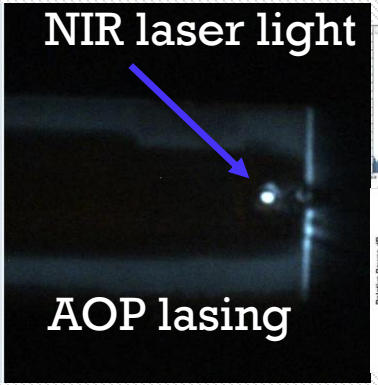


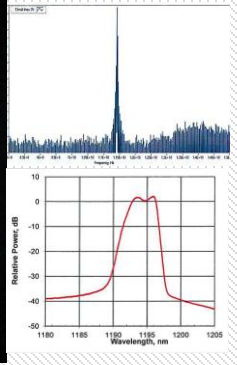
Pulse width =3.5ps

Pusle repletion rate 11GHz









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