Steven Wang

Mechanical Engineer
Project Leader

My Education Background

- PhD Mechanical Engineering, Xi'an Jiaotong University, China

Research Focus: Nondestructive test with Laser Holographic interferometry for engineering

- M.S. Mechanical Engineering, Xi'an Jiaotong University, China

Research Focus: Stroboscopic Laser Holographic interferometry for machine vibration test

- B.S. Mechanical Manufacturing & Automation, Xi'an Jiaotong University, China

Main Career Experiences

- Industry Positions (USA): Mechanical Engineer, Project Lead
- Xi'an Petroleum University: Professor of Mechanical Engineering
- Xi'an Institute of Optics and Precision Mechanics of CAS: Research Fellow

My Qualifications

- Strong communication, project planning, and time management skills; excellent team player.
- Highly experienced in leading and working with engineering teams distributed across different cities/countries. Successfully mentored many engineers throughout my career.
- Extensive knowledge of Mechanical Engineering, Optics, Material Science, Automation, FEA and Thermal and Stress Management, Dynamic Design, etc.
- Strong expertise in opto-mechanical, opto-electronic and precision mechanical product development, as well as manufacturing, assembly and package design. Experienced DFM
- Skilled in organizing test programs to validate concept designs and performing data analysis to verify product performance.
- Highly experienced in working with machine shops, vendors, suppliers and contract manufacturers, both domestic and overseas. Communicates very effectively with internal and external customers.
- Excellent track record of successfully delivering numerous projects/products that have entered production.

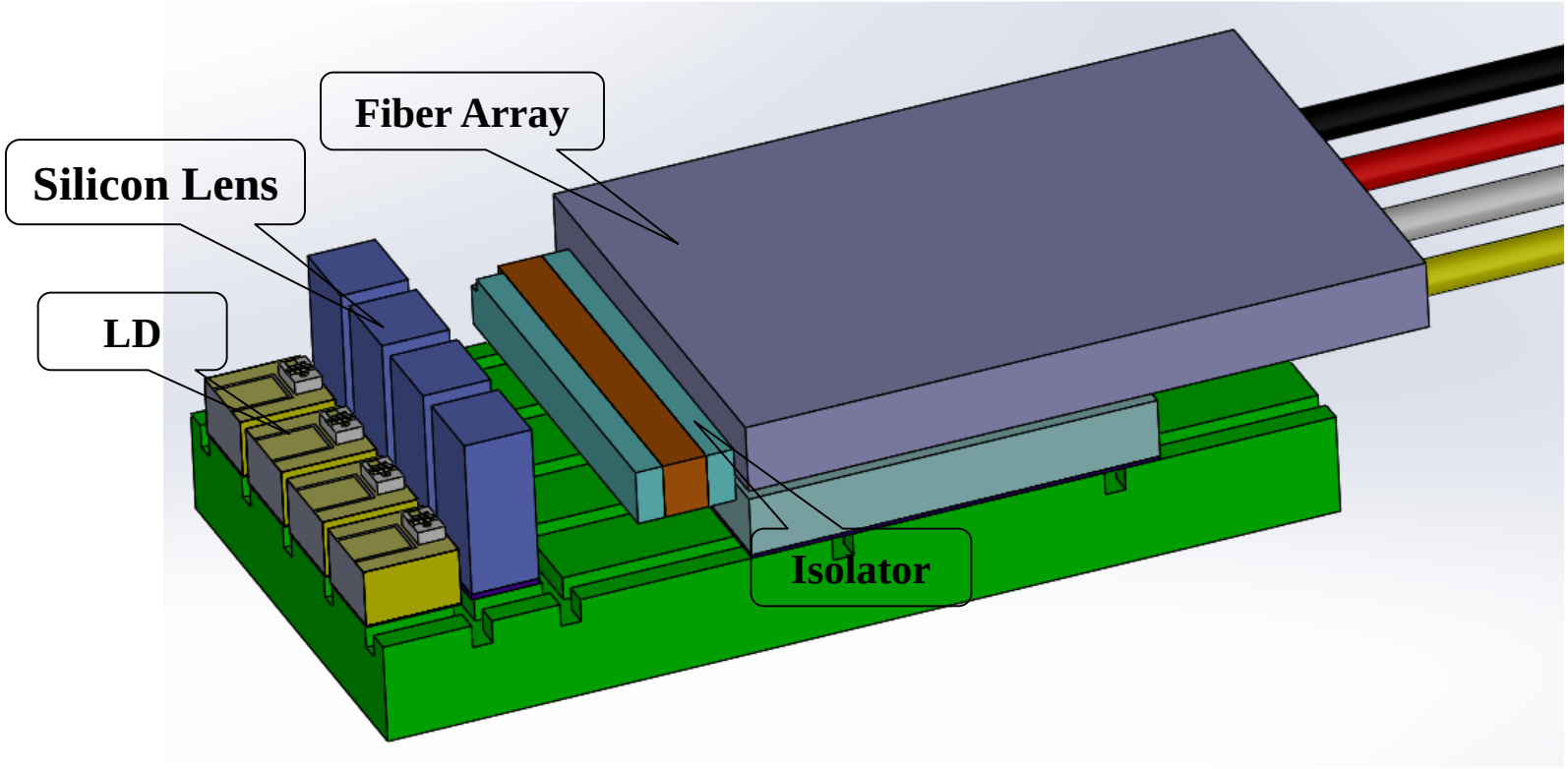
Areas of Expertise

- Optical Products
  - Intelligent Contact Lens
  - Image Optics: Camera, Objective, Tube Lens, Microscope system
  - Telecom: Fiber Optic components
  - Devices: Laser, Optical Sensor, Interferometry etc.
- Semiconductor Equipment
  - MEMS Tech Probe Card for Wafer Sorting
  - Wafer Flatness Measurement Device

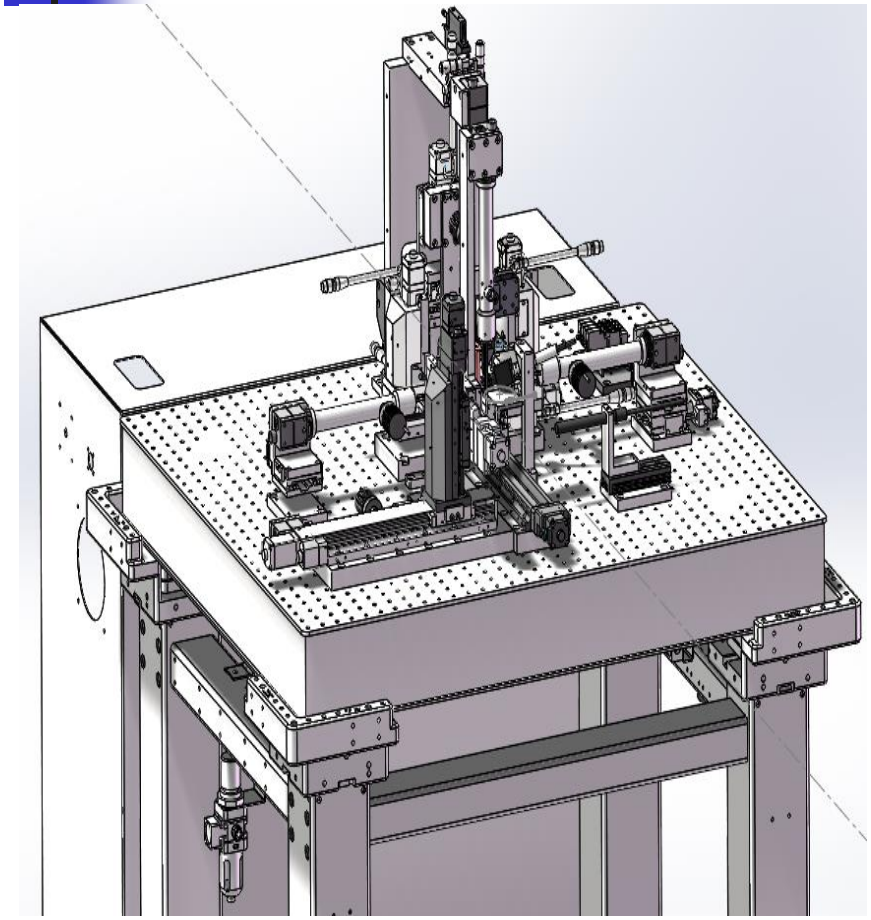
My Patents

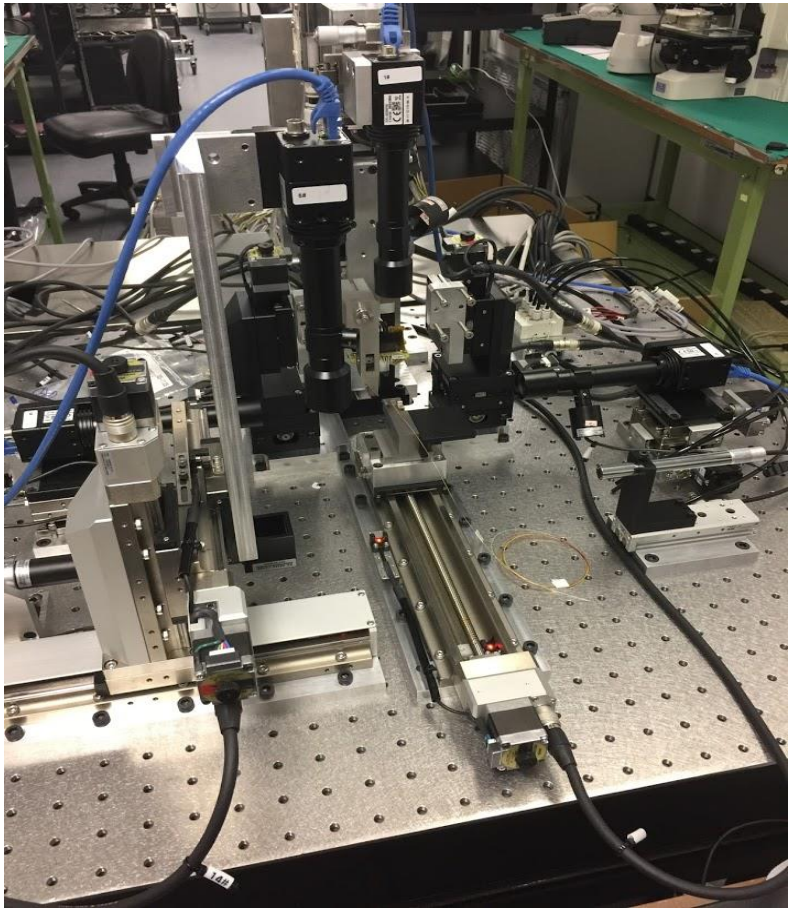
- Integrated Sensor and Lens Assembly with Differential Threads Adjustment (GoPro)
- Reconfigurable mass data recording method and system, SN:13/440,891
- Motorized curtain rack system, SN:61/393,923
- Drawer slide and locking mechanism, SN:12/768,669,
- Adjustable/Non-adjustable Precision Optical Mounts, Patent Pending (This IP was sold to Newport Corp.)
- Probe card Assembly, Patent No. US 7,365,553 B1， April 29, 2008
- Probe head with machined mounting pads and method of forming same, Patent No. US 7,180,316 B1, 2007
- Adjustable Optical Signal Collimator, Patent No. US 7,010,193 B1, 2006
- Integrated Polarization Beam Combiner, Patent No. US 6,919,989 B1, 2005
- Multi-Channel Polarization Beam Combiner/Splitter, Patent No. US 6,973,224 B1, 2005
- A Servo-Damper of Well Drilling Machine, Patent No. ZL91228657.1A, 1992, China
- Lighter with solid fuel, Patent No. ZL89221370.1A, 1990, China

Optic Product-PSM4 TOSA

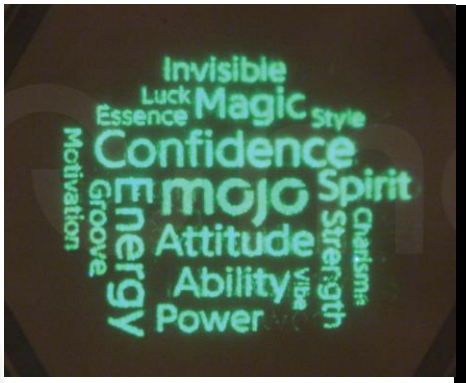


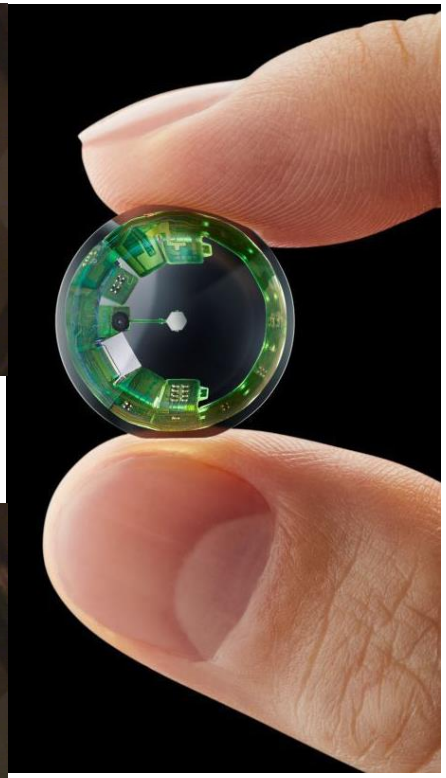
TOSA Lens Aligning Machine

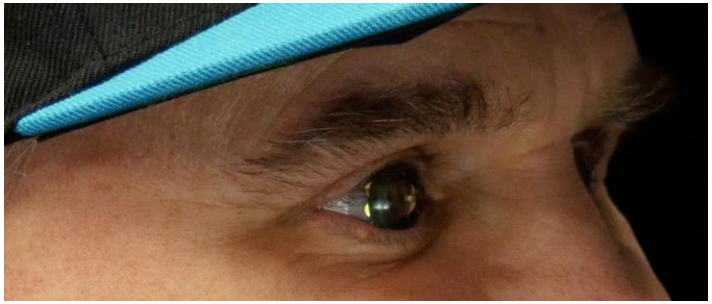




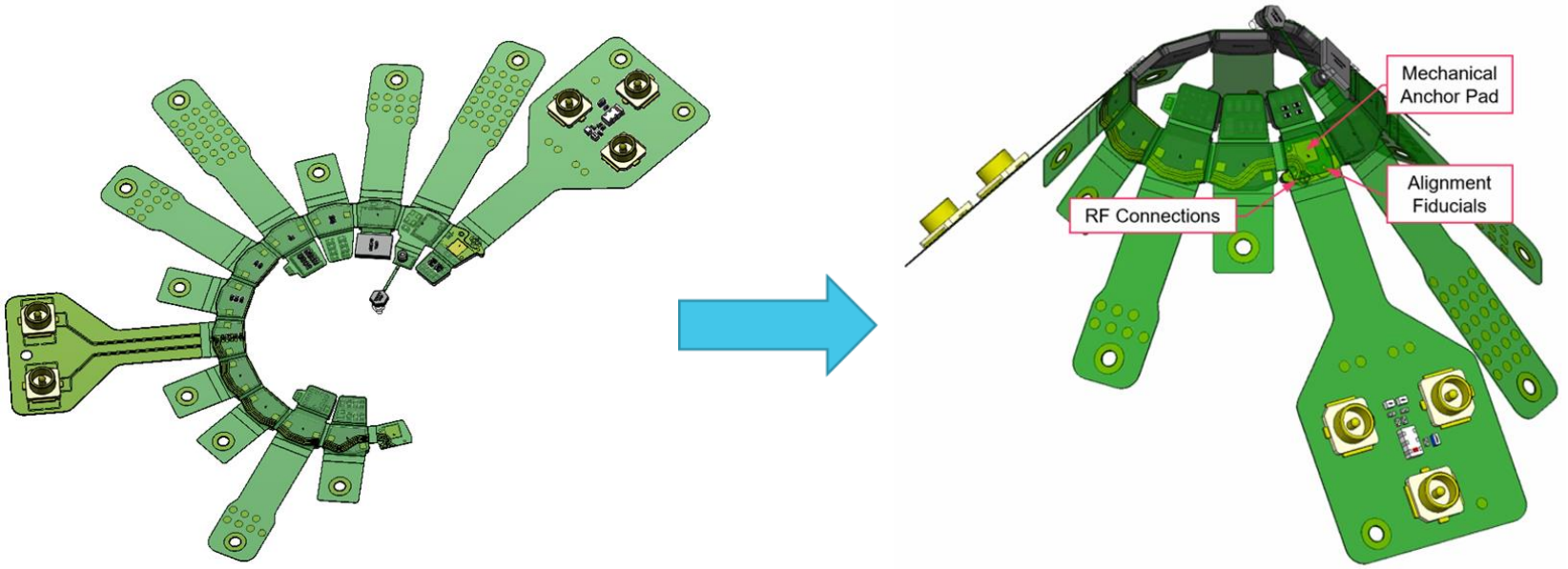
MOJO Vision Contact Lens



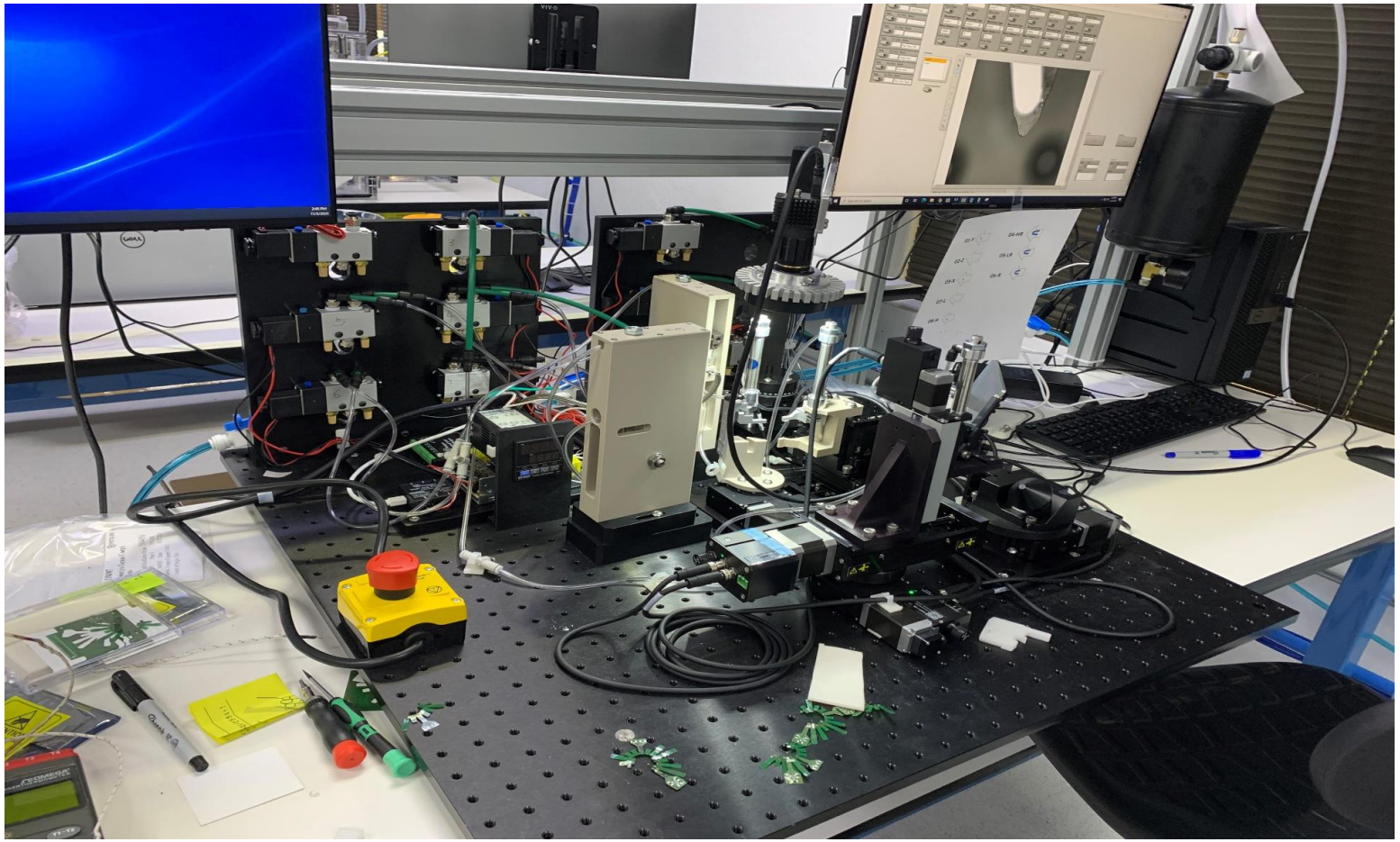




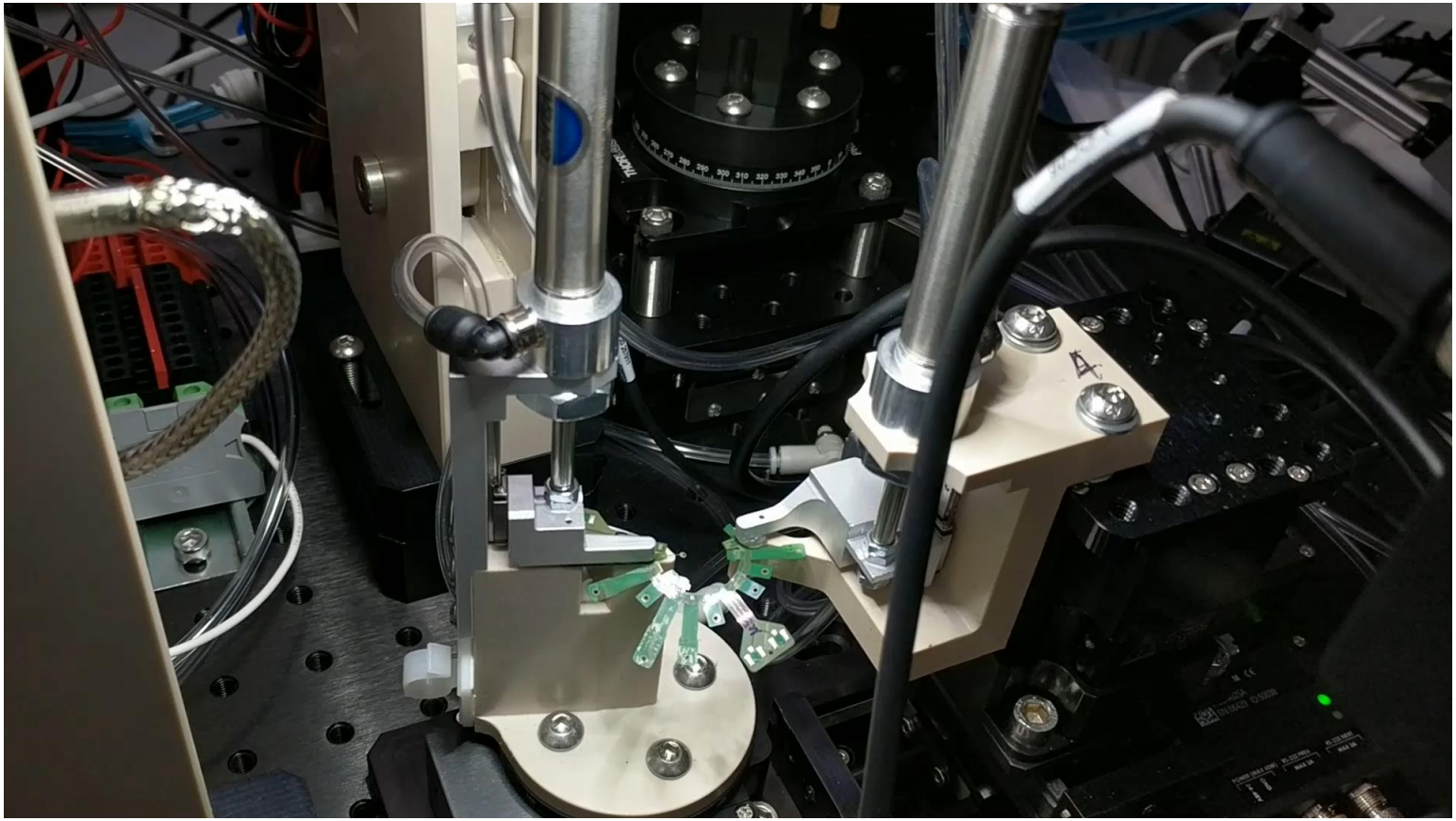
Project Requirement



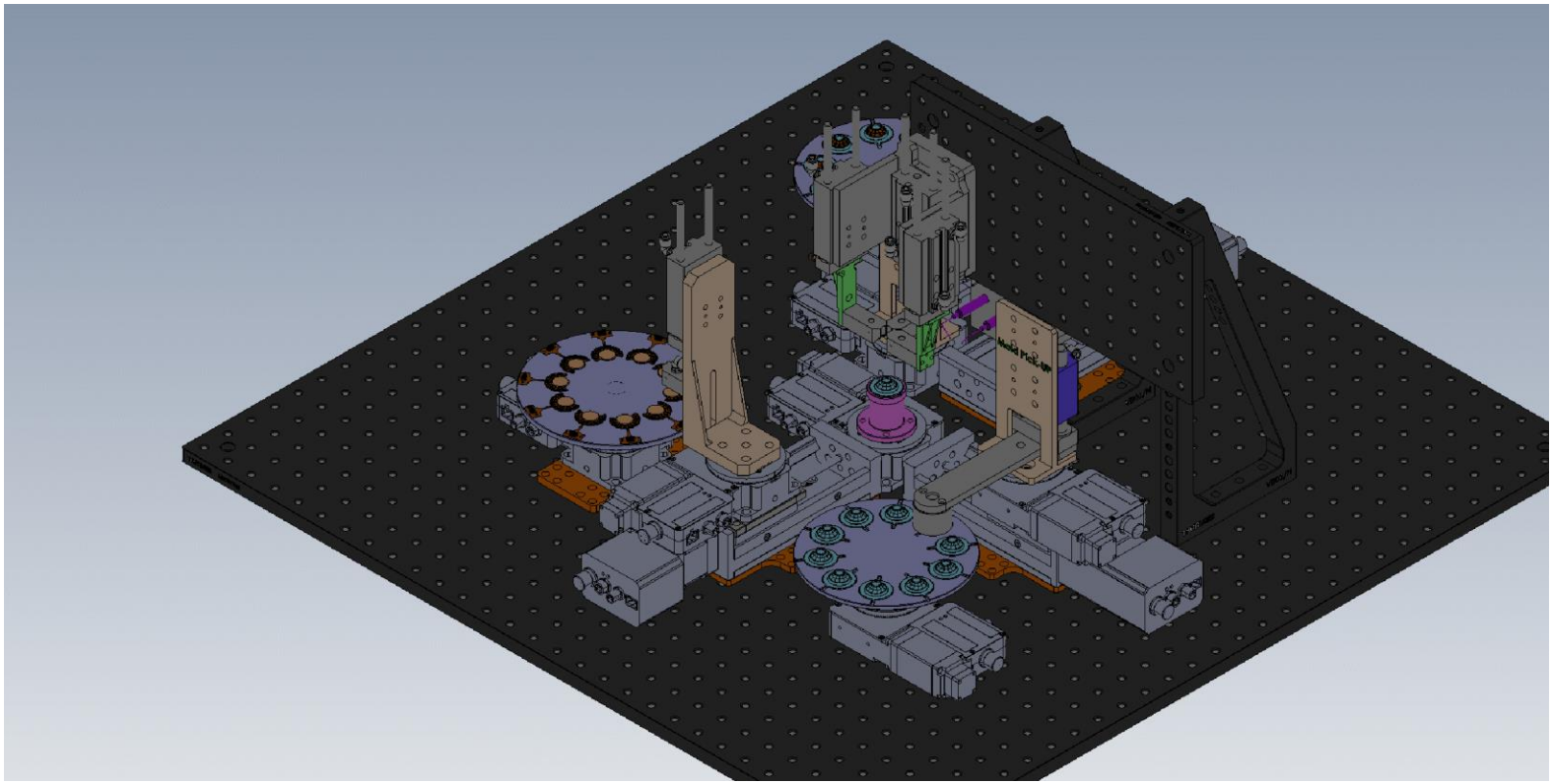
The Payload Closure Station



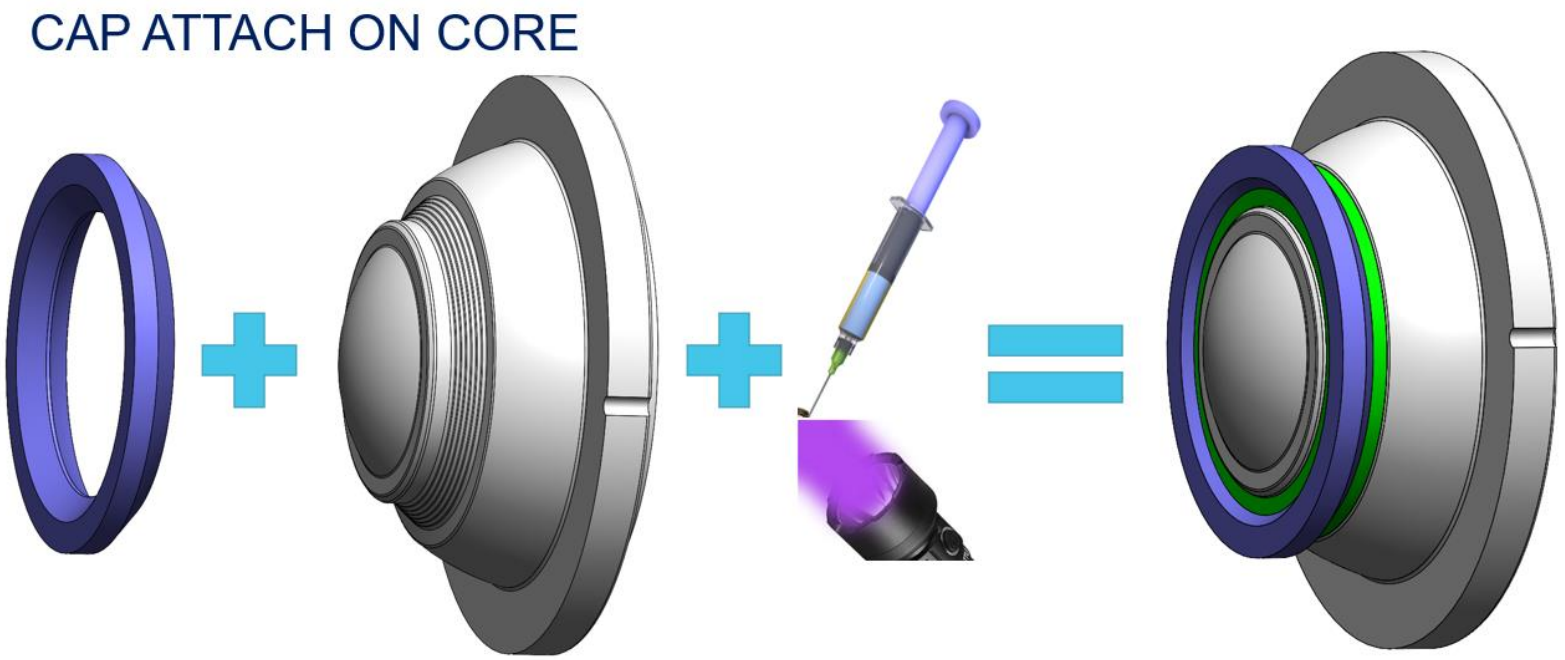
The Closure Station



Payloads Assembly Process



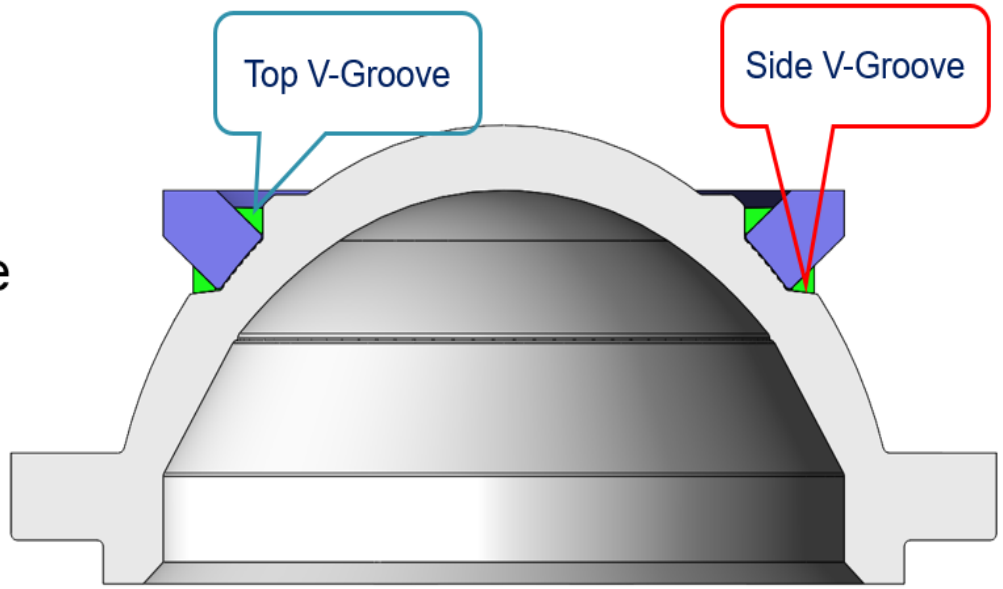
How This Machine Operates



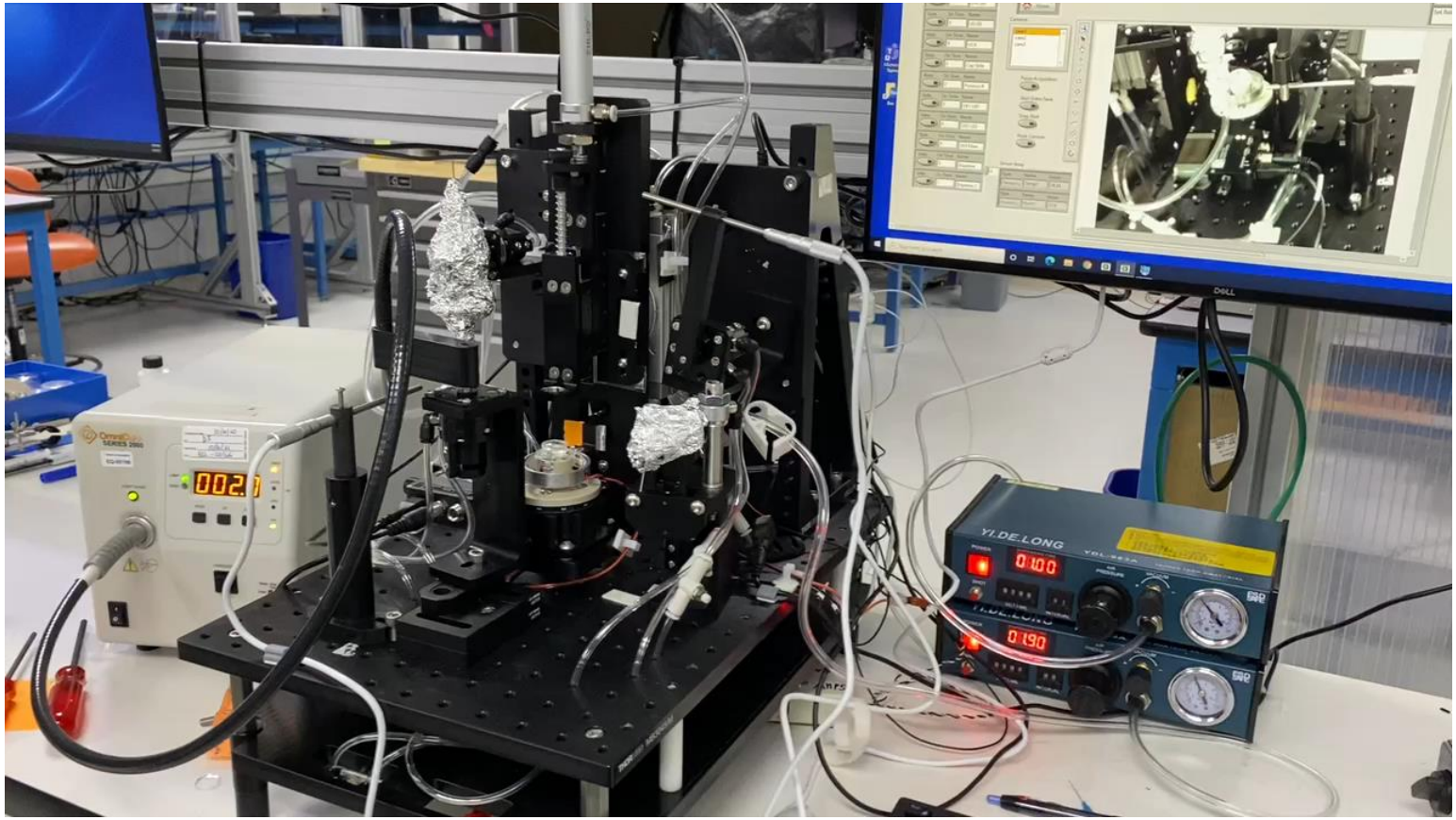
Attachment Process

Firstly, Apply UV glue on top V-groove and cure it with UV light;

Then apply UV glue to side V-groove and cure it with UV light

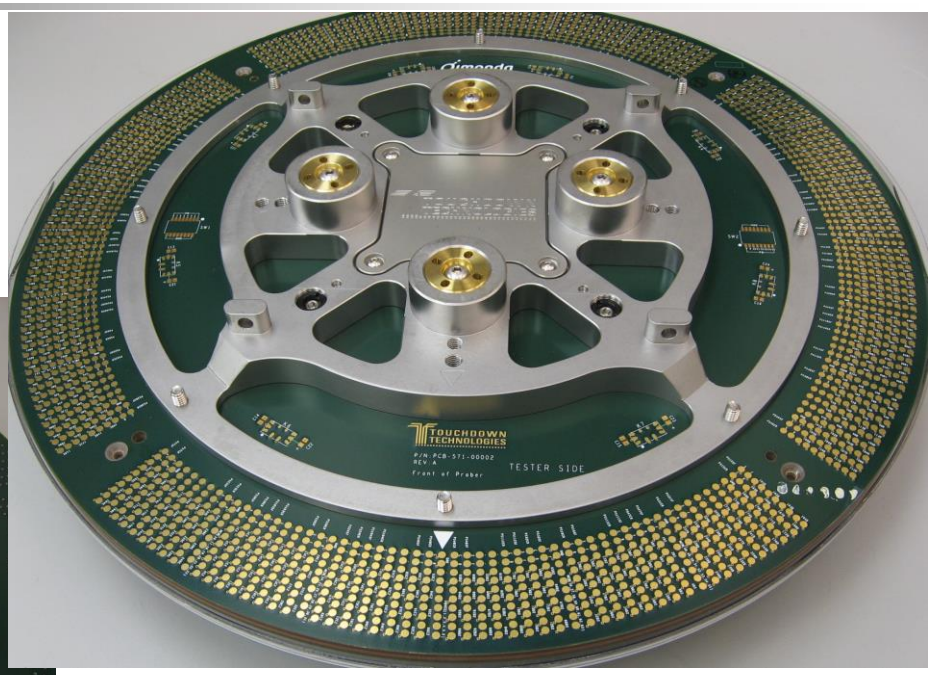


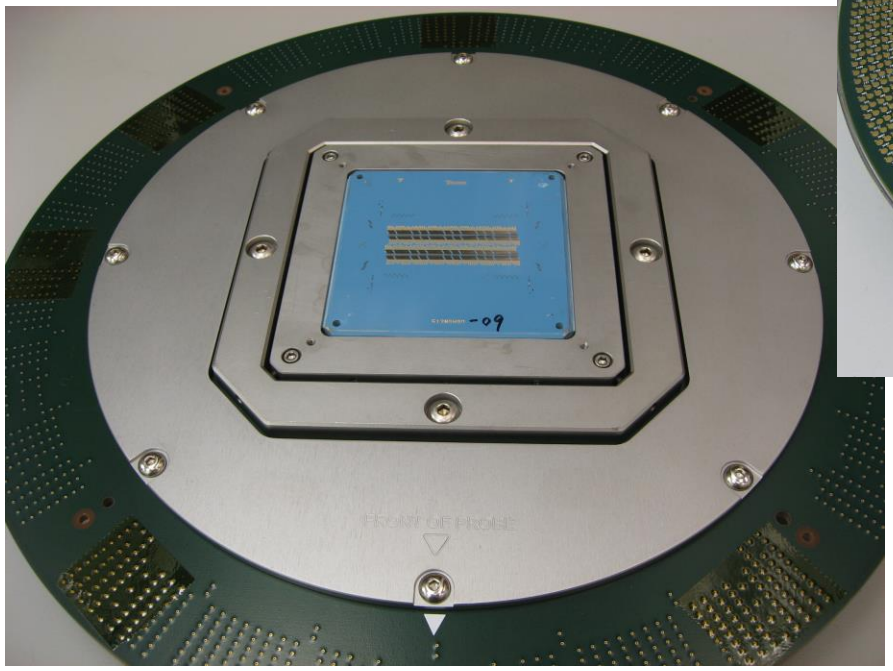
Attachment Station



Semiconductor Wafer Probe Card

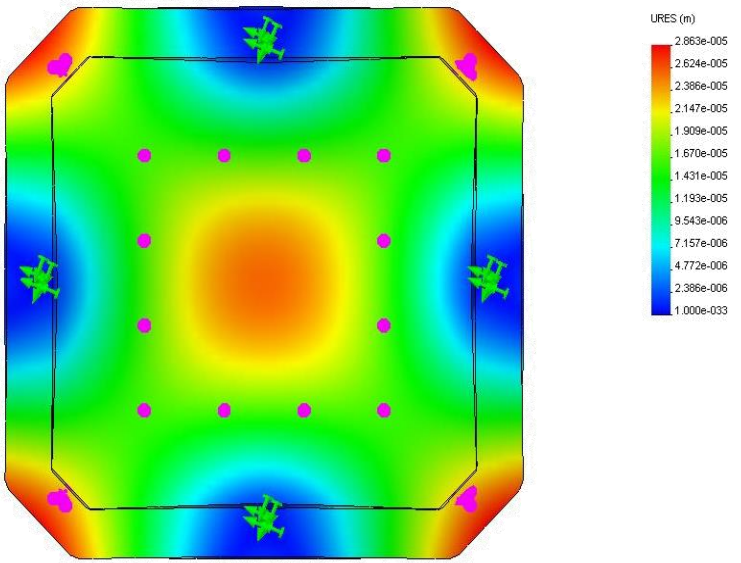
This is a MEMS technology probe card for memory wafer sorting. The probe I designed uses a torsion cantilever hybrid structure design.



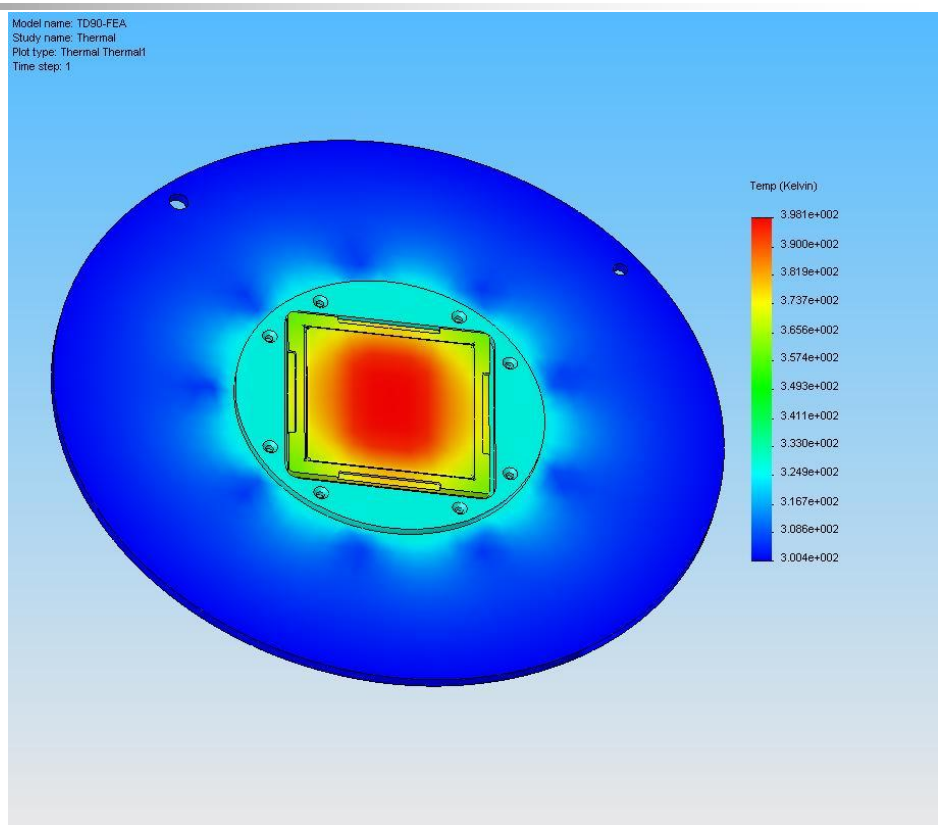


I designed this probe head utilizing a mechanism with 8 differential threads to balance out the extra stress from the POGO pin connectors and prevent deformation.

Probe Card FEA



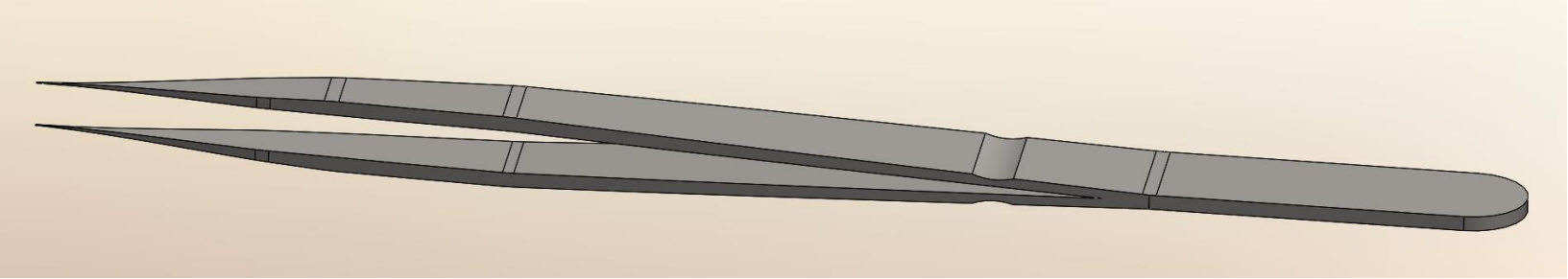
Deformation Analysis



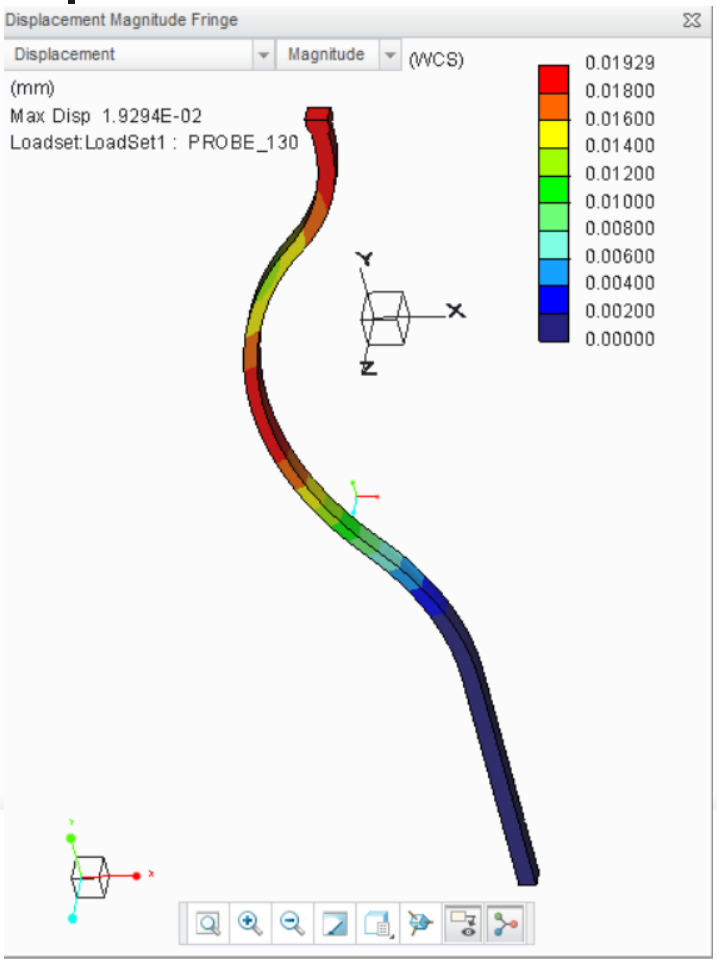
Thermal Analysis

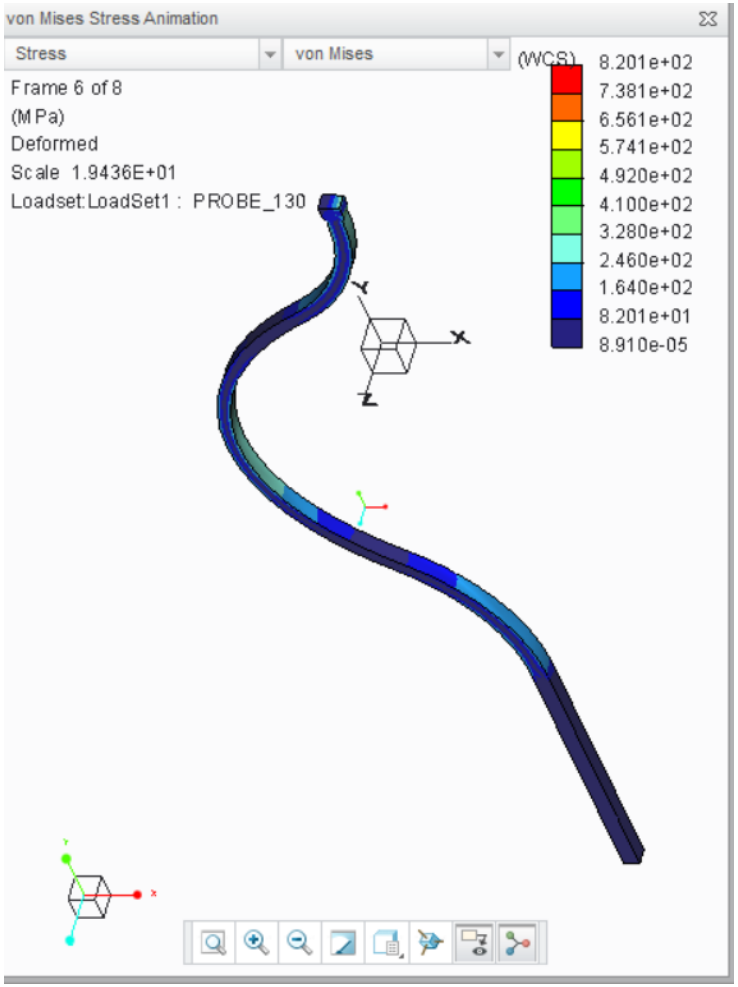
Improved Tweezer Design

- Greatly improved user comfort and neuromechanical feedback for fine manipulation of sensitive MEMS vertical probes.
- Reduced user-induced part failure rate by 90% compared to previous tweezer design.



Probe Stress Analysis

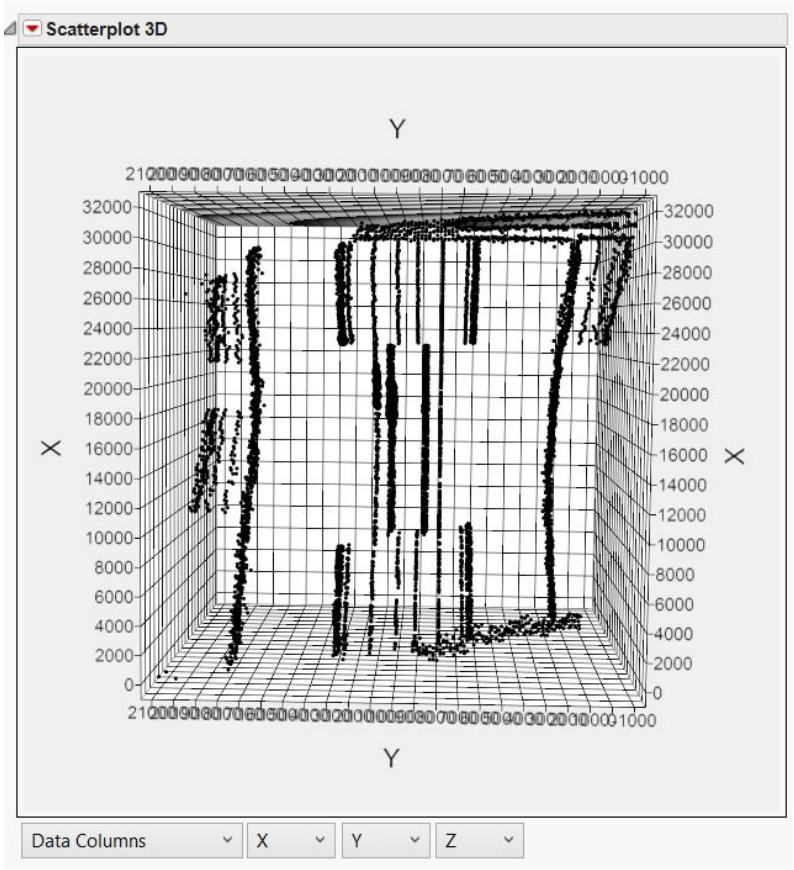


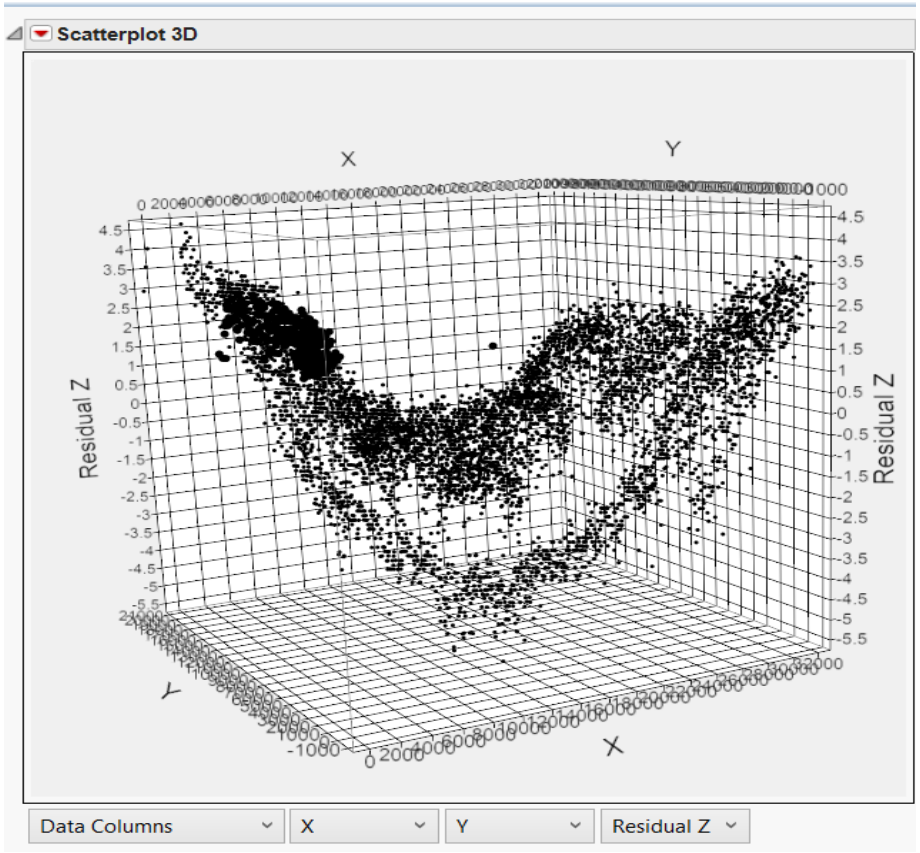


Intelligent Sanding Machine for Probe Head Lapping

I designed and created this device, which utilizes sensors to perform precise sanding for probe head distal end and eliminate planarity issues.

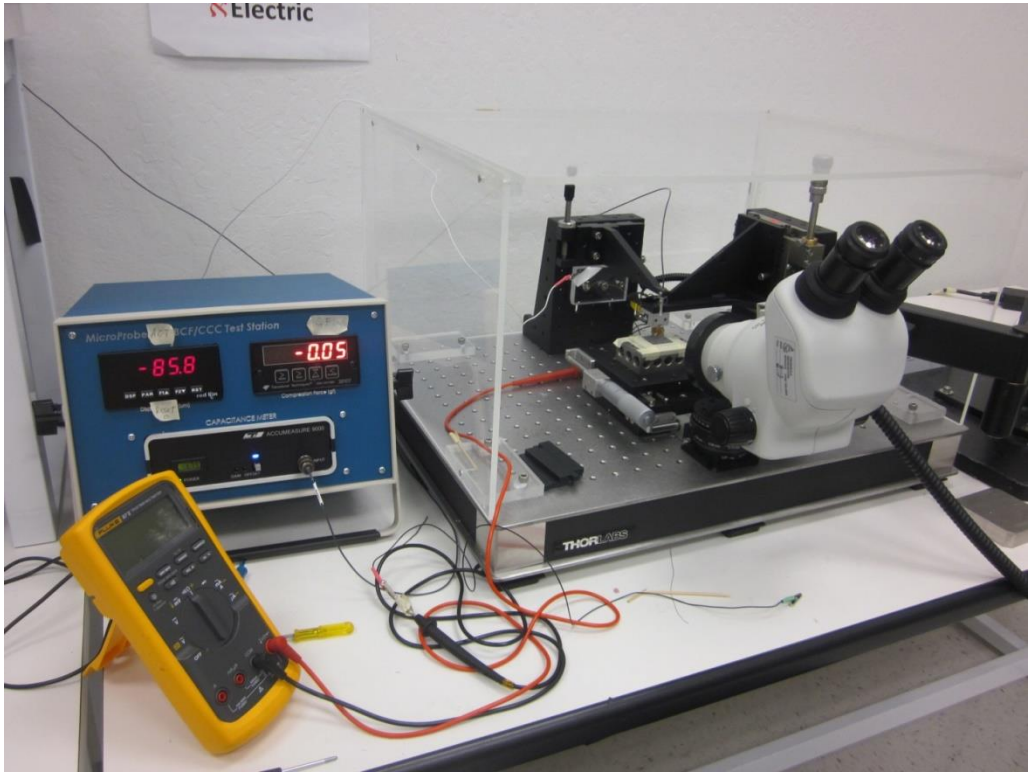
Probe Head Planarity Analysis



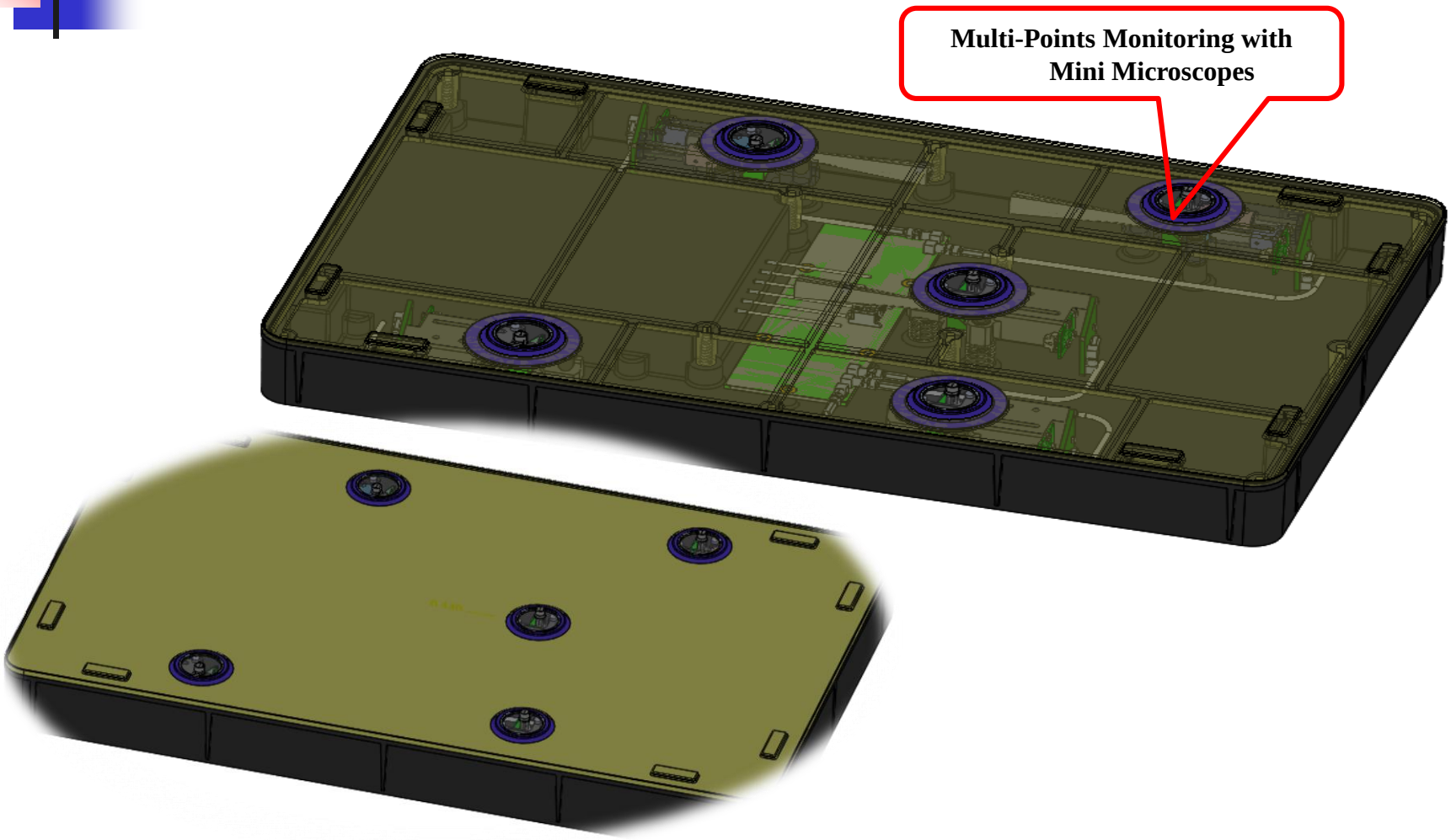


Instrument for Measuring Probe Balance Contact Force and Current Carry Capacity

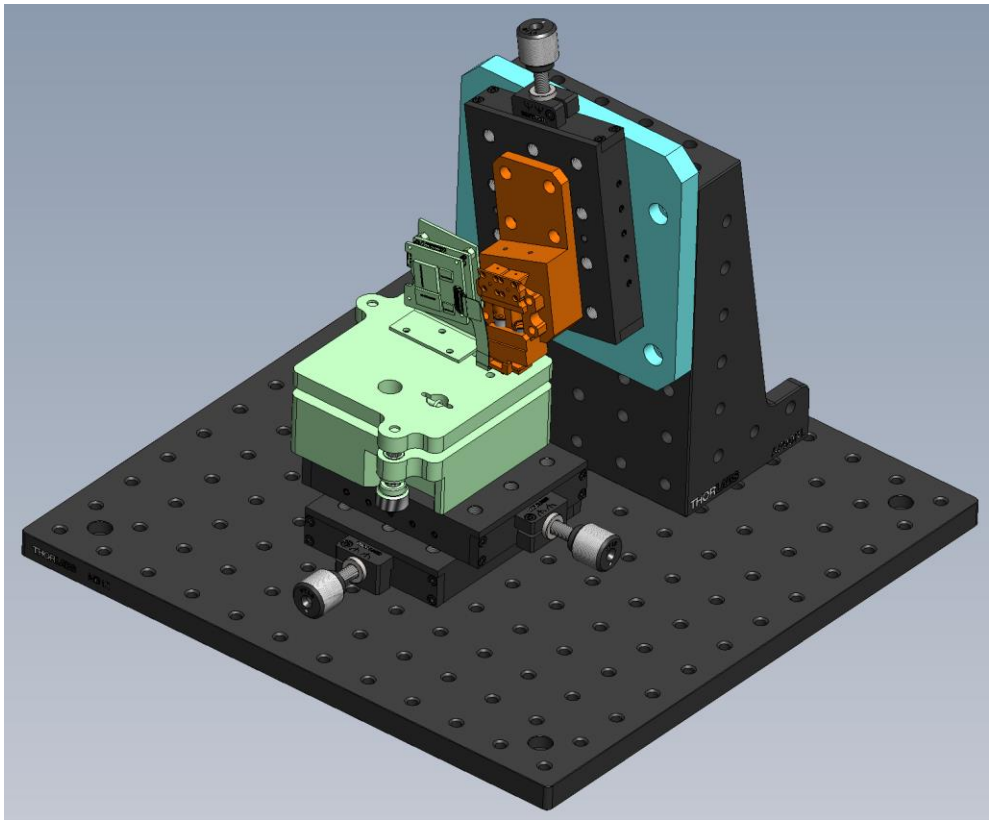
This instrument measures the probe compression displacement, compression force and current capacity. It utilizes load cell and capacitor sensors, which directly interact with the probe to obtain highly precise measurements.



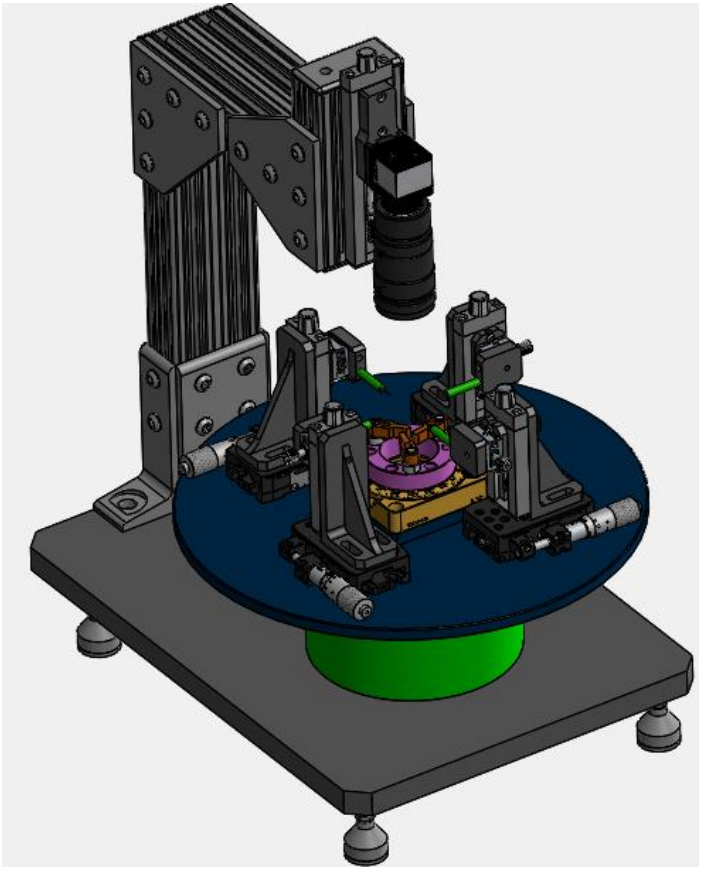
Cell Growth Monitoring Device



Optic Assembly Tools



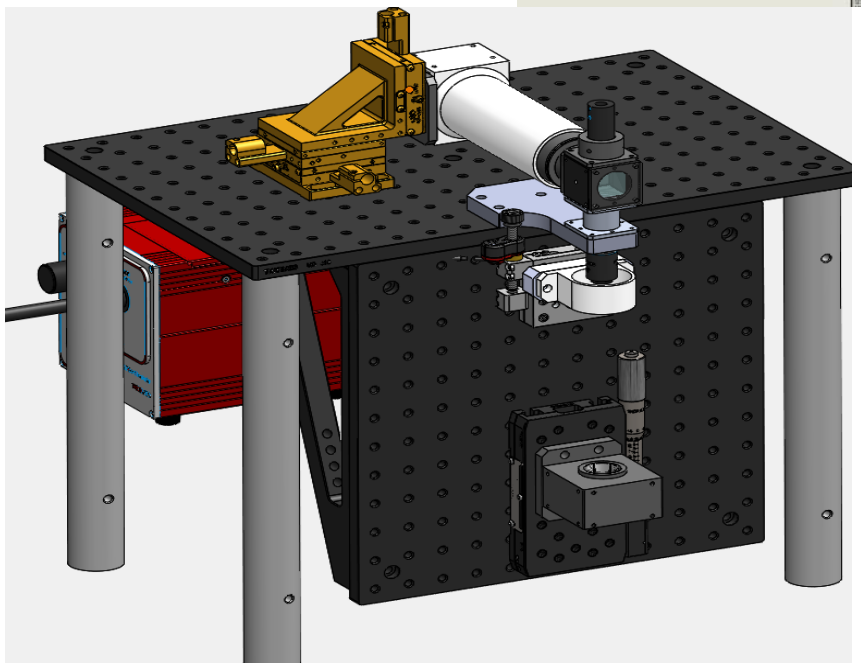
Microscope Camera CCD PCB Alignment

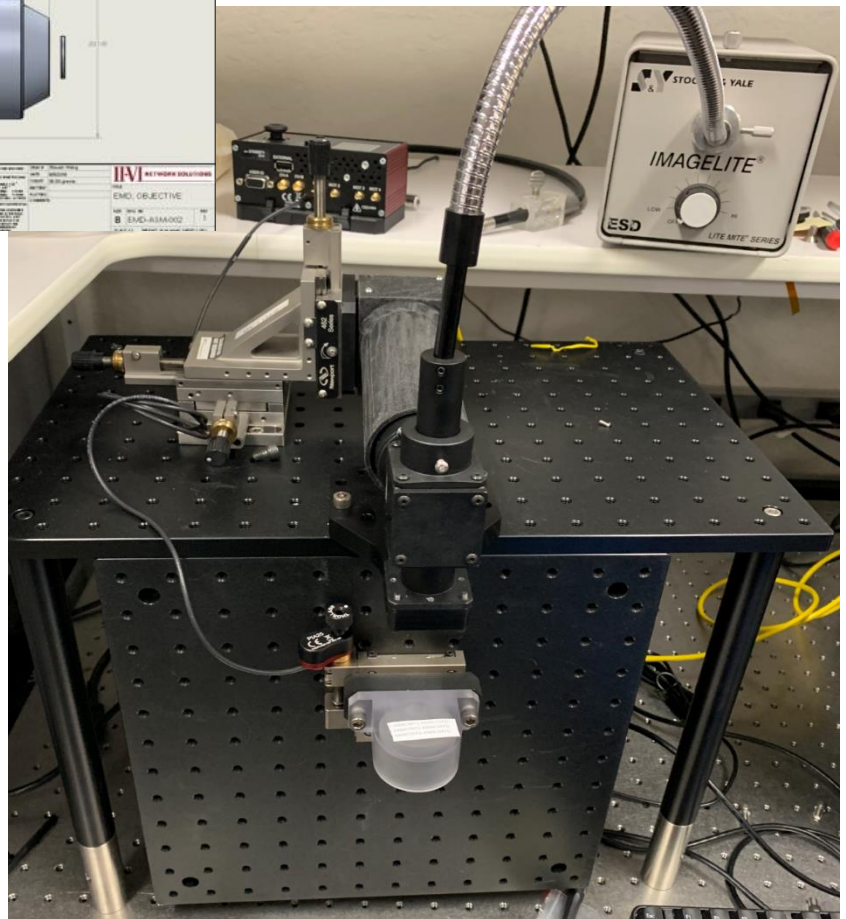


Objective Lens Element Assembly

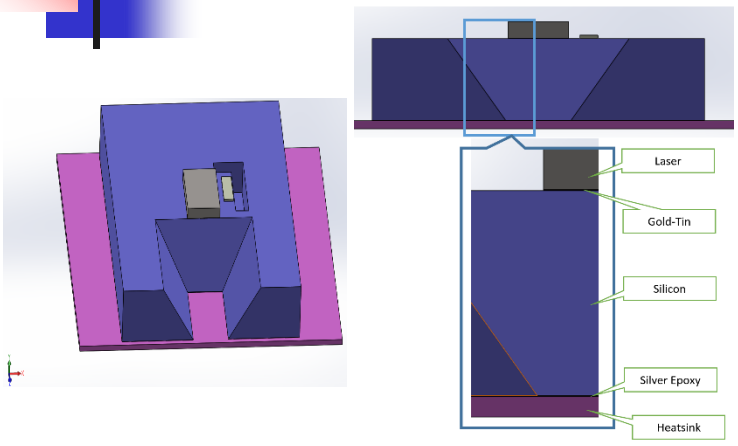
Objective Tester

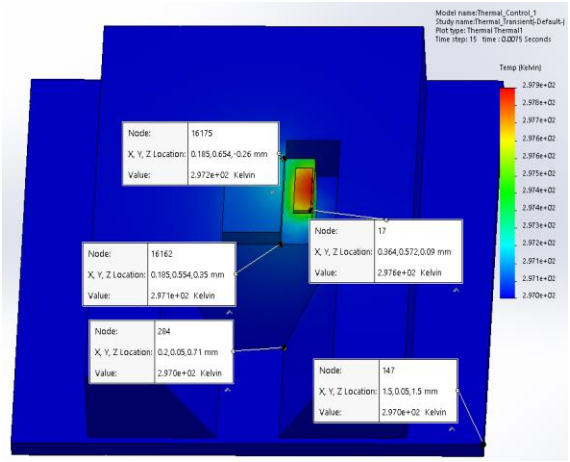
For Objective WD, N.A, MTF etc.

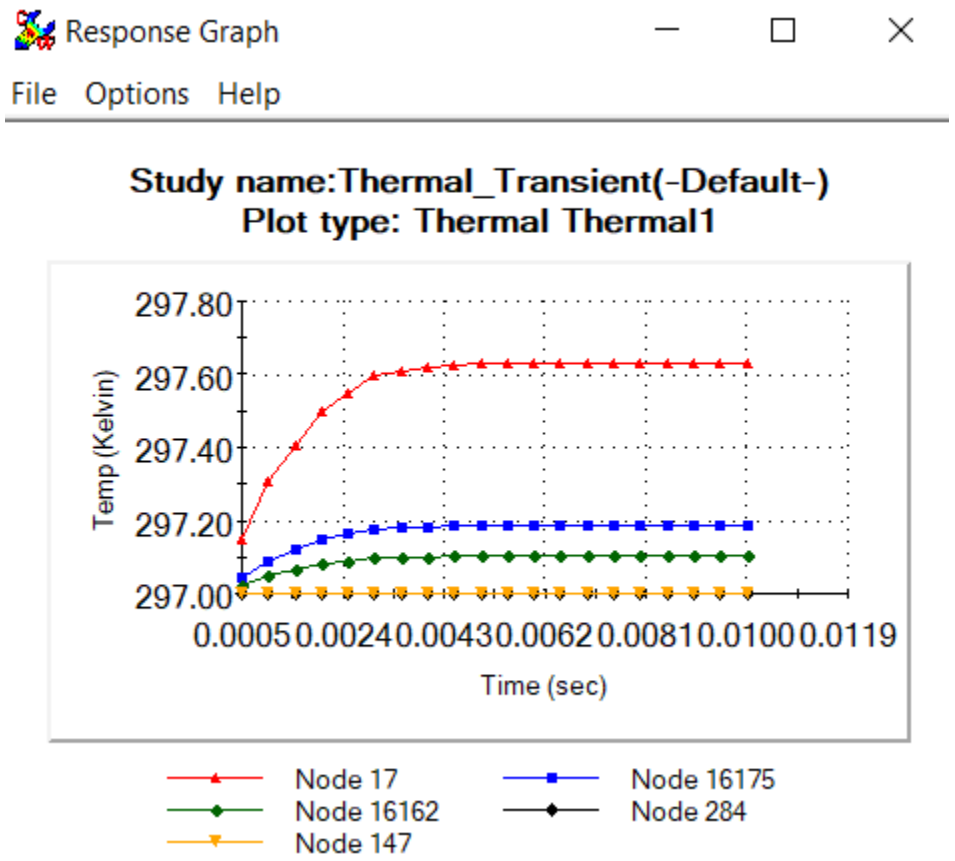




Laser Chip Thermal Analysis



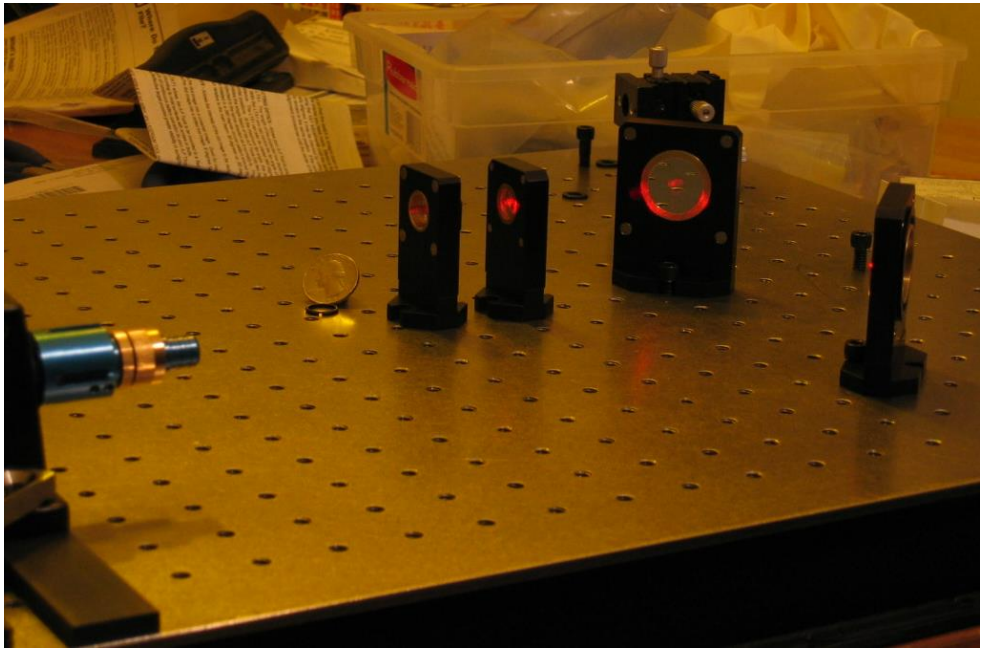


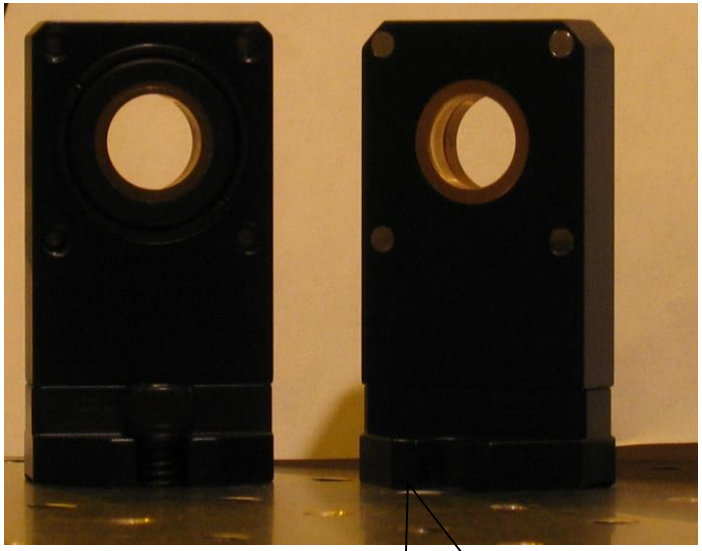


Compact Adjustable Optical Mount

(Patent was acquired by NewPort Corp.)

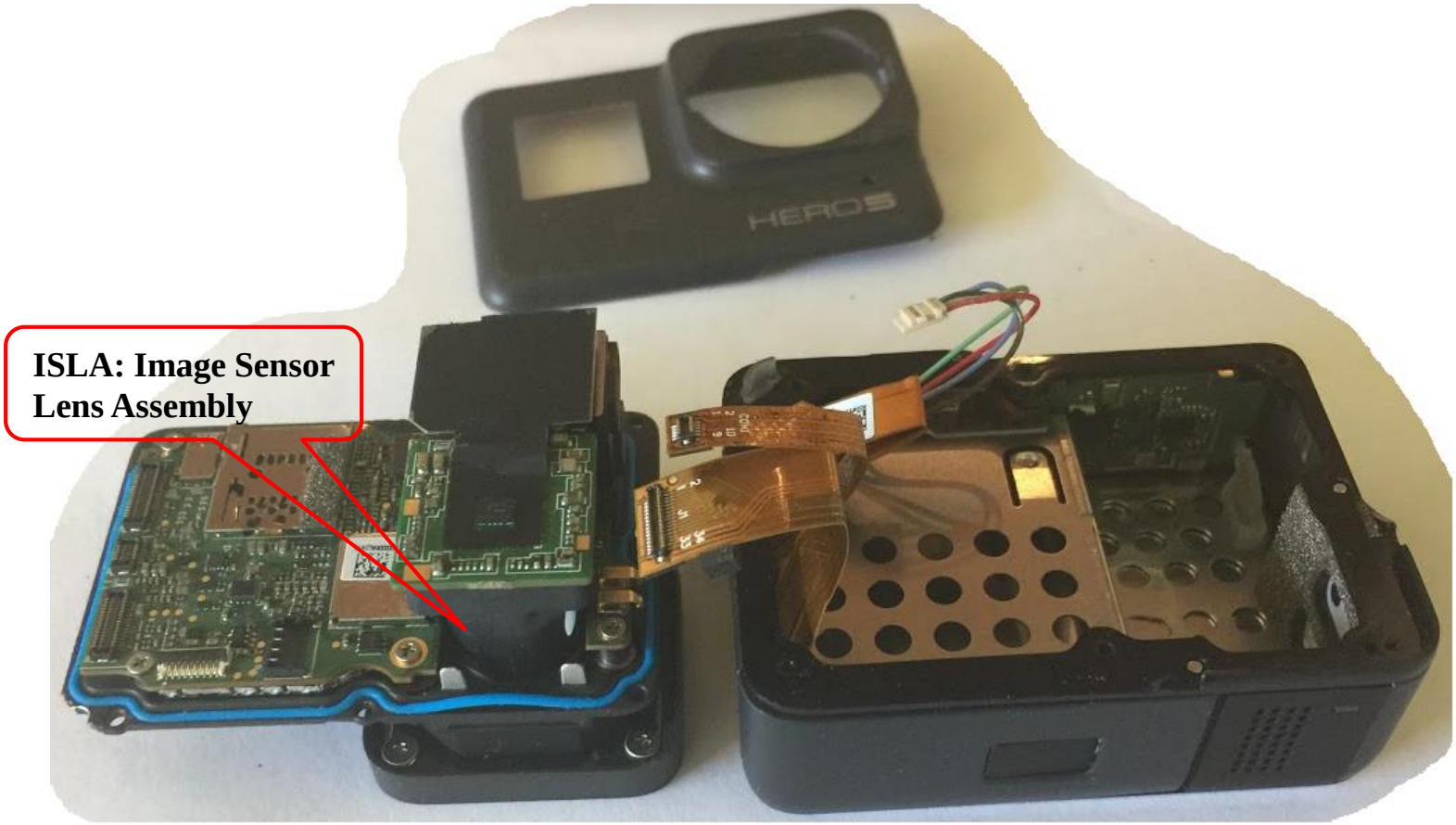
This invention resolved optical mount stability issues. The compact design also saved space for the optical system.



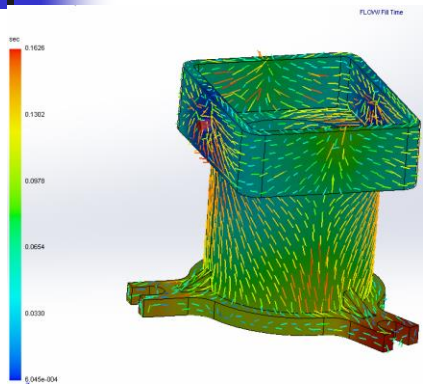


Optical mount can be adjusted very precisely and then firmly locked in place.

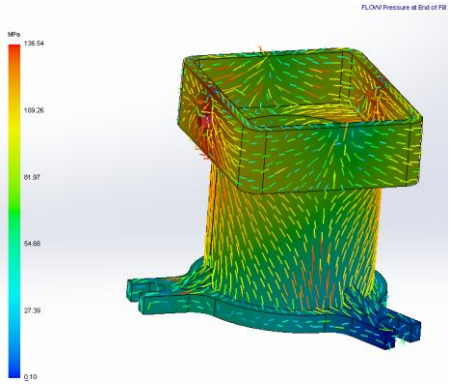
Hero 5 Action Camera



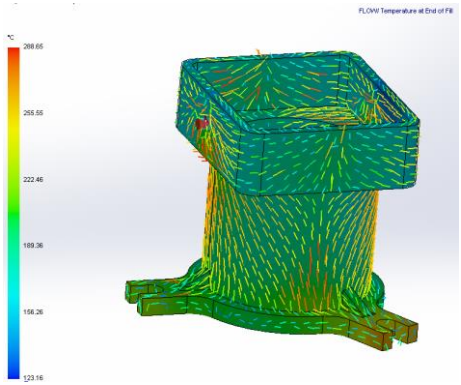
Lens Mount Injection MFA



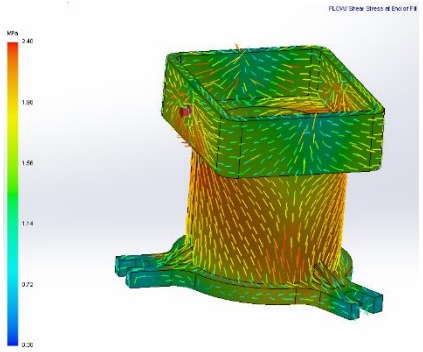
FLOW/Fill Time



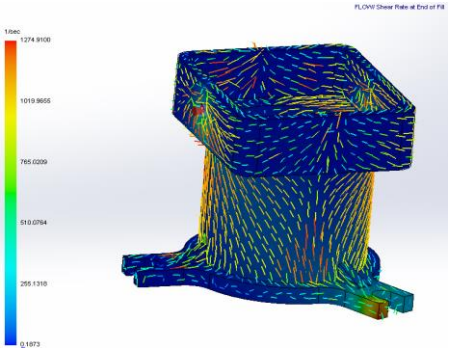
FLOW/Pressure at end of Fill



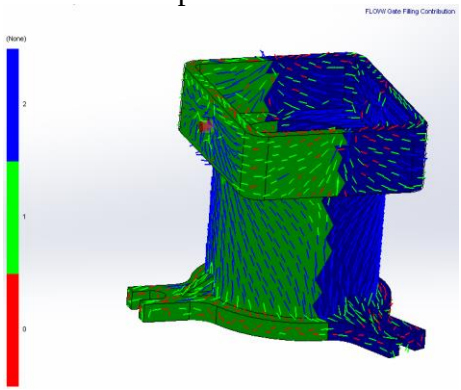
FLOW/Temperature at end of Fill



FLOW/Shear stress at end of Fill

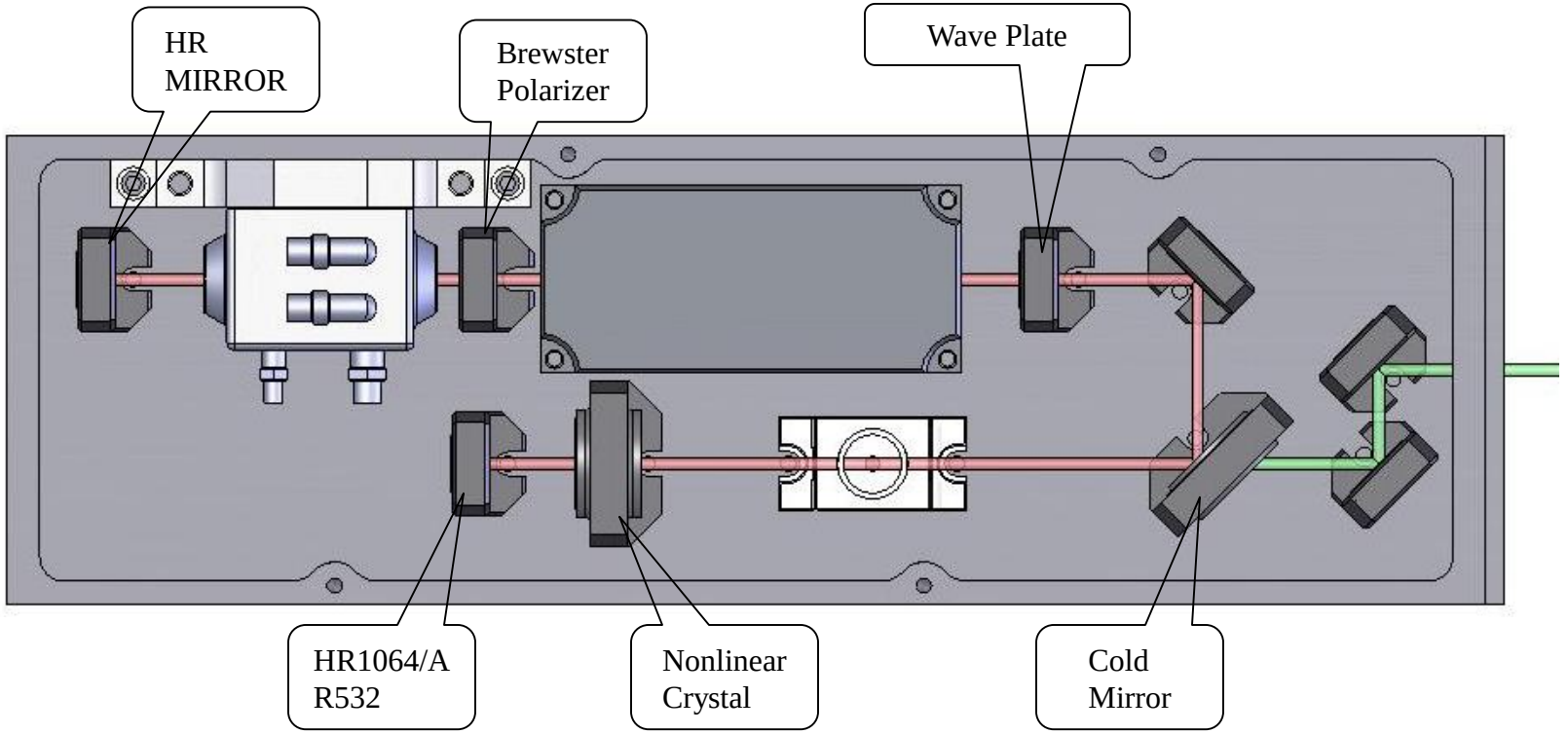


FLOW/Shear rate at end of Fill



FLOW/Gate Filling Contribution

YAG Laser


HR
MIRROR
Brewster
Polarizer
Wave Plate
HR1064/A
R532
Nonlinear
Crystal
Cold
Mirror

Optical Sensor for Measuring Fruit Juice Concentration

I created this device to replace an existing less-reliable ultrasonic fruit juice concentration measurement system. It had a simpler design than its predecessor and a much longer service life since it had no moving parts and produced more precise measurements.