

Microvisk Technologies



**Novel Sensor Technology for
Point of Care Diagnostics**



MICROVISK TECHNOLOGIES

MEMS – Elegant Simplicity

MICRO **E**LECTRO
MECCHANICAL **S**YSTEM



- **Using the micro technology of silicon semi conductors to create truly 3D micro mechanical structures**
- **It is the technology behind:**
 - The technology that triggers air bags
 - The technology that senses tyre pressures
 - The DLP - computer projector technology
 - The gyroscope sensor behind the Nintendo **Wii** and **iPhone**

Technology at the heart of Microvisk advantage

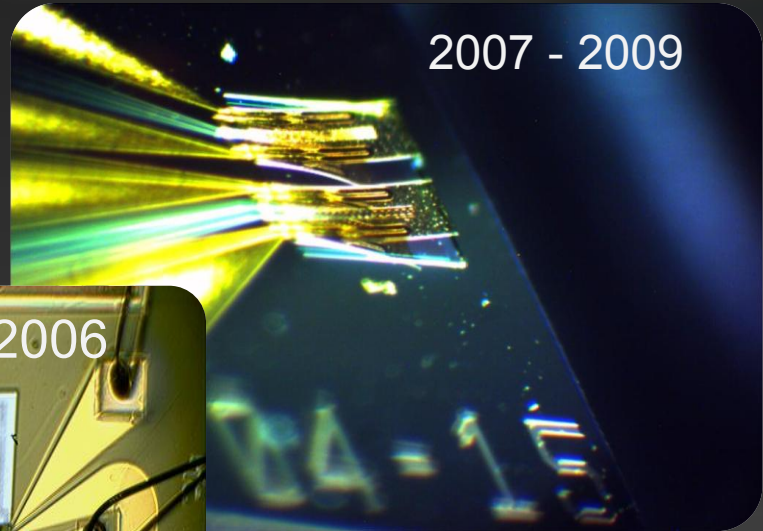
MEMS Technology



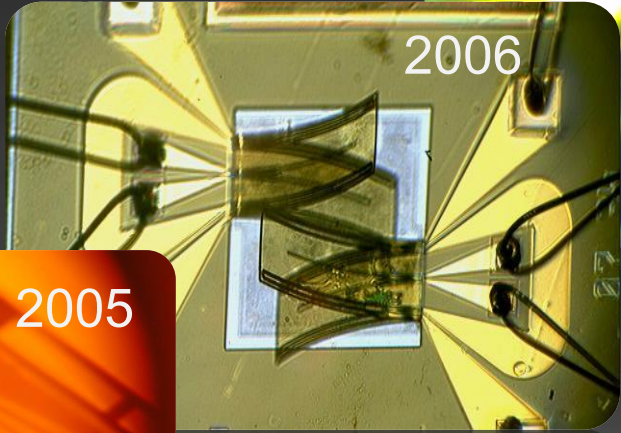
Technology at the heart of Microvisk advantage

The Microvisk Technology

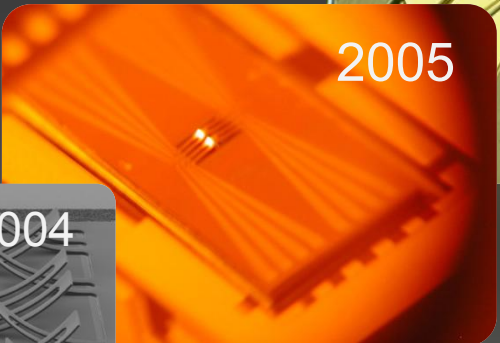
Originally developed at
Rutherford Appleton
Laboratories
STFC - UK



2007 - 2009



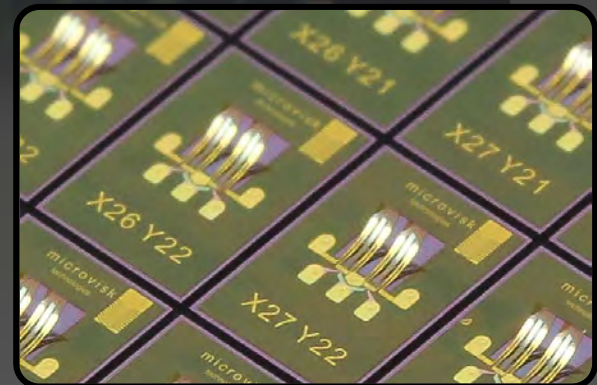
2006

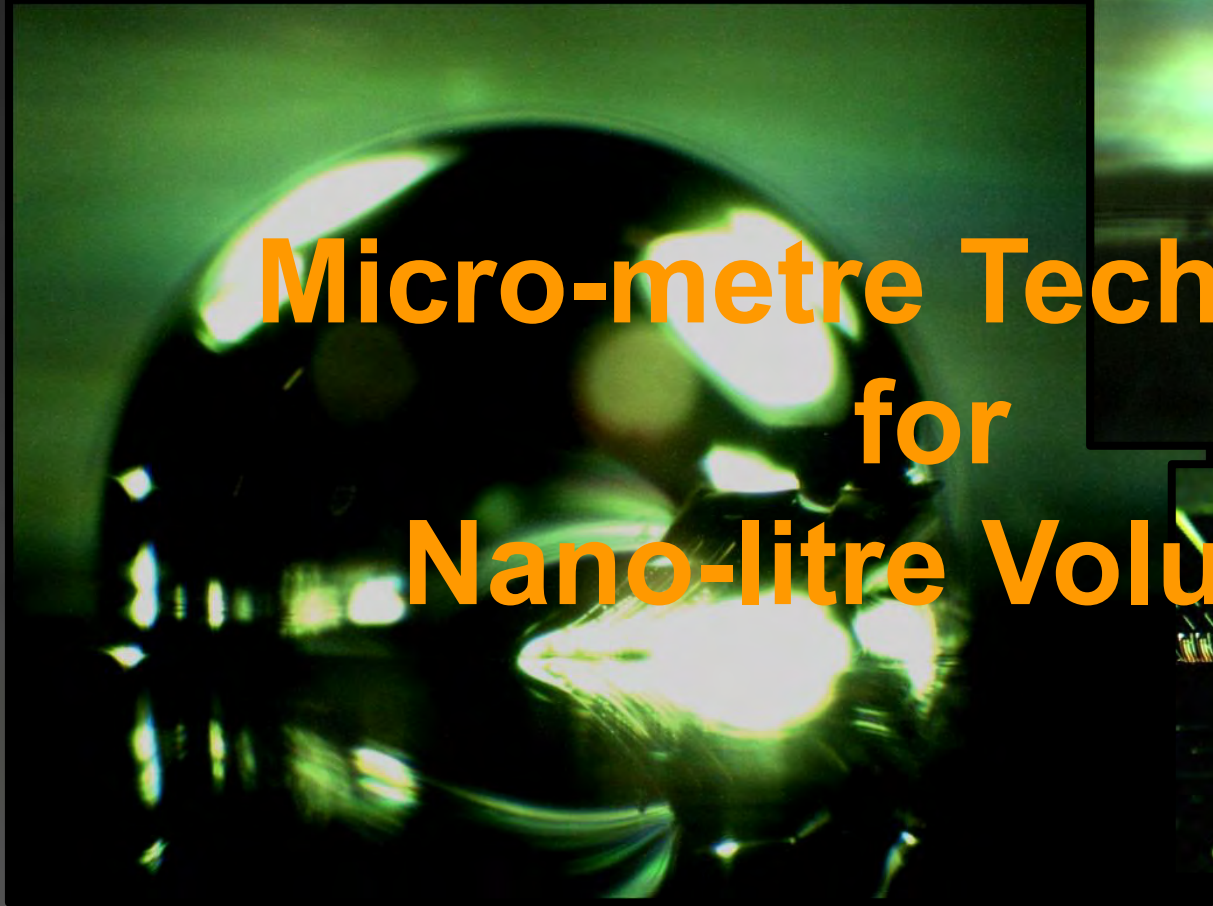


2005





2002 - 2004





**Micro-metre Technology
for
Nano-litre Volumes**



The image features a large, dark, circular microfluidic device on the left, with bright green light reflecting off its curved surfaces. To the right, there are two smaller inset images: the top one shows a microfluidic channel with a curved structure and green light, and the bottom one shows a microfluidic chip with multiple channels and small reservoirs, also illuminated with green light.

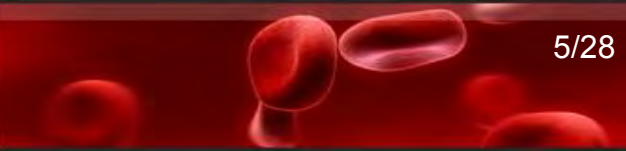
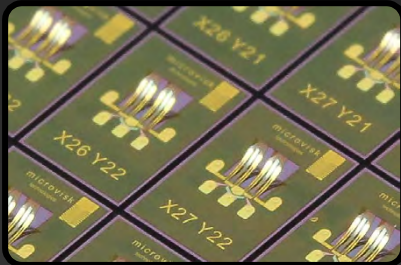
Microvisk Technologies



- **Developing Point Of Care and Patient Self Test system**
- **Monitoring of blood coagulation**
- **Patients on Warfarin therapy -7 mil. UK, Europe and USA**
- **Home testing now paid for by US and German health care providers**
- **Financially similar to the glucose market**
- **Global Market valued at \$6bn - Only 3 competitors**
- ***So exactly 42 times less competition***

Microvisk Concept

MEMS Technology



Instruments for POC and PST



Disposable Test Strip - SmartStrip®



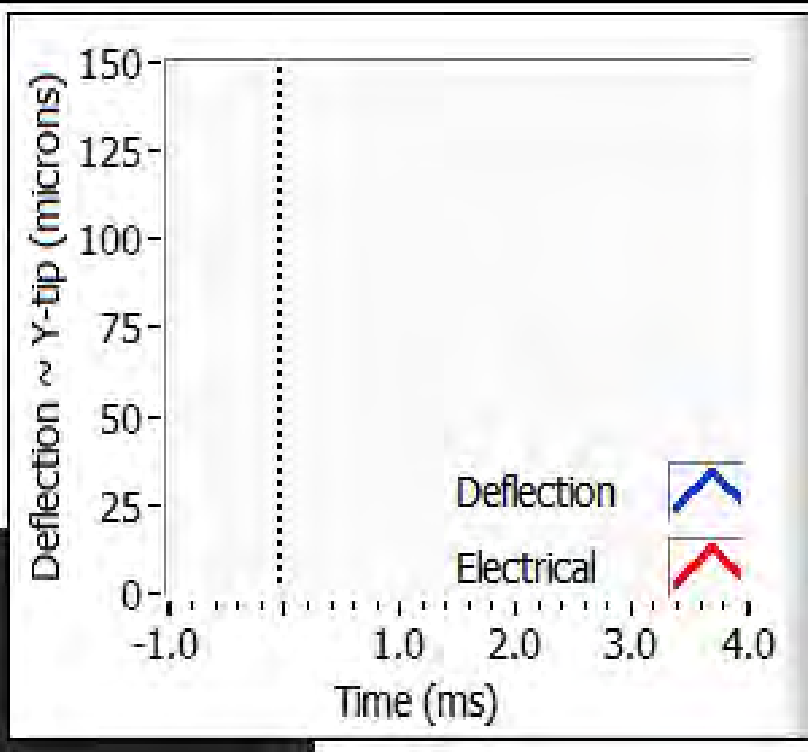
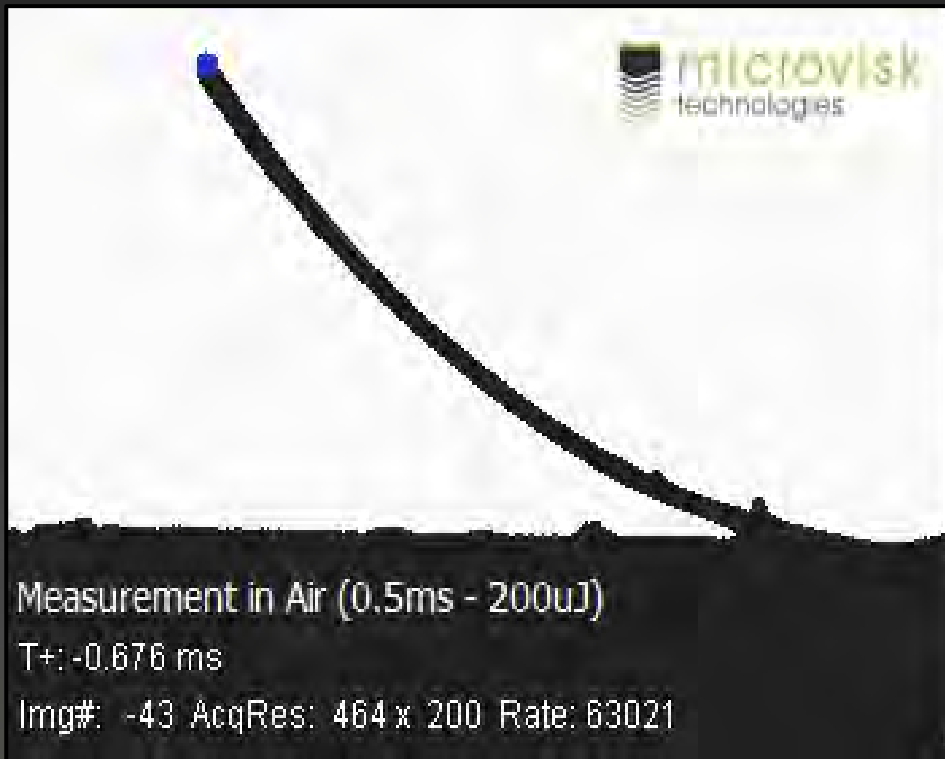
- **Clear test differentiation from competitors**
- **High accuracy, robust, easiest to use**
- **Microvisk SmartStrip® first solid state coagulation test**
- **Microvisk technology capable of all coagulation tests including TEG + monitoring of other bodily fluids**
- **Microvisk Technology - technology truly suited for multiple testing and modular architecture**



Microvisk Advantages

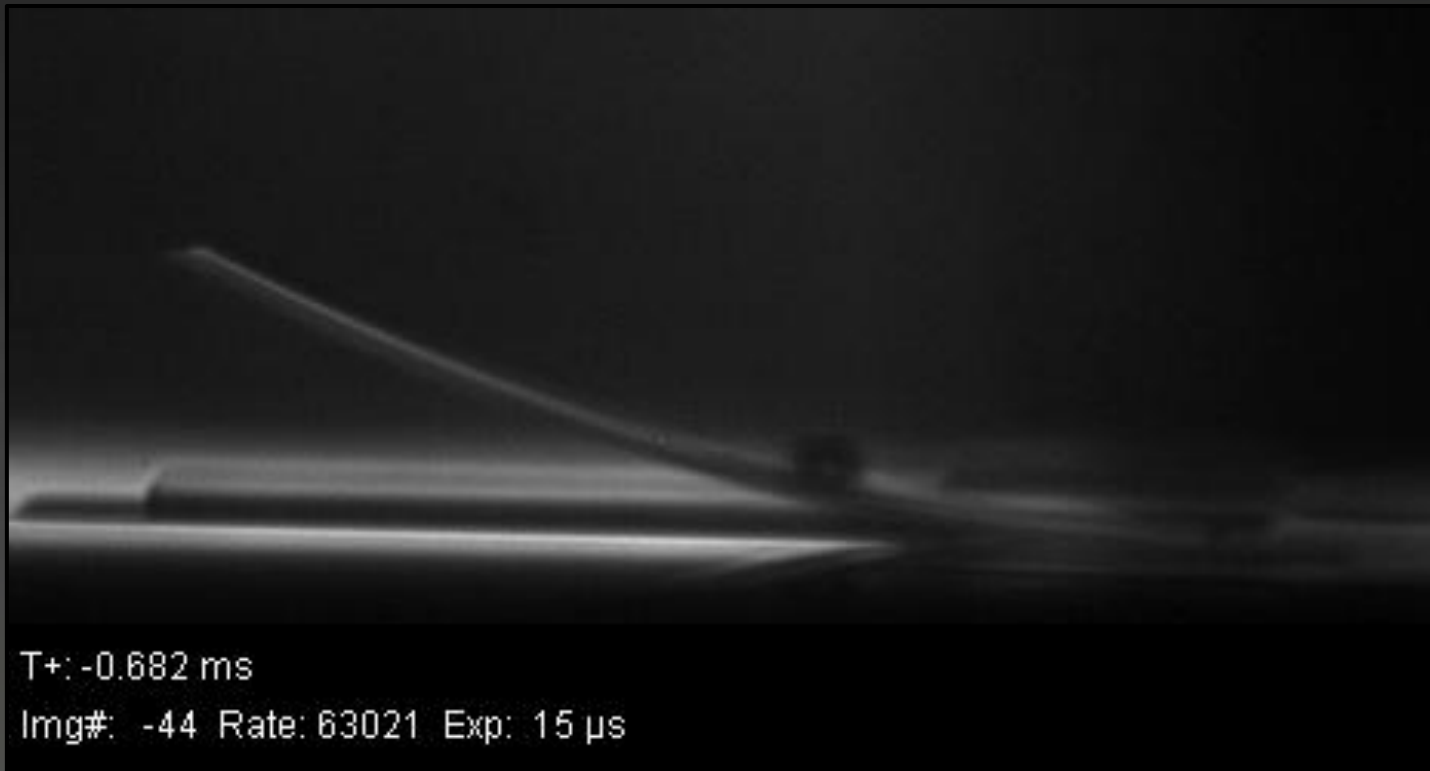
- Low blood volume 5microlitres
- Low pain for users
- Robust solid state technology
- Simple and safe to use – just like a glucometer
- Unique Smartstrip® technology
- On board control system

How it's done...Thin Air...

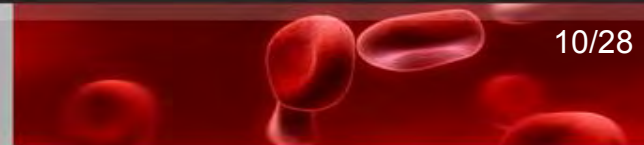


... And Thicker Fluids...

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The Microvisk Technology

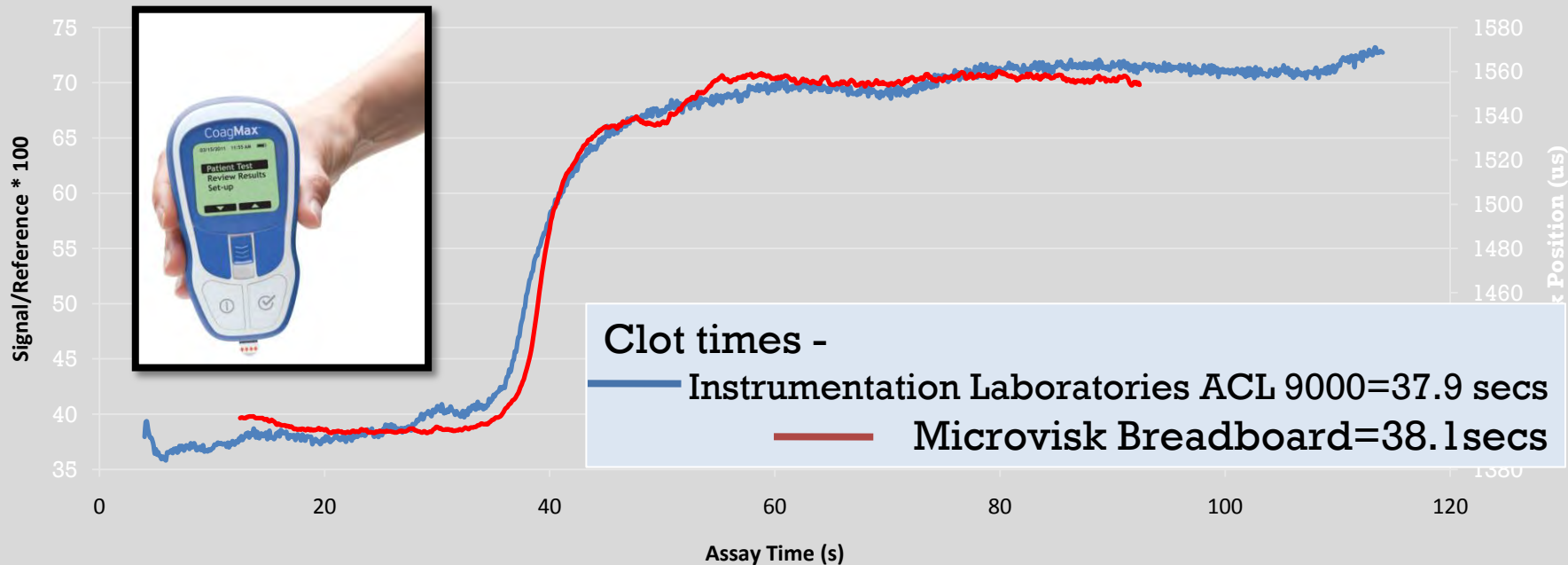


HemosIL High Abnormal Plasma

Data generated by IL ACL 9000 optical coagulometer & Microvisk Breadboard Electronics
20th October 2008

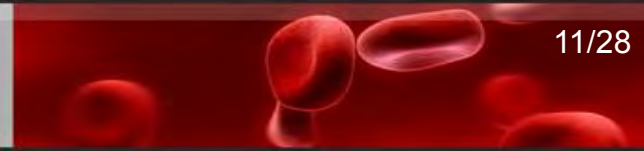
ACL data offset +4 secs for blanking time; Breadboard offset +10secs for sample addition time

— ACL Data — BreadBoard Data

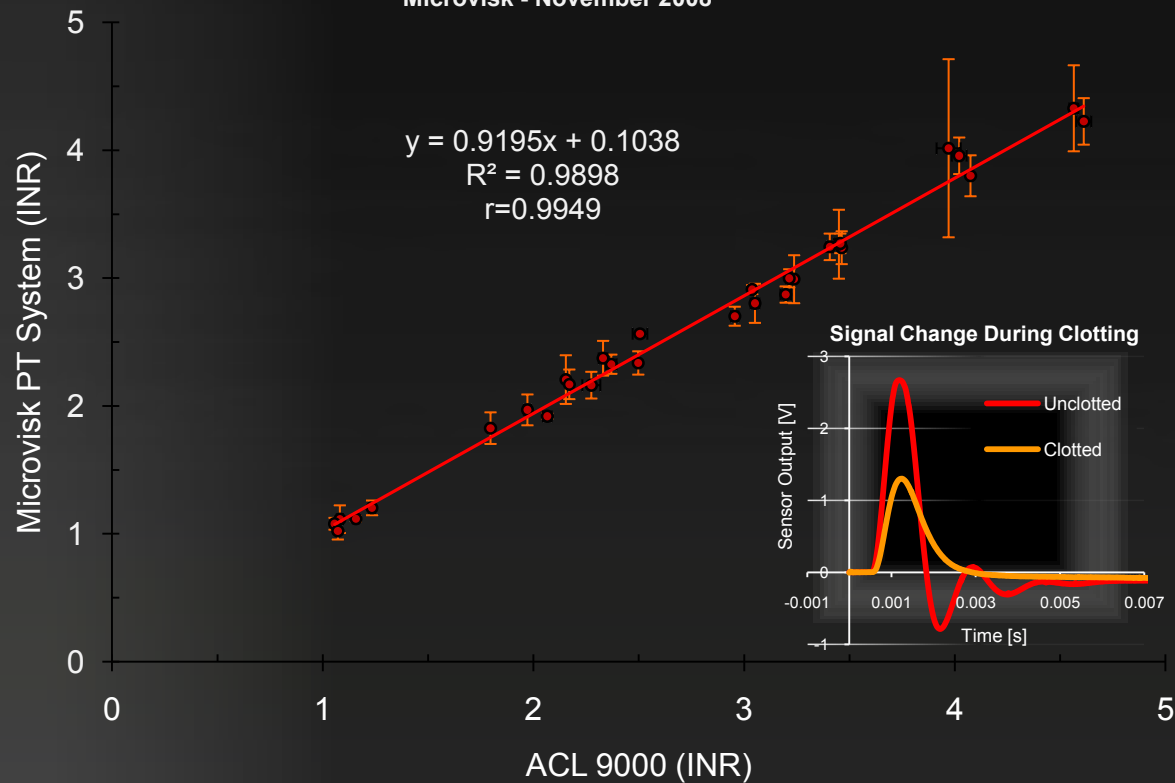


Clot times -
— Instrumentation Laboratories ACL 9000=37.9 secs
— Microvisk Breadboard=38.1secs

The Microvisk Technology



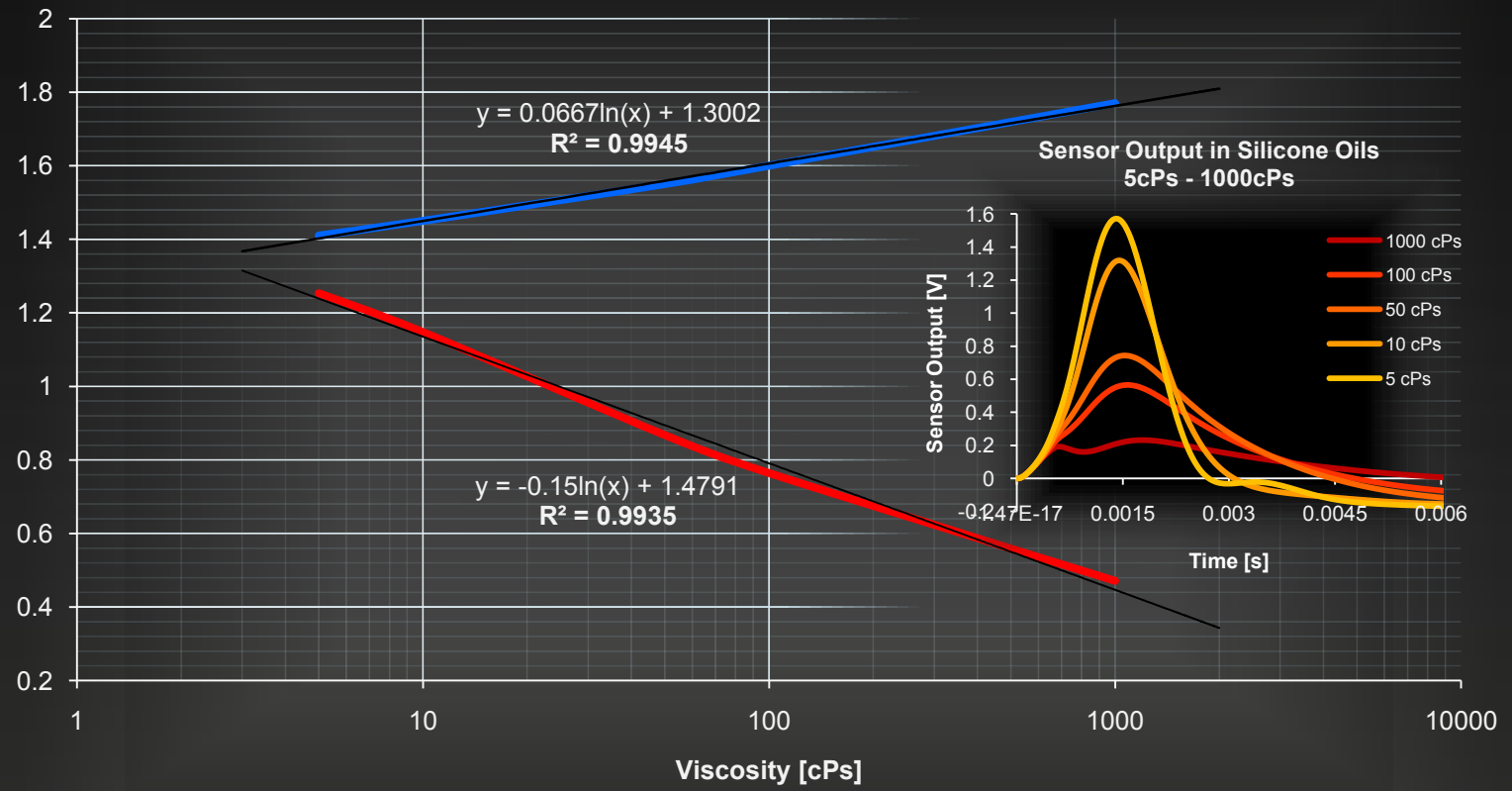
Microvisk INR vs ACL 9000 INR
Citratated Plasmas
Mean Values (Error Bars +/-1SD)
Microvisk - November 2008



Mean
Precision

2.3% CV

Sensory Response 1cPs - 1,000cPs Silicone Oils



— Parameter #2 — Parameter #1 — Log. (Parameter #2) — Log. (Parameter #1)

- **Motor industry – engine oil viscosity**
- **Oil industry – viscosity of oil drilling slurry**
- **Pharmaceutical industry – in process product viscosity**
- **Food industry – in process viscosity**
- **Marine industry – viscosity of marine diesel – algae contamination**
- **“Technologies used in viscometry measurements have seen little or no innovation for half a century”**
 - – Frost & Sullivan, “World Physical Properties Instrumentation Markets” 2006



Microvisk Advantages

- **Low blood volume 5 uL vs 15 uL**
- Low pain for users
- **Robust solid state technology**
- Simple and safe to use – just like a glucometer
- **Unique Smartstrip® technology**
- On board control system

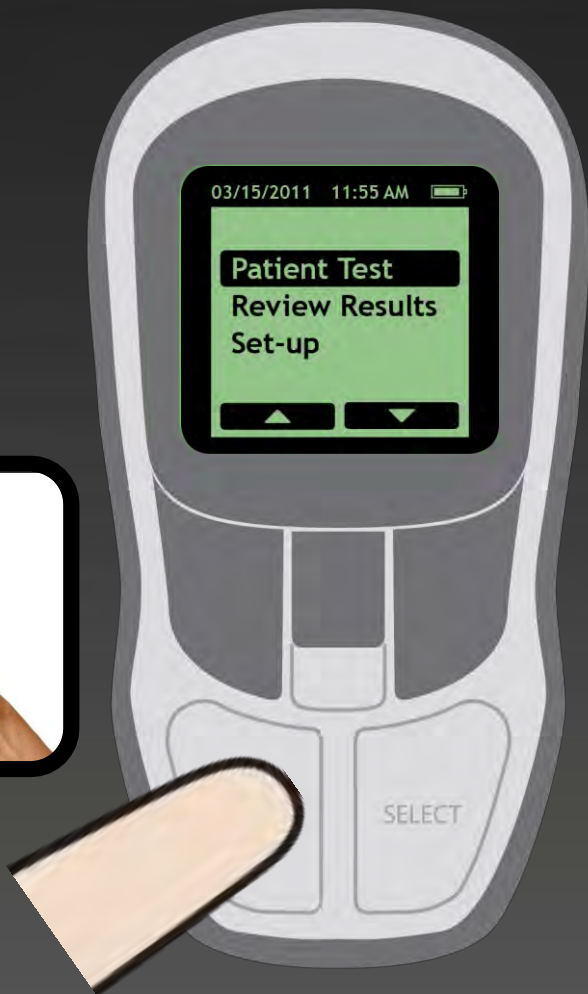


Microvisk Advantages

All Competitors
take blood to instrument

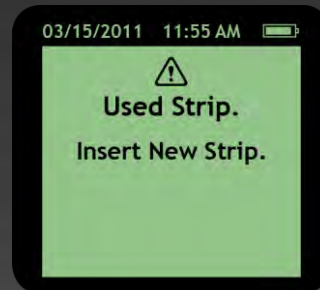
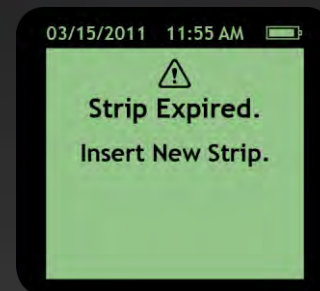
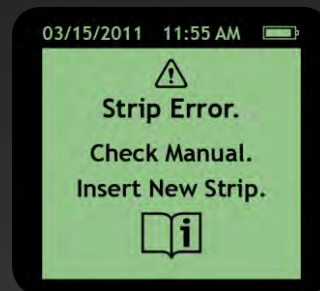
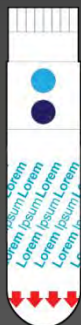
Only **Microvisk**
take instrument to blood

Instrument Self-Test



Error Messages

SmartStrip® Integrity Check



Error Messages



Testing



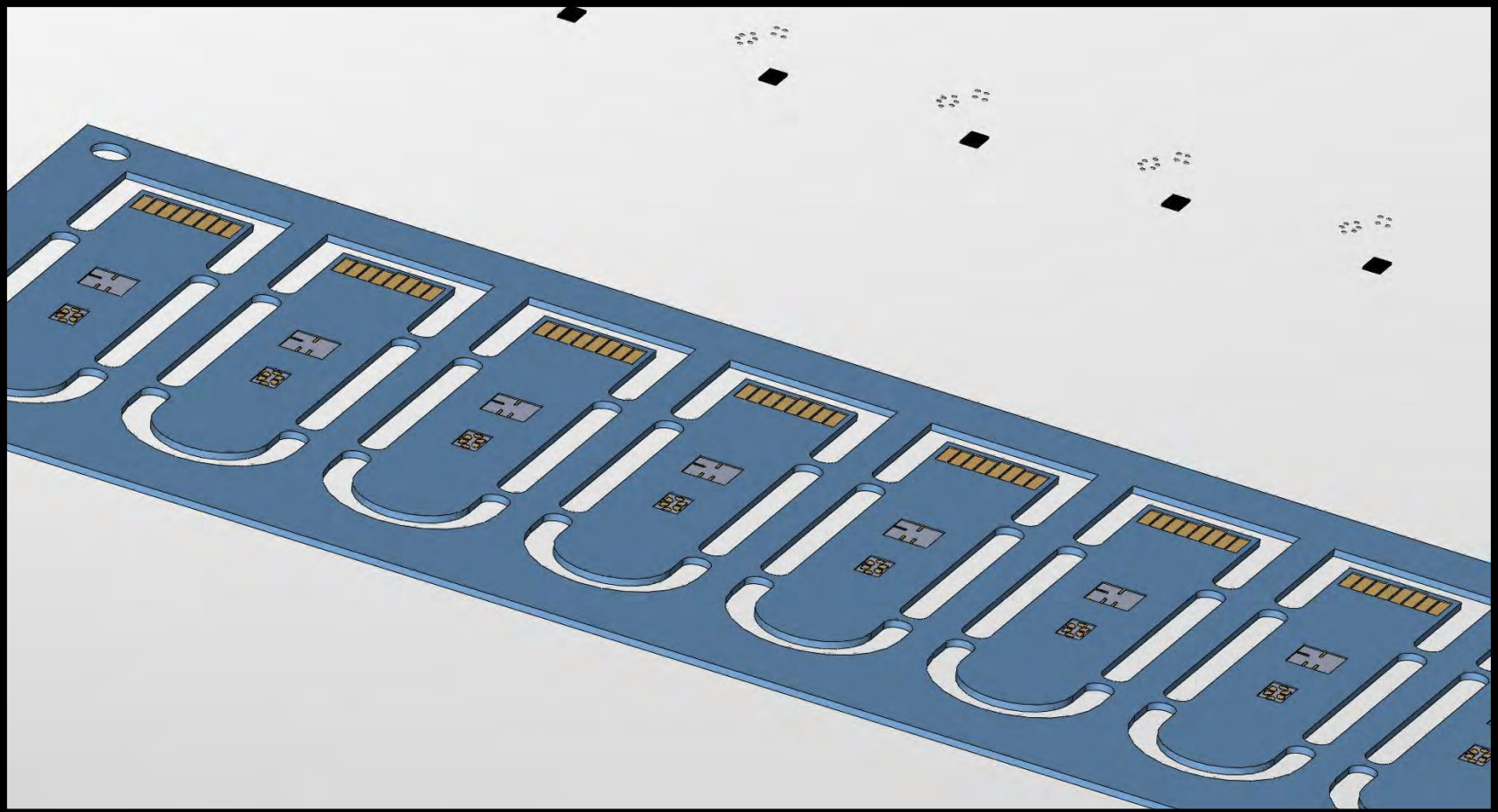
Error Messages

Result

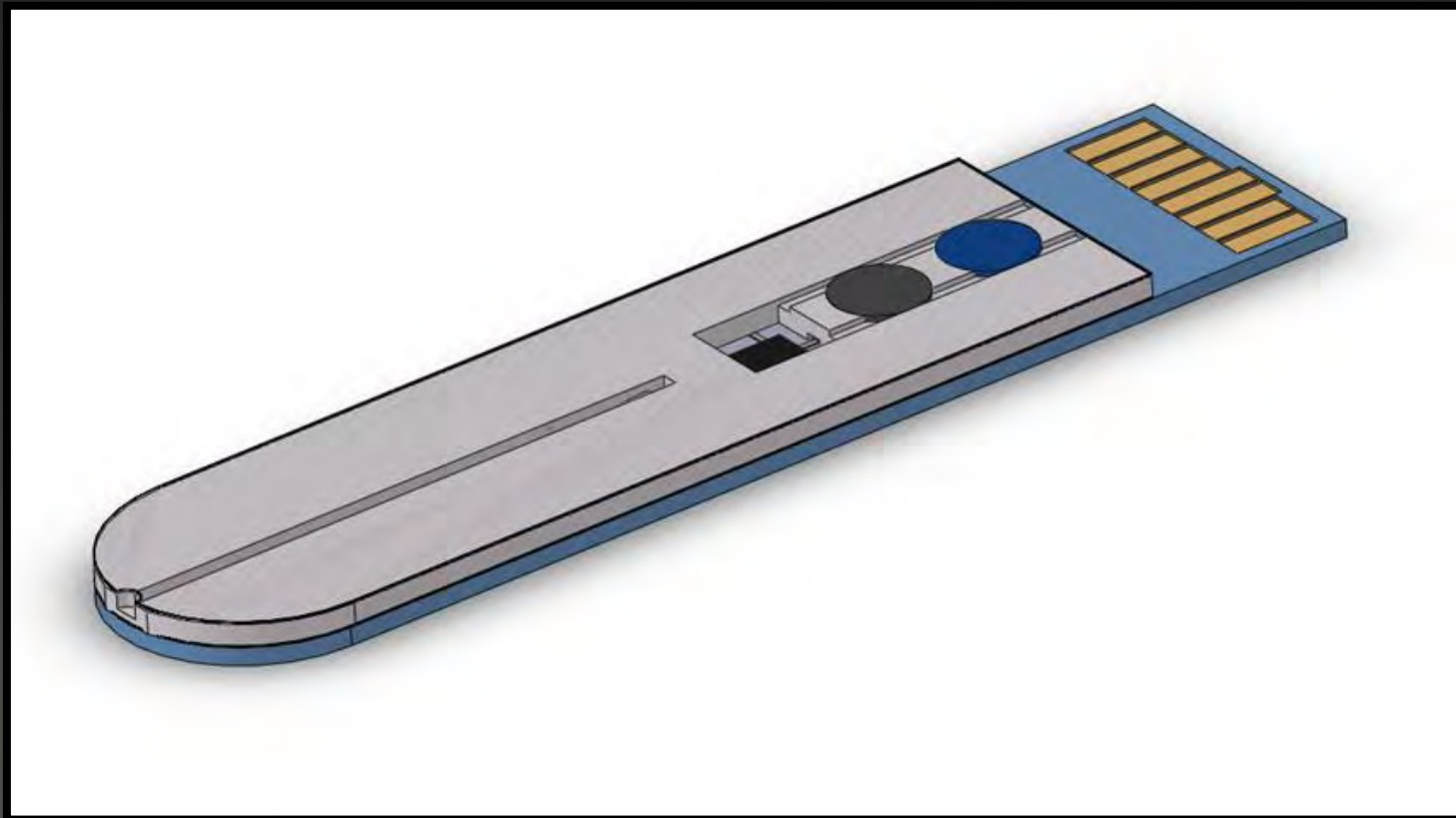


Alternate Screens

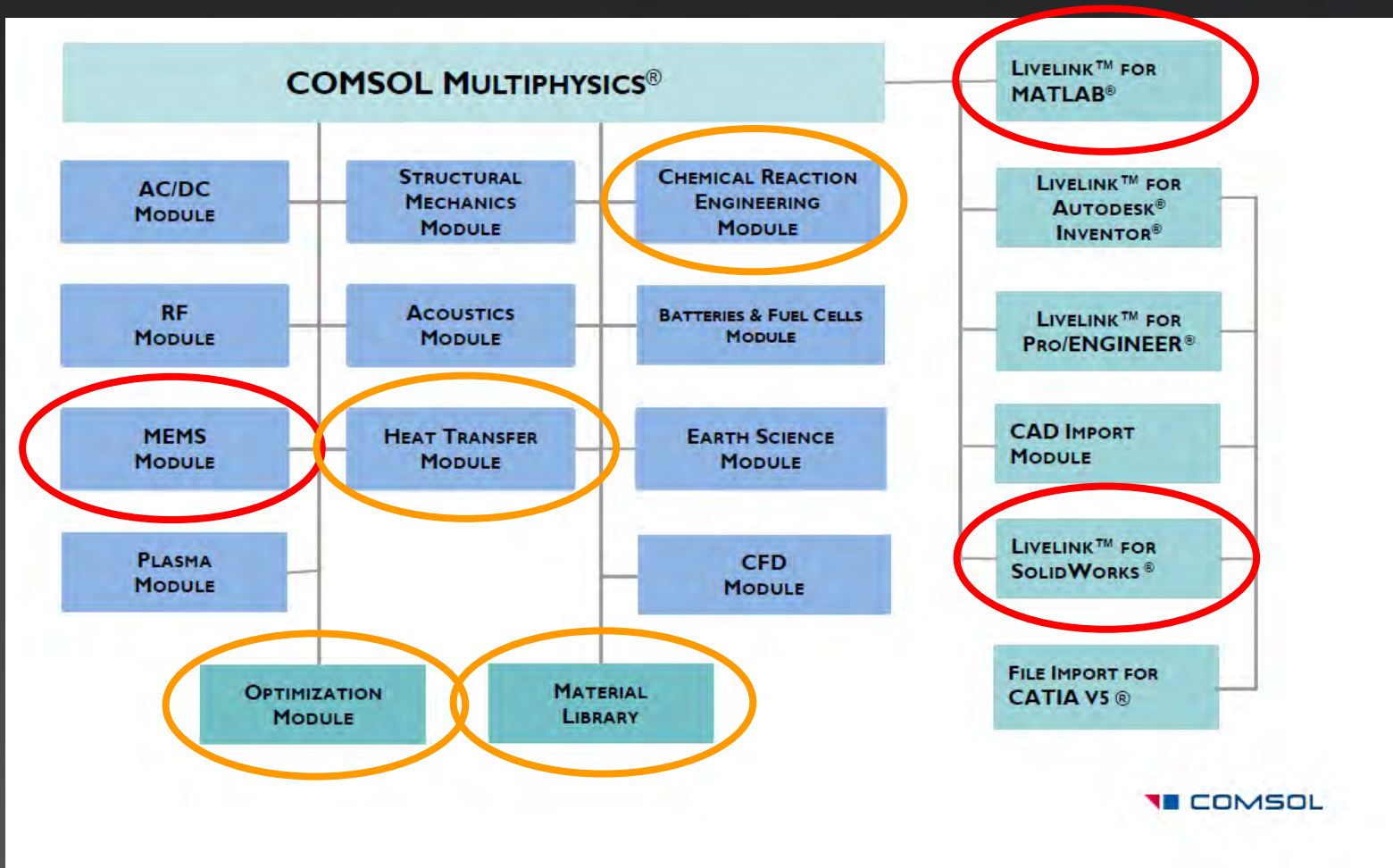
SmartStrip® Architecture



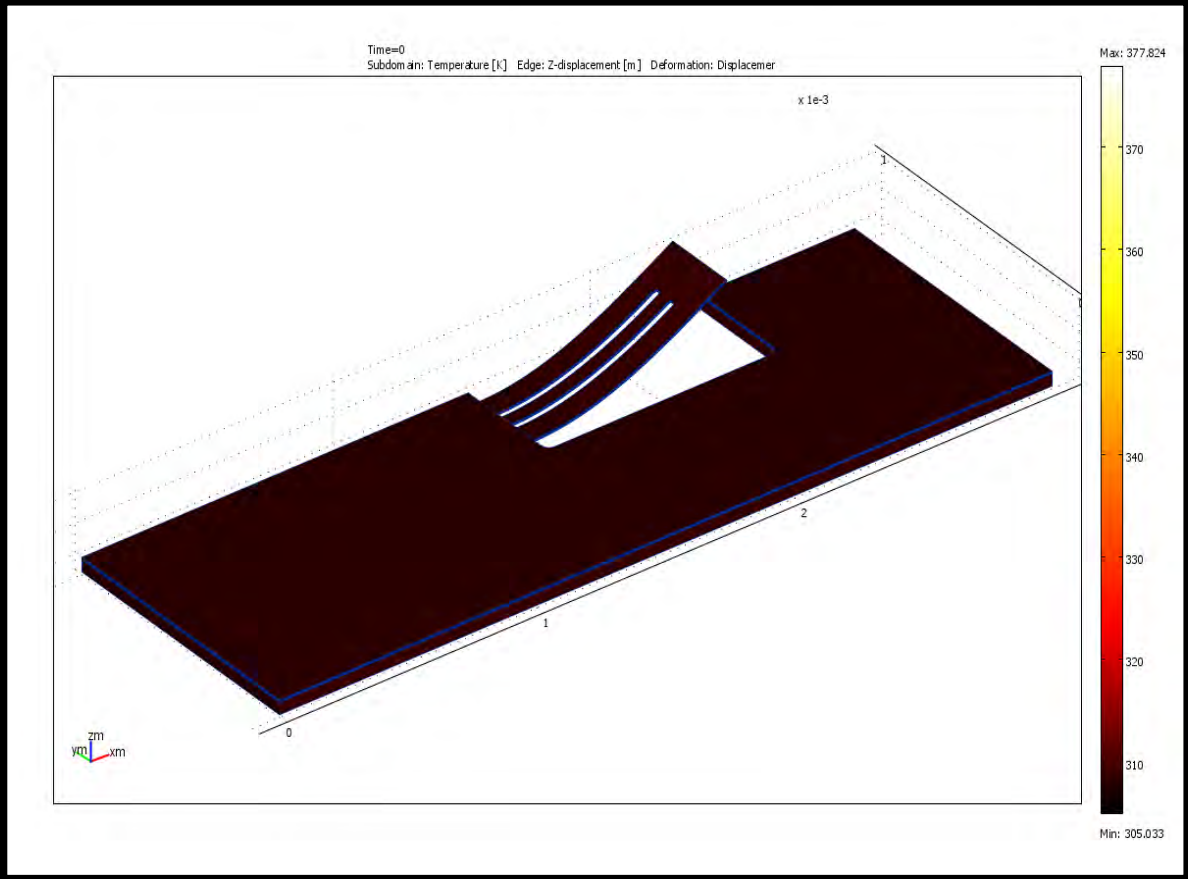
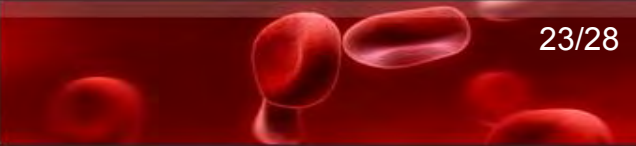
Completed SmartStrip®



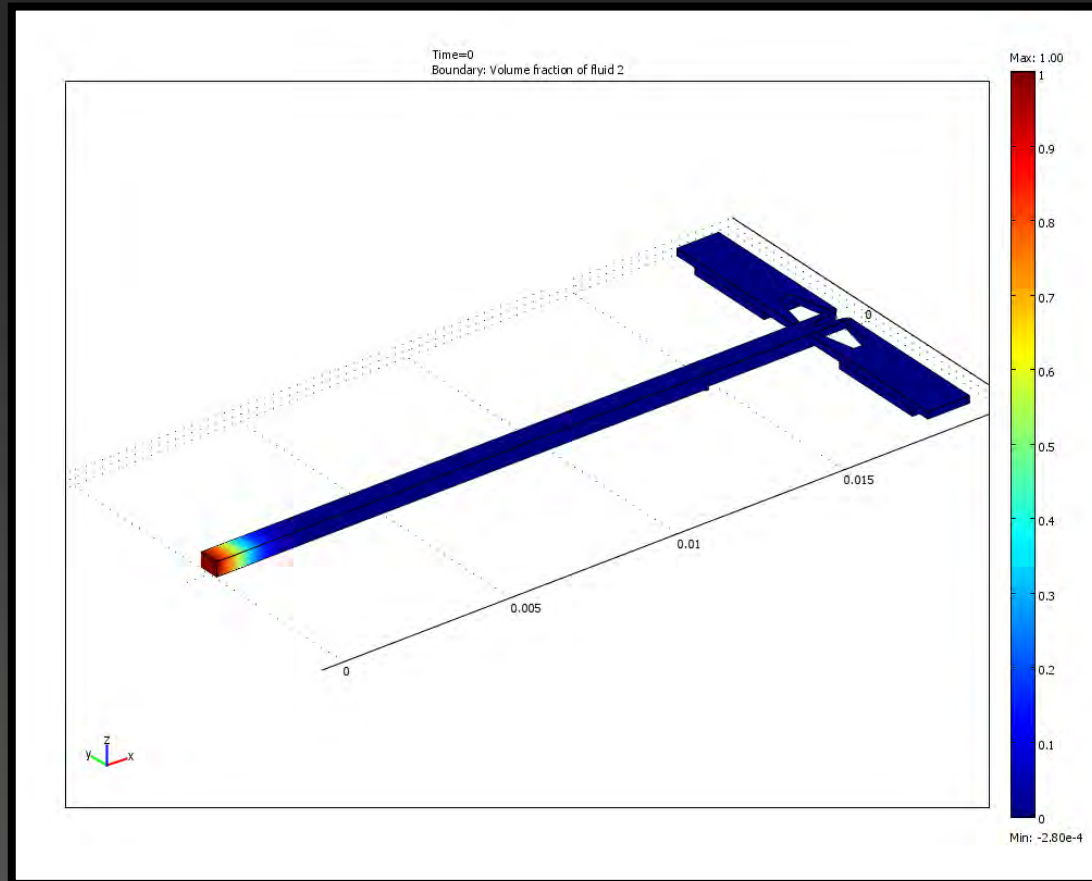
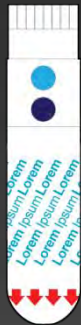
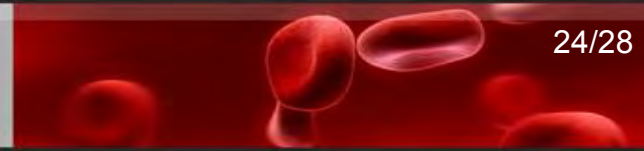
COMSOL Multiphysics



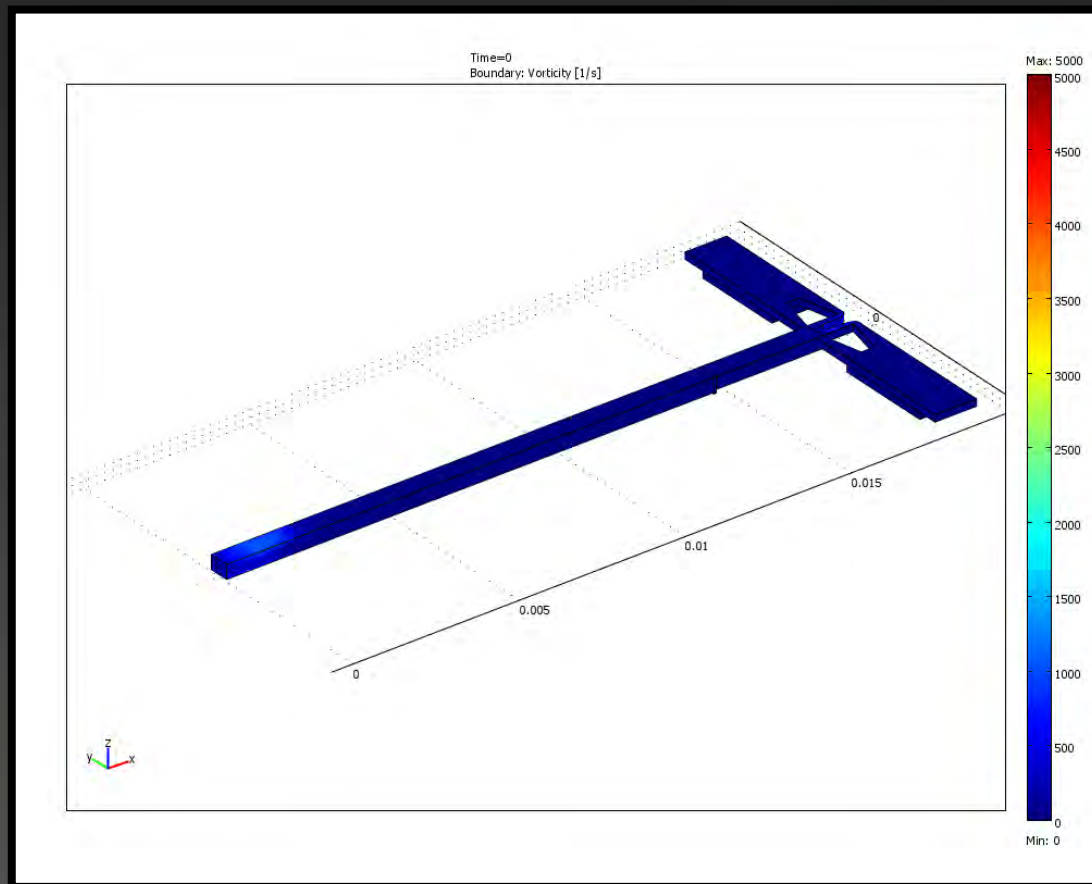
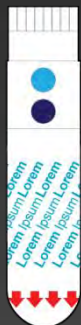
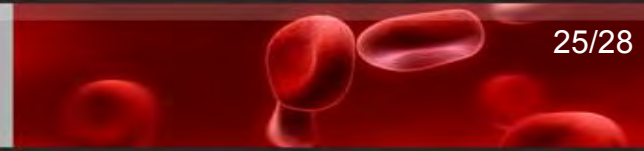
MEMS Device Simulation



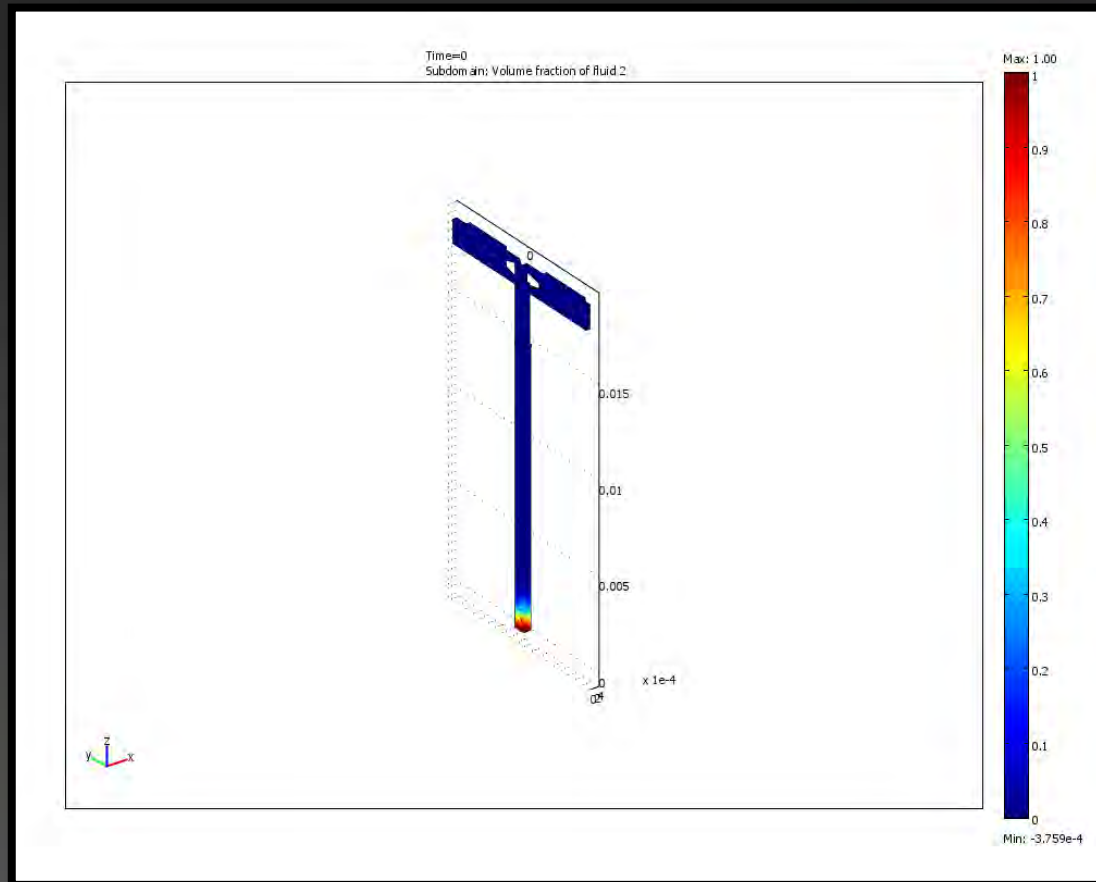
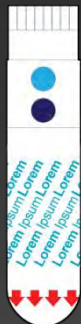
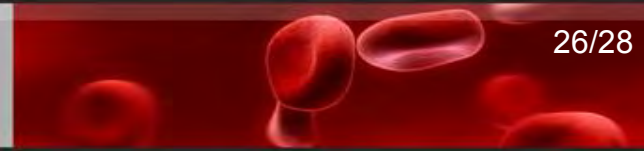
Capillary Design – Hor. Flow



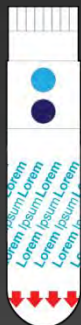
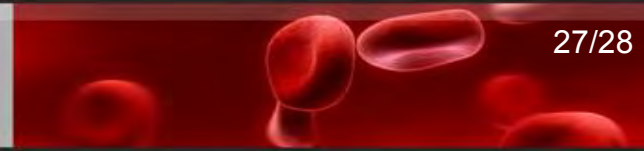
Capillary Design - Mixing



Capillary Design – Ver. Flow



Capillary Design – Pressure



Tiny Sensor – Big Advantages



Tiny Sensor – Big Advantages

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Our solid-state MEMS technology offers important advantages over alternative approaches to viscosity measurement, including:

Ease of manufacture — our MEMS technology is designed to enable cost-effective, large-scale production of disposable micro-cantilever devices.

Rapid measurement — designed to provide accurate measurements within seconds.

Small sample size — designed to deliver viscosity measurements using tiny fluid samples.

Versatility — designed to enable compact, low-cost devices for a wide range of viscosity measurement applications — from healthcare to heavy industry

- **Disruptive, patented technology**
- **Clearly differentiated product**
- **Designed to answer unmet market need**
- **Promising early clinical trial data**
- **Simple manufacture based on scalable technology**
- **High profit from launch**
- **Broad applications across several markets**

Microvisk Technologies



**Novel Sensor Technology for
Point of Care Diagnostics**

Further Information



microvisk
technologies

www.microvisk.com