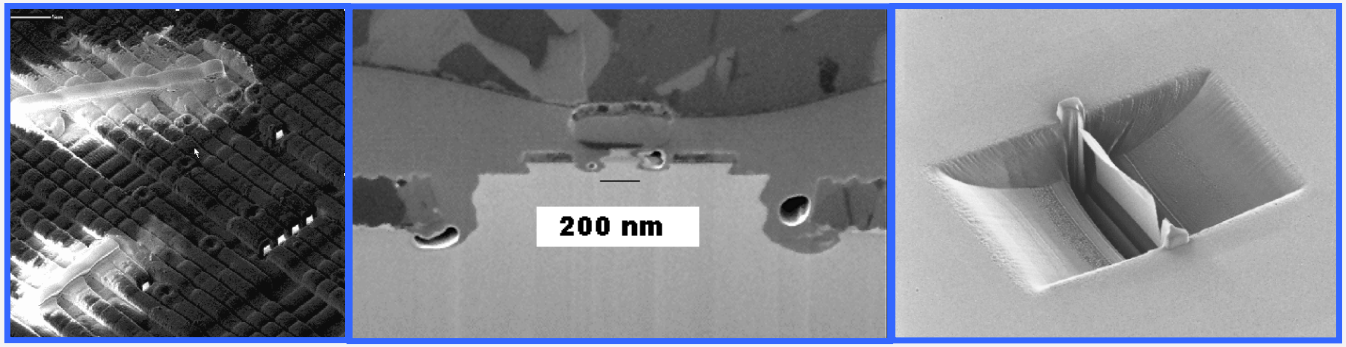
# An Introduction to NanoScope

*'Your 1st Silicon Emergency Service'*

## Semiconductor Partner Services 2009




Proud to be members of the National Microelectronics Institute

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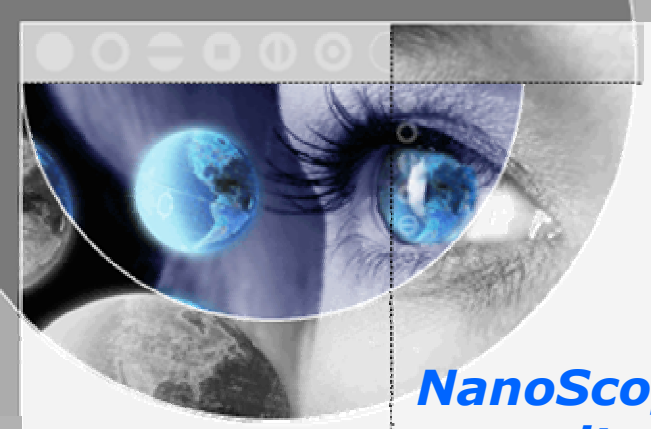

# Who are NanoScope?

***NanoScope is an independent, European, microscopy consultancy offering commercial laboratory services for Semiconductor design and fabrication companies.***

- Founded in May 2006 - Bristol UK based, small but growing
- Specialists in **FIB** (focused ion beam), **TEM** (transmission electron microscopy) and support techniques
- We implement your chip design changes as fast as you need them – **'Circuit edit and debug'**
- We help you check your package, fabrication process, and device failures – **'FA, PA and QA'**
- **Fast turnaround** and **complex edits** are our prime services
- We have a network of expert partners and brokered techniques if you need something extra.

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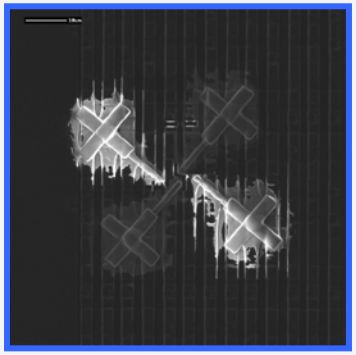
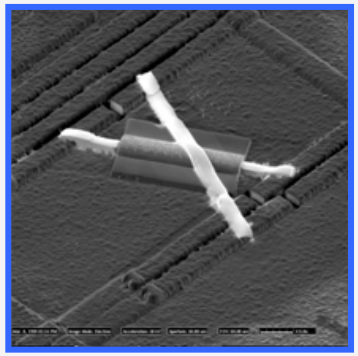
# Call us for





## *Circuit design mods 'edits' on your devices*

**Go for small numbers FAST** – to fix the design

**Go for small lots** - for board/customer tests while waiting for new silicon

**Rapid design changes for**

- Design revisions after 1st Silicon
- Design verification before tape out
- Electrical debug/fault finding of a new design
- Adding probe pads where you need them

**We specialise in working with copper devices**

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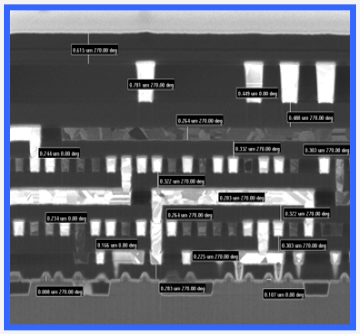
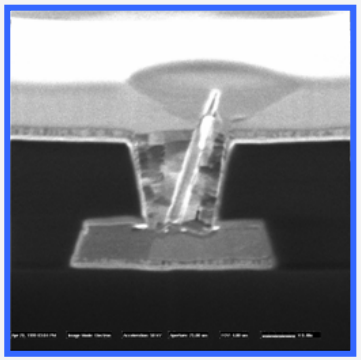
# Call us for





## *Physical Analysis of your 1st Silicon*

**Is the process correct?** – Foundry QA

- Checking process rule compliance – all technologies
- Process quality verification/uniformity
- From quick metrology checks to atomic resolution imaging (FIB + TEM)
- Get the full (independent) story – with controllable costs

**Why has it failed?** – Failure Analysis

- Site specific cross sectional analysis tells you which layer/feature caused the fault
- Design or process problem – get the true picture

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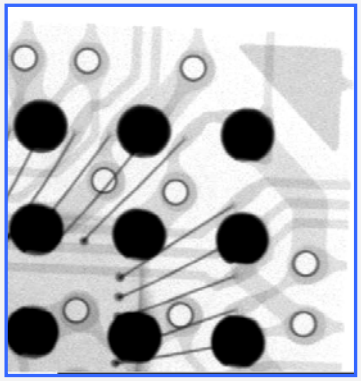

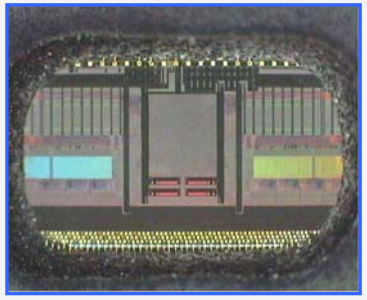

# All in one place

***We can check, open, operate and close your device/package – in one project***

**Opening the devices and (if required) closing them after intervention.**

- plastic package decapsulation
- glob-toping, package re-sealing

**Checking the package too**

- CSAM and X-ray microscopy

**Special capabilities available**

- Ultra-low Ω/long copper track deposition

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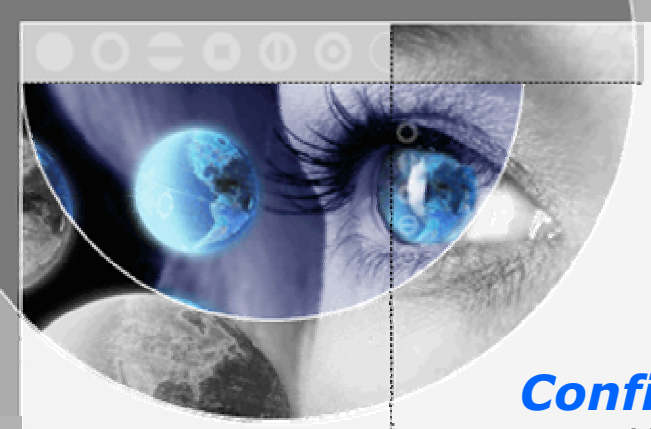

# How we work with you

## *Confidentially*

- Your information is protected (NDA's also available)

## *Rapidly*

- From immediate support with bike couriers – to economical small lots – we are ready to help

## *Expertly*

- NanoScope engineers pioneered many of the techniques used by FIB and its support techniques over the last 15 years – we literally wrote the book. Choose the experts for your project.

## *Economically*

- We get you the best results (in budget), when you need them
- The highest yield = more testable devices = more results
- The best techniques – you get the time/cost savings

## *Successfully*

- Your success is our success – if something doesn't work we'll help you find out why – and how to fix it.
- We will tell you if its not possible, and the risks – be informed
- We'll help you design an intervention – for result and yield.

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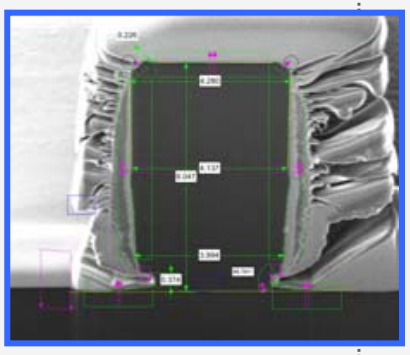
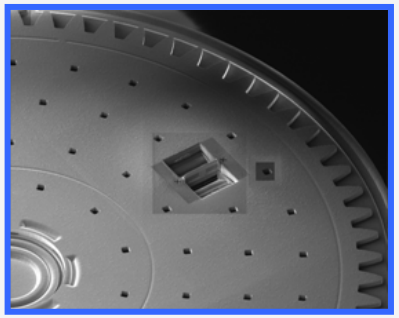
# We also do

## *We also support client applications for*

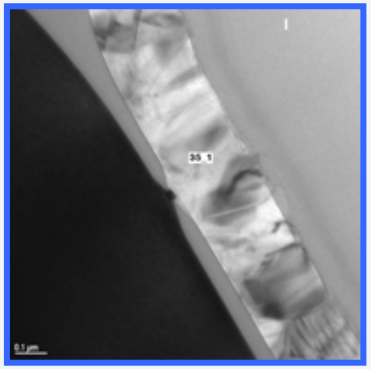
- MEMS
- Catalysts
- Compound semiconductors
- Materials Science
- Nano-Research
- Semi research groups



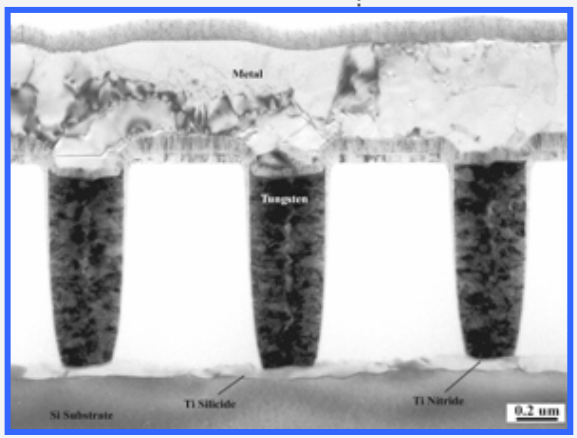
Optical MEMS metrology



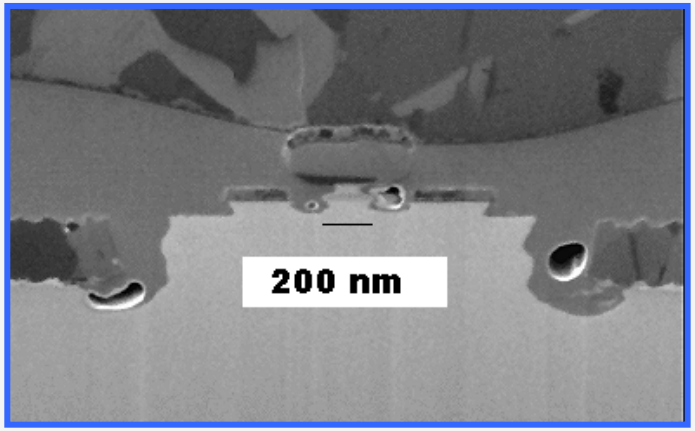
MEMS failure analysis



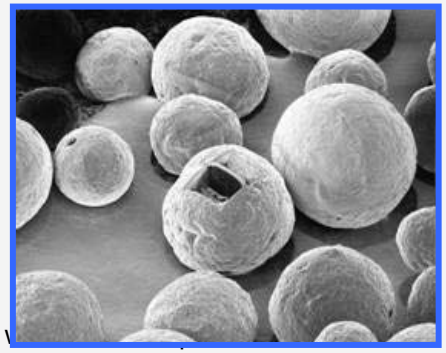
Gate oxide failures




Site specific metrology




Compound semiconductor devices



Catalytic materials and layers

# Why call us when you need help?

## *Your business is our business*

- We specialise in difficult work, with very short turns
- Your success is our success
- We are 100% dedicated to our customers - we don't work for anyone else – just you
- We deliver on your commitments
- We are the experts – through experience
- We use the best equipment
- Our clients use us for years – we only do partnerships
- We only use the time we need – more experienced engineers means time-to-result (cost) is minimised.

## *'Your 1st Silicon Emergency Service'*

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