



# Diamond Probes for High Resolution AFM Imaging

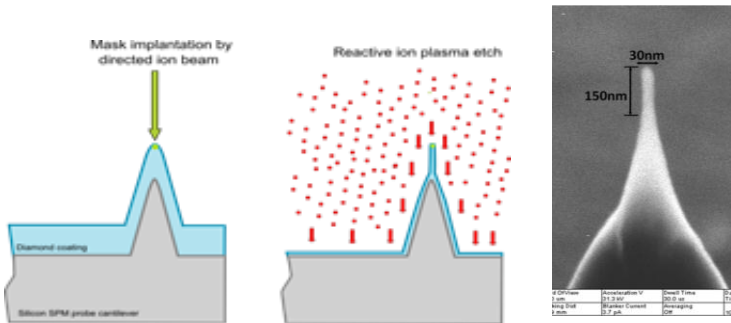


*Available for investment*

## Basic overview

Atomic force microscopy (AFM) is a widely used metrology technique for imaging in the semi-conductor and hard drive industry. As technologies become increasingly smaller there is a drive to produce **more accurate metrology** and this is driven by the geometry of the AFM tip. Currently there is no cost effective solution that combines high resolution with a long tip lifetime.

The technology solution created by CRANN, Trinity College Dublin, converts a low resolution diamond tip into a **high resolution tip** using diamond patterning technology.



*Probe fabrication process*

## Advantages

- Wafer-scale, batch processing enables **cost-efficient fabrication methodology**
- **High resolution**- < 25 nm tip diameter with 10:1 aspect ratio
- Diamond has **low wear** and is very robust
- **Chemically inert**- resistant to wafer residue
- High stiffness leading to **higher speed imaging**
- Low adhesion properties

This production worthy fabrication process has been **developed and fully characterised** by CRANN.

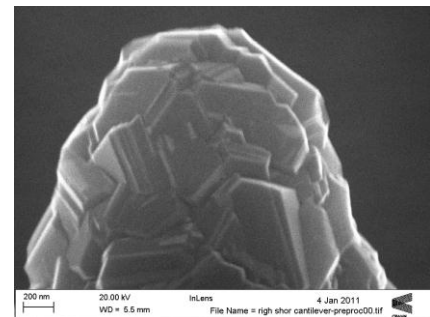
Internal testing confirms the unique, successful combination of **high resolution and extended lifetime** diamond AFM tips.

## Applications

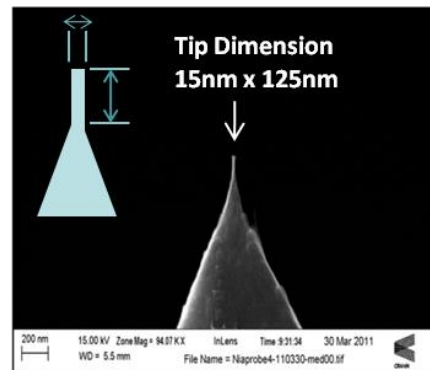
The application focus for this technology is high resolution metrology.

## Technology and patent status

A prototype of this product is currently in test with a leading multi-national AFM supplier. Patent applications have been nationalised in the US, Europe and Australia in 2011.



*Low resolution diamond tip*



*Tip processed with diamond patterning technology- high resolution tip*

## The opportunity

The diamond patterning technology used to create the tip is patent-protected.

A start-up company is being formed to exploit the technology partnership / investment opportunities are available.

