

# Low current measurements on HOPG

## Nanosurf® - easyScan 2 AFM LS Application Note No. 00298

The fast evolution of microchip circuits to smaller and smaller feature sizes makes it hard to keep analysis techniques up to date with current technology. Today, in most Failure Analysis laboratories, Scanning Electron Microscopy is the main tool for visualizing semiconductors in order to control processes and identify failures. Due to the common availability of these high resolution microscopes there has, at first, not been much need for a new technique like Atomic Force Microscopy (AFM). However, based on AFM, several derivative techniques have been developed which allow various physical properties to be visualized simultaneously.

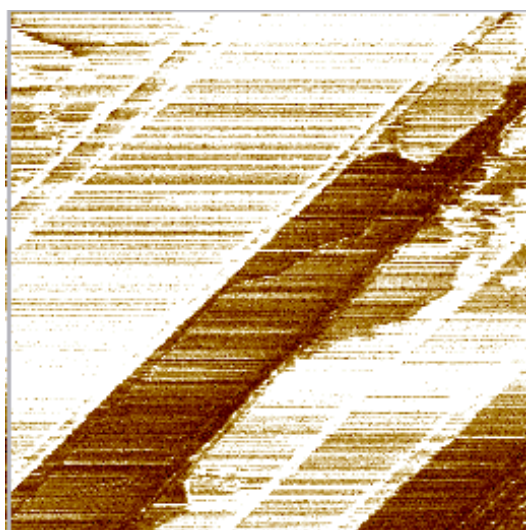


Figure 1. Low current cAFM measurement on HOPG. 500nm x 500nm; z-range 80pA

Conductive AFM (cAFM) is becoming a very important analytical tool in the semiconductor industry. Doping, electrical conductivity, surface potential and current flow are only some examples of cAFM. Continuous improvement and development on this technique to expand its capabilities and increase its sensibility is an essential aspect.

Figure 1 shows a low current measurement on HOPG. The measurement was realised with an easyScan2 AFM in combination with an external current amplifier.

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**Can be measured with:** Mobile S  
easyScan 2 AFM

**Application domain:** Material Science  
Semiconductor  
Storage Devices (Optical & Magnetic)  
New Material  
Coating