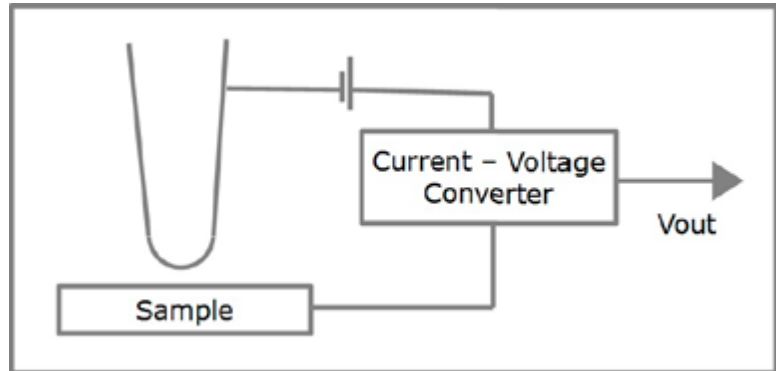


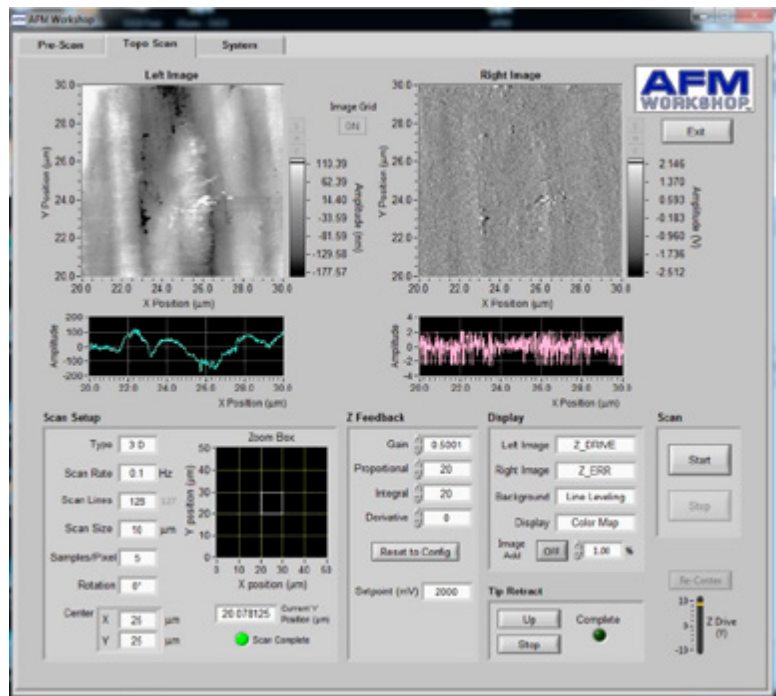
**STM** has great historical significance as it was the first type of scanning probe microscope developed by IBM researchers in Switzerland.

Further, the inventors of the STM received the Nobel Prize for its discovery. Today, in ambient air, most scanning probe microscope images are made with AFM. The STM-2017 module is used for measuring STM images in the TT-X, NP, LS, and SA-AFM products.

In the STM, the current flow between a metal probe and a sample are used to control the distance between the conductive probe and conductive surface. When the probe is scanned across the surface, if the current between the probe and surface are held constant with a feedback control loop driving a piezo ceramic, the topography of the sample's surface is measured.



In an STM, a voltage is applied between the probe and surface. A current to voltage converter outputs a voltage ( $V_{out}$ ) that is proportional to the distance between the probe and sample.



In the STM Control software pictured above, on the left side of the screen the voltage driving the Z piezo is displayed on the left, and error in the current signal is displayed on the right.

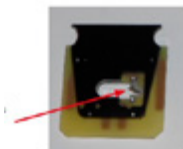
# SPECIFICATIONS

» Scan Range	Scanner Dependent
» Scan Rate	0.1 – 2 Hz
» Image Modes	Constant Height Constant Current
» Current To Voltage Converter	
Gain	Full Scale Scaling Transimpedance
Low	10 $\mu$ A 2 $\mu$ A/V 0.5 M $\Omega$ m
Medium	250 nA 50 nA/V 20 M $\Omega$ m
High	10 nA 2 nA/V 500 Mohm
» Probe:	
Material	Tungsten
Fabrication	Shear
Length	0.5"
Diameter	0.020"

# INCLUDE WITH STM OPTON:

- Probe Holder
- Tungsten Probes
- Sample Holder with Clip
- Current Amplifier
- Interface Box
- Cables
- Manual

## ► Probe Holder



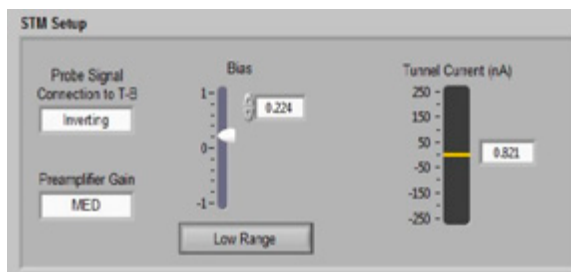
The STP probe holder replaces the AFM probe holder in the TT-AFM. The red arrow in this picture points to the probe holder.

## ► Interface Unit



The interface unit is connected to the STM current/voltage converter and the Ebox. Connections are made at the rear of the units.

## ► Control Software



This software interfaces sets the bias between the probe and the surface, and displays the current between these two conducting materials.