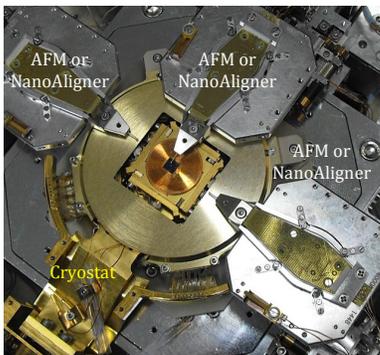
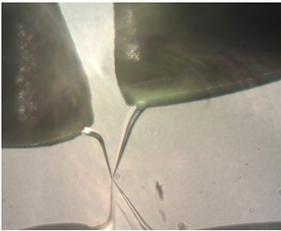


***MultiProbe AFM Integrated  
With Raman Chemical  
NanoCharacterization  
For Functional Imaging &  
Transport***



***Down To 10<sup>0</sup>K  
Allowing For Mixing &  
Matching of AFM &  
Nanoaligners***

# **2D & METAMATERIALS AFM MultiProbe PROBE STATIONS**

*On-line Raman  
Temperatures Down To 10<sup>0</sup>K  
Electrical Nanophotonics Thermal  
KPM MFM  
Magnetic Fields*



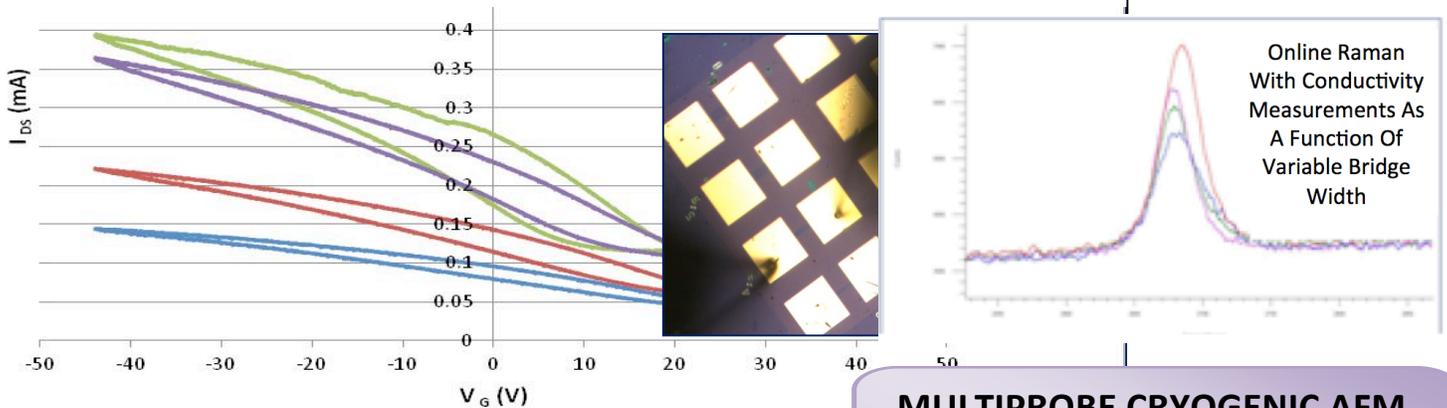
**NANONICS  
IMAGING Ltd.**

## An Integrated Solution To Fully Characterize Nanomaterials

### Highlighting 2D & Related MetaMaterials

The **MultiProbe AFM Probe Station™** is a must-have tool to probe a variety of properties on a wide range of functional nanomaterials and metamaterials. The plasmonic revolution and the discovery of carbon nanotubes and its 2D counterpart graphene have induced a plethora of discoveries of other inorganic systems with exceptional 2D and other qualities such as MoS<sub>2</sub>, WSe<sub>2</sub>, BN, TaS<sub>2</sub>, NBS<sub>2</sub>, WS<sub>2</sub>, HfO<sub>2</sub> etc. These materials are complemented by a variety of inorganic nanotubes and other metamaterials including plasmon supporting metallic surfaces. All of these materials require a combination of structural, chemical and functional nanocharacterization. Conventional probe stations not only do not have capabilities to address such ultrasmall dimensions but also generally lack integration with such techniques as Raman scattering & Raman imaging at the nanoscale (TERS). This is crucial for the type of chemical characterization required to understand these systems. Furthermore, most of these materials have exceptional optical qualities over a broad range of the electromagnetic spectrum that require the new abilities in nano optics provided by near-field scanning optical microscopy (NSOM), scattering NSOM and its variants. Nanonics Multiprobe Systems allow for a unified understanding by not only permitting optical integration but also allowing singular functional and transport insights not capable of being obtained previously. On-line measurement possibilities include nanometric photoconductivity, electron mobility and charge carrier distribution and multiprobe transport, thermal conductivity and transport, quantum Hall related phenomena, apertured and scattering NSOM and contact potential via Kelvin Probe Microscopy all capable of being compared on-line with nanoRaman (TRES) and fluorescence nano-imaging even at 10°K. This combination of singular integrated measurement possibilities are not provided by any other instrument. Furthermore, these measurement modalities can be coupled with imposed magnetic fields and MFM down to cryogenic temperatures.

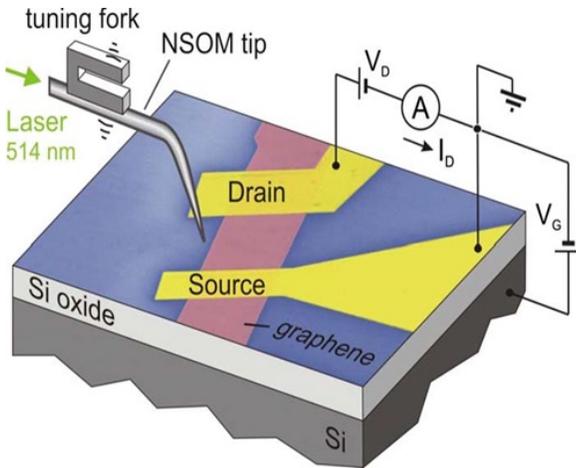
## MultiProbe Conductivity of Graphene Devices Can Now Be Monitored As A Function of Temperature & Raman



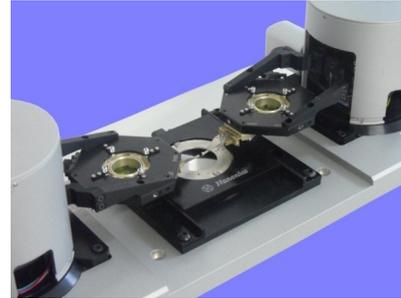
**MULTIPROBE CRYOGENIC AFM  
FULLY INTEGRATED WITH RAMAN**

*A BREAKTHROUGH IN  
MEASUREMENTS OF GRAPHENE &  
OTHER 2D MATERIALS*

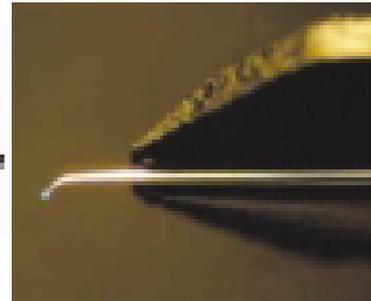
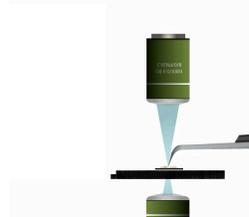




**PHOTOCONDUCTIVE  
NANOIMAGING  
OF A GRAPHENE TRANSISTOR**

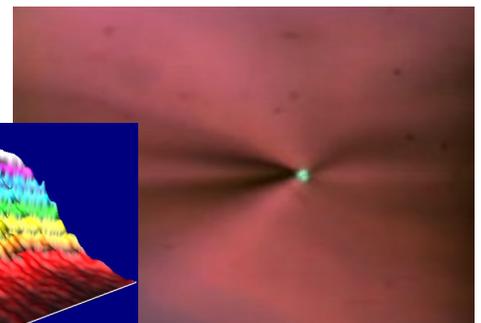
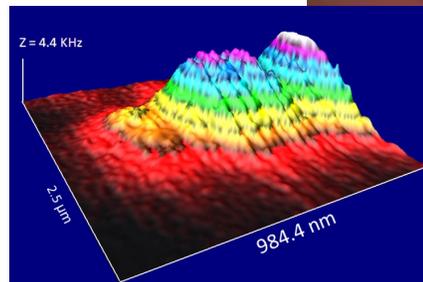


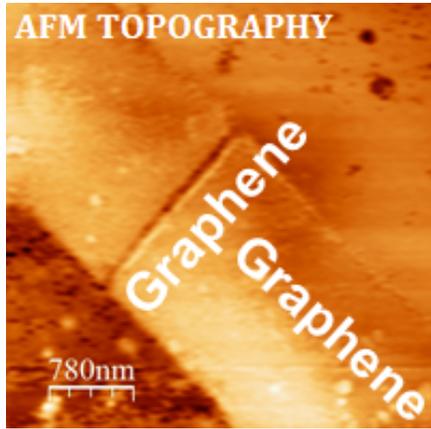
**MIX & MATCH  
AFM PROBE HEADS  
& NANOALIGNERS**



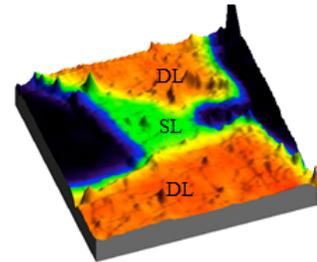
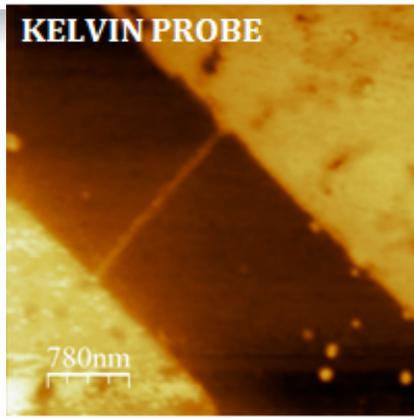
**A NanoToolKit™  
OF FUNCTIONAL PROBES  
NON-OPTICALLY OBSCURING &  
MULTIPROBE ENABLING**

**INVESTIGATE AMPLITUDE & PHASE OF  
ELECTROMAGNETIC NANOTRANSPORT  
WITH MULTIPROBE  
ON-LINE APERTURELESS  
& APERTURED NSOM  
FOR EXCITING DARK PLASMONS**

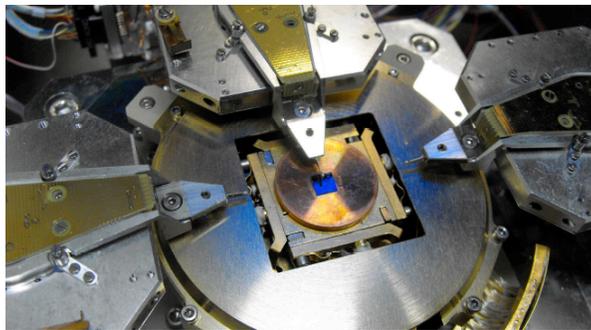




# KELVIN PROBE OF GRAPHENE DEVICE

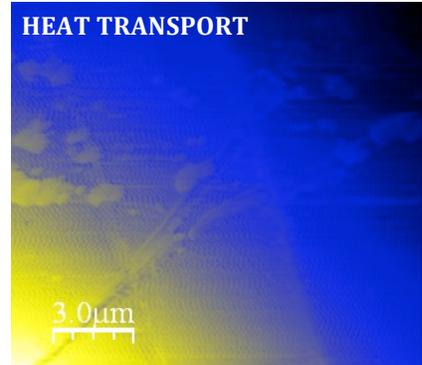
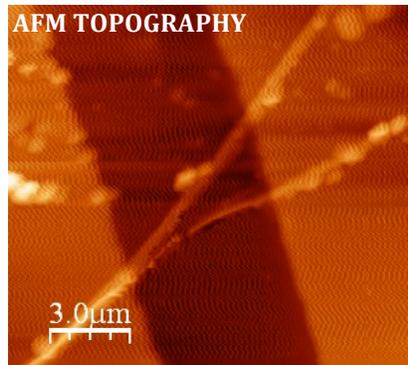
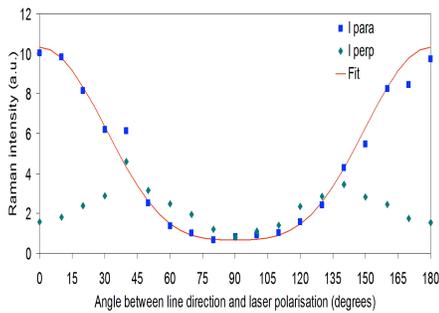


COLLAGE  
AFM & RAMAN SINGLE LAYER  
& DOUBLE LAYER GRAPHENE



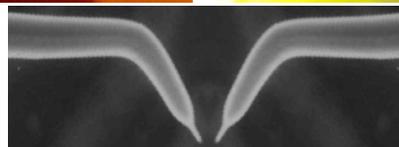
# HEAT NANOTRANSPORT

CARBON NANOTUBE ALIGNMENT  
WITH ON-LINE RAMAN



## UNLIMITED HORIZONS

NANOHEATER



NANTHERMOCOUPLE