

## CURRENT STATUS OF NANO CHARACTERIZATION PRODUCT PT. JJ EXECUTIVE INTERNATIONAL

Jefry

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### ABSTRACT

Material analysis Instrumentation and characterization equipment are rapidly develop in this recent decade. Many new techniques and new instrumentation are introduced for researcher to overcome the limitation and conventional technique as in last decade.

As the Nano Technology and Material research topic had been focused since 20 years ago, the requirement for high speed, high accuracy, Nano scale instrumentation become un-delayed anymore. Researcher required those kind of equipment to help them to explore Nano world.


I. The rapid development instrumentation like in XRD. New XRD has not using goniometer anymore. Goniometer are conventional technique which employ delay scanning time and not real time diffraction analysis. Typically, it need 3-5 minutes to complete the scanning from low theta to high theta. The accuracy are limited due to the life time of X-ray emission. Because of this limitation, XRD had been developed using **Real Time detector**. With this new technique all diffractogram can be obtained **within 2-5 Seconds in Real Time and Simultaneously**. The scanning process is very rapid and all emission can be detected in Real time, gives high accurate phase analysis, concentration, high resolution of each peak. Further, with this XRD it is possible to get also XRF and Raman spectrum for element quantification in real time. By the multi detector configuration, **XRD-XRF-Raman system**, one sample can be analyzed down to 20 micron spot to get all phase, chemical concentration, texture, stress and other useful information. **This is un-comparable XRD technique for micro and nano research.**

II. Another rapid interest characterization technique in **Nano tech is SPM**. SPM is the result of long research and development of STM and combination with complex Force Microscope (AFM). Today, the SPM are not only known as characterizing instrumentation only but equipped also with sample preparation system. Energy Dopping for InSitu crystal growth and synthesis evaluation. Further, the ability to be added by some of advance characterization technique as Energy analyzer (XPS-ESCA), and integrated with SEM and SAM, Photo Emission Electron Microscopy, UPS, and many more. We called this as **MULTI SCANNER** which run in One instrumentation, one sample and MULTI scanning possibilities like **SPM-STM-SEM-SAM-AFM**. Nano Technology research requires the sophisticated technique instrumentation like those above.

III. The latest development in ICP technique is **ICP-oTOF-MS**. This instrumentation is the first in the world which apply orthogonal device to detect high accurately of the travel of Ion while ejected to MS detector. This technique is very high accurate detection since It can be easily detect any isotope which has similar Mass weight. The difference in Isotope mass weight is very small and conventional ICP-MS is not so accurate to detect of this individual Isotope. The element concentration detected by conventional ICP-MS is actually the total concentration of different Isotope. **ICP-oTOF-MS has been developed to be used to detect each isotope easily even in very low concentration down to 10 ppt.**

**PT. JJ Executive International** is the private company which focus on **Nano Technology Instrumentation** in Indonesia. The company brings new technique and high instrumentation to researcher who interest to Nano Technology and also become **the equal partner** for official government research center, university, Institute, material development center for **consultation and supplying** all laboratory equipment and instrumentation. Company vision and mission is to be a bridge the missing link between researcher and laboratory equipment.

We are proudly presenting New and High Technology Instrumentation in Indonesia and willing to be the right partner for those who interest in High Technology for Nano Technology Research.

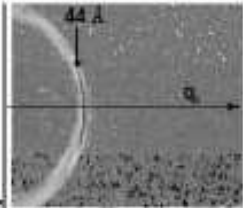



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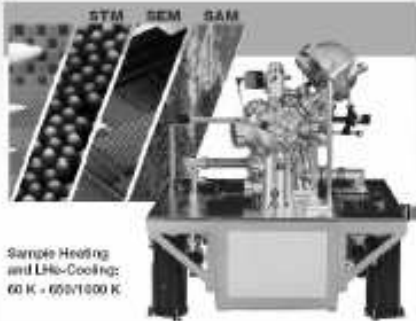
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*if you want to know more of Nano Tech Instrumentation...  
 If you are not sure the technique to characterize...  
 If you want to improve the accuracy, resolution, detection limit..  
 If you want to explore Nano World.....*

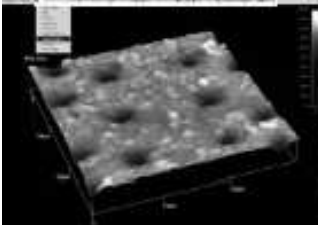
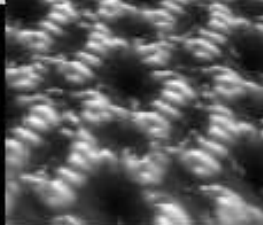
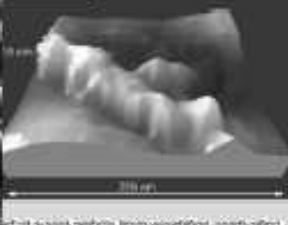

*Do not hesitate to contact us...  
 We will be gladly stand next to you..*








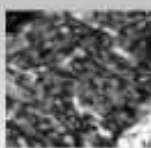
Sample Heating and LHe-Cooling: 60 K - 600/1000 K

**STM**




On top of a Cu island



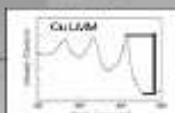
Cu/Fe/Cu(100) adjacent to Cu islands

**SEM**

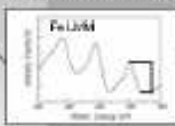


Cu islands on a Cu/Fe/Cu(100) sandwich structure.


**AES**




Static AES around the Cu LMM (above) and Fe LMM (below) lines



**SAM**



Elemental map: Cu islands (red)



Elemental map: Fe layer (red)

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## Nano Tech Instrumentation

### Consultant & Supply



**Representing and Supply Nano Tech and General Lab Equip:**

- rt-XRD-XRF-Raman	- TOF-ICP-MS	- SPM-SEM-SAM
- SAXS/ WAXS	- SPM, STM, AFM, DFM	- XPS, ESCA
- SEM,TEM	- Particle Size Analyzer	- EPMA
- DMA 1000 Hz	- Neutron Analyzer	- UV-Vis
- SIMS	- FTIR, NIR, MIR	- GC-MS TOF
- LC-GC-MS	- HPCE, HPLC, LC-MS	- EPMA
- Pore distribution	- Mercury analyzer	- Sherography
- UPS, STEM	- Hardness Tester	- Polarography



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