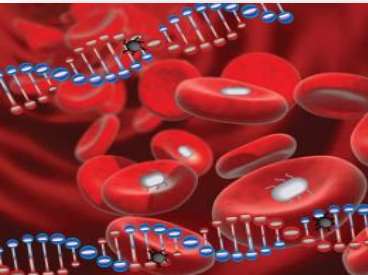


# NANOVerify Programme : Protecting Consumer's Right Through Product Labelling & Certification



**By** : Norazira Binti Othman  
**Designation** : Operation Executive  
**Date** : 9<sup>th</sup> November 2016

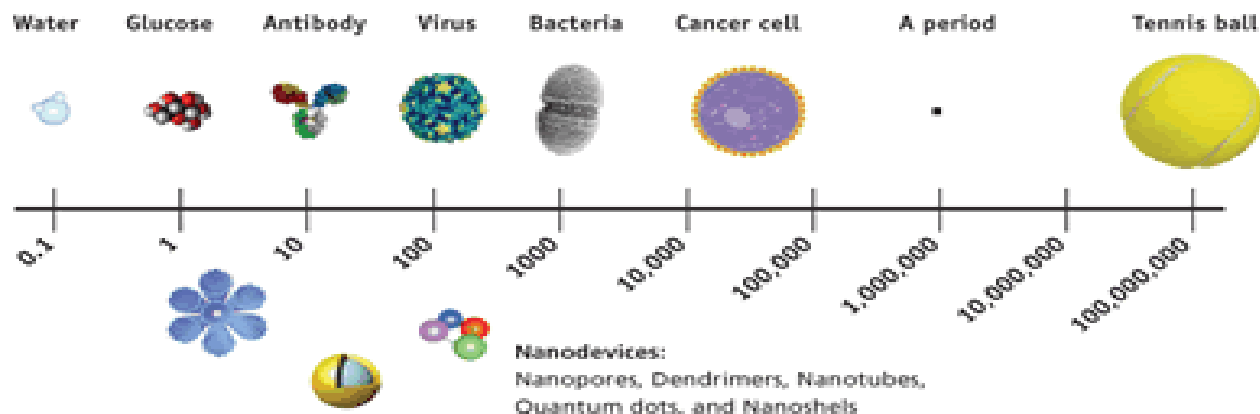


# What is nanotechnology?

Science, engineering, and technology conducted at the nanoscale, Nanoscience and nanotechnology are the study and application of extremely small things and can be used across all the other science fields.

## ISO/TS 80004-1:2015 (en)

Nanoscale: Length range from approximately 1 nm to 100 nm



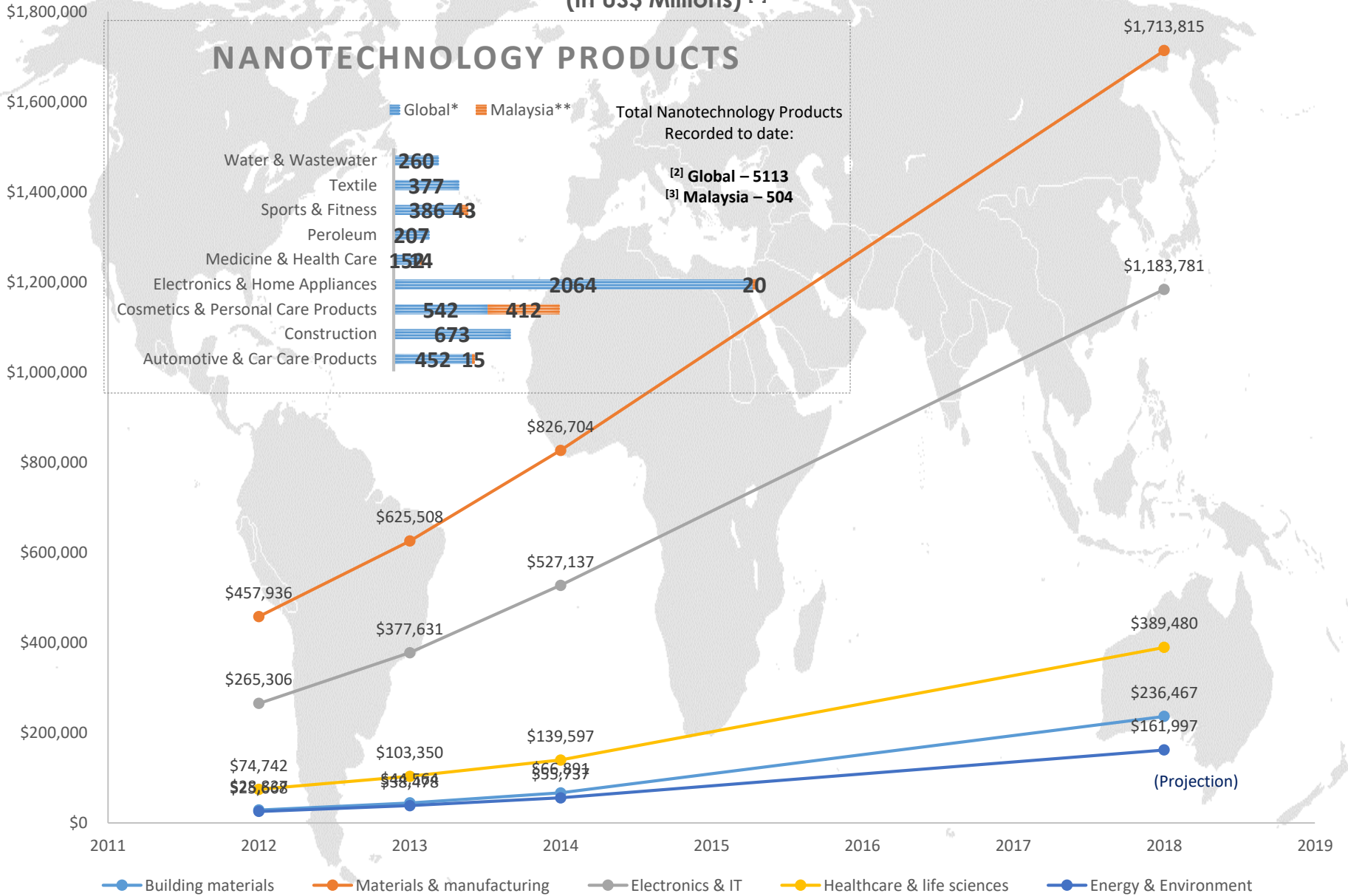
# Nanotechnology Markets

## Global Revenue for Nano-Enabled Products by Sector (in US\$ Millions) <sup>[1]</sup>

[1] Lux Research (2016)

[2] <http://statnano.com/> (2016)

[3] NanoVerify Sdn. Bhd. Database (2016)



# Nanotechnology



Nanotechnology is the most advanced technology available in the market



Products with nano-elements often demonstrate commercially important properties the same products might not exhibit when produced without nano-elements (such as greater strength, lighter weight, and greater chemical reactivity)

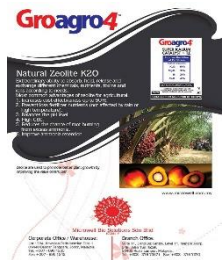


Nanotechnology products is usually sell at a higher price

# Nanotechnology Reality



## Verified Nanotechnology Products



## Unverified Products



## Misused of nano term



Market Value



Number of products



False Claim on Nano Products / Processes



## Key functions of



Owner of the programme



Manager of the programme



Operator of the programme



# What is NANOVerify Programme?

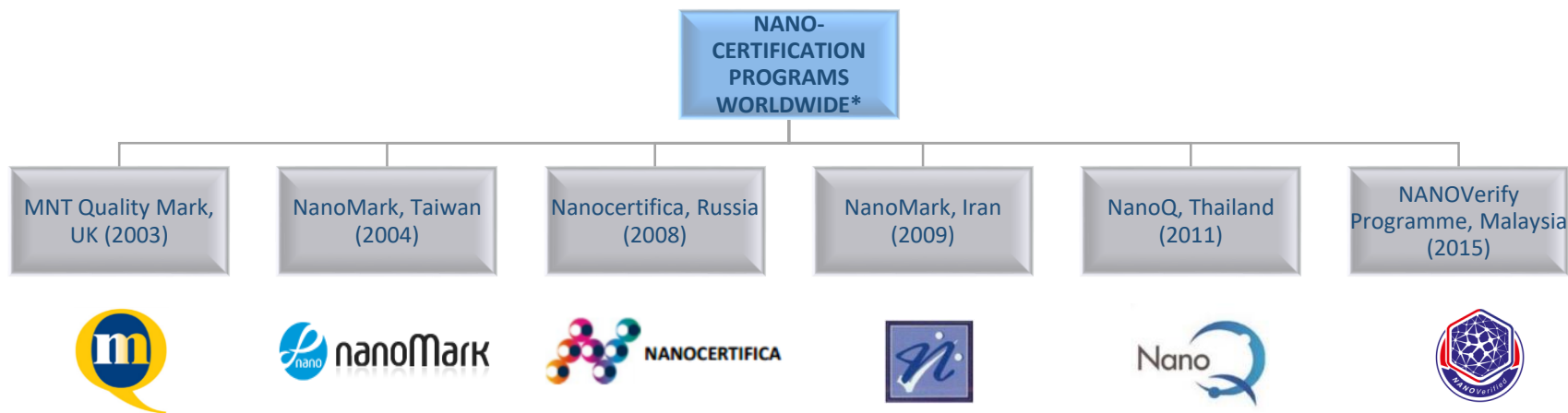


“NANOVerify Programme” is a voluntary certification programme for process and product with claims of nano-elements in the range of 1 to 100 nm (“nm” referring to nanometre).

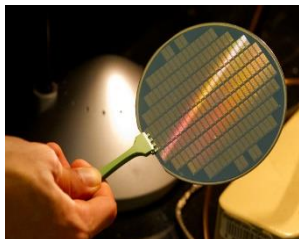


“NANOVerified” is the mark that will be awarded to the processes and products upon successful completion of the NANOVerify programme, as determined by Parties.

## A Program to Ensure Governance and Compliance



# Launching of NANOVerify Programme & the Products



**MIMOS Berhad**  
Technology:  
CNT on Wafer



**Microwell Bio Solutions Sdn. Bhd.**  
Technology:  
2 x Nanofertilizer



**Wipro Manufacturing Services (M) Sdn. Bhd.**  
Technology:  
Safi Rania Gold



**Nanopac (M) Sdn. Bhd.**  
Technology:  
Nano Hybrid Socks

Launched by the former MOSTI Minister, **Y. Bhg. Datuk Dr. Ewon Ebin** during National Innovation Conference and Exhibition (NICE) and 26<sup>th</sup> International Invention & Innovation Exhibition (ITEX), 2015, on **22<sup>nd</sup> May 2015**

## Products in Pipeline



**Food & Agriculture**

**9**



**Electronics, Devices & Systems**

**1**



**Energy & Environment**

**7**



**Wellness, Medical & Healthcare**

**13**

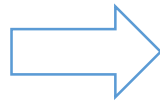
**TOTAL : 30**



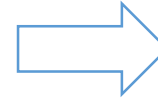
# Nano-Certification Brief Process Flow



Application  
Manual/Online



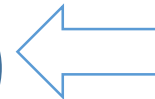
Pre-Qualification/  
Due Diligence



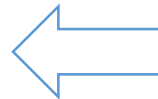
Verification  
- Inspection/Audit  
- Lab Test



Approval  
Committee  
Meeting



Issuance of  
NanoVerified  
Certification for 2  
Years



2 months before  
expiry date

Application  
for  
Renewal



## Our Testing Partners



**SIRIM AMREC**



**NEMS/MEMS RESEARCH  
LABORATORY, MIMOS**



**IBNU SINA INSTITUTE  
FOR FUNDAMENTAL  
SCIENCE STUDIES (IIS),  
UTM**

# Nanotechnologies Standards Applied in NANOVerify Programme



1

## ISO Standards Adopted by Malaysia

- Nanotechnologies – Characterization of Single Wall-Carbon Nanotubes Using Near Infrared Photoluminescence Spectroscopy (ISO/TS 10867:2010, IDT)
- Nanotechnologies – Characterization of Volatile Components in Single-Wall Carbon Nanotubes Using Evolved Gas Analysis/ Gas Chromatography- Mass Spectrometry (ISO/TS 11251:2010, IDT)

2

## International Standards Adopted by NANOVerify Programme

- Nanotechnologies – Methodology for the Classification and Characterization of Nanomaterials (ISO/TR 11360)
- Nanotechnologies – Characterization of Single-Wall Carbon Nanotubes Using Transmission Electron Microscopy (ISO/TS 10797)
- Nanotechnologies – Terminology and Definitions for Nano-Objects – Nanoparticle, Nanofibre and Nanoplate (ISO/TS 27687)
- Standard Guide for Size Measurement of Nanoparticles Using Atomic Force Microscopy (ASTM-E2859-11)
- Measuring the Size of Colloidal Gold Nano-Particles Using High-Resolution Scanning Electron Microscopy (NIST-NCL, PCC-15)

3

## Other Procedures Adopted by NANOVerify Programme

- MIMOS Standard Procedures for nano characterizations
- Other testing partners procedures for nano characterizations

# Comparison of NANOVerify with Other Nano-Certification Programmes in Asia

	<b>NANOVerify, Malaysia</b>	<b>NanoMark, Iran</b>	<b>NanoMark, Taiwan</b>	<b>NanoQ, Thailand</b>
<b>1 Fee</b>	➤ All charges covered by the company	➤ USD 300-3,000 (depending on size of the company, and analyzing cost)	➤ Varies. <USD1,600 and other cost will be bared by the government	➤ All charges covered by the company
<b>2 Validity</b>	➤ 2 Year	➤ 1 Year. After first supervision, increase to 3 years	➤ 3 Year	➤ 2 Years
<b>3 Measurement Criteria</b>	➤ Size (1-100nm) ➤ <b>Functionality (In Progress)</b>	➤ Size (1-100nm) ➤ Improvement in properties (Except for nanomaterials) ➤ Reproducibility	➤ Size (1-100nm) ➤ Unique properties	➤ Size (1-100nm) ➤ Unique nanoscale-related functionality features
<b>4 Instruments for size characterization</b>	➤ SEM ➤ FESEM ➤ XRD ➤ Raman ➤ TEM	➤ TEM ➤ DLS ➤ XRD ➤ FESEM / SEM ➤ ICP / AAS	➤ DLS ➤ SEM ➤ FESEM ➤ XRD ➤ Raman ➤ TEM	➤ DLS ➤ SEM ➤ More...various techniques
<b>5 Standards used</b>	➤ ISO methods and other international standard methods	➤ ISO-TS 80004 – 2010 ➤ ISO-TS 12805 – 2011 ➤ ISO-TR 13014 – 2012 ➤ More than 30 National Standards	➤ As references from ISO, JIS, CNS and the ASTM, 52 National testing standards and testing methods have been established	➤ ISO methods and other international standard methods
<b>6 Incentives/ facilitation provided</b>	➤ Assistance for commercialization	➤ Facilitation for commercialization ➤ Business Training , ....	➤ Assistance for commercialization	➤ None

# The Importance of Nano Certification Programme



## Consumers

- To control the false claim of nanotechnology products in the market
- To protect customer's right to have genuine nanotechnology products
- To help genuine products to differentiate their products from others
- To keep track the high risk nanotechnology products in the market
- To gain public trust in nanotechnology and its benefits



## Economy





- Verification tools to assist domestic and international trade/investment of genuine product
- Public trust  , number of sales  , Economy growth 
- Create demand on nanotechnology products (genuine) in the market
- Increase in the number of high technology products in Malaysian market
- Promote local high technology products in the market



## STI Development

- A booster to local nanotechnology development in Malaysia
- Creating demand for STI development in Malaysia
- Demand  , attract  investment for STI development
- Increase human capital development in nanotechnology / STI
- A good public awareness on Malaysian activities & achievement in STI

# Programme Development

	Partner	Status
1 1 <sup>st</sup> Development & Launching		➤ Partnership in developing and operating the program <b>Completed</b>
2 National Recognition & Facilitation	   	➤ Partnership in aligning the program to international standards. <b>In Progress</b> ➤ Partnership in developing an incentive system for nanotechnology companies ➤ Partnership in identifying and certifying nanotechnology companies in Malaysia ➤ Partnership in assisting nanotechnology companies to be verified and certified
3 International Recognition	NanoMark, Taiwan NanoMark, Iran NanoQ, Thailand	➤ Partnership in aligning the programs and developing a cross-country accepted program ➤ Started with ANF Interlab activities <b>In Progress</b>
4 Further development of the programme	  	➤ Under 11 <sup>th</sup> Malaysian Plan has been allocated with a budget to further develop the program to also verify the functionality of products including mechanical, electrical, antimicrobial, etc. properties (in 5 years) <b>In Progress</b>

# Towards Graphene Definition Standardisation

The volume of production and the choice of different types of graphene are growing.



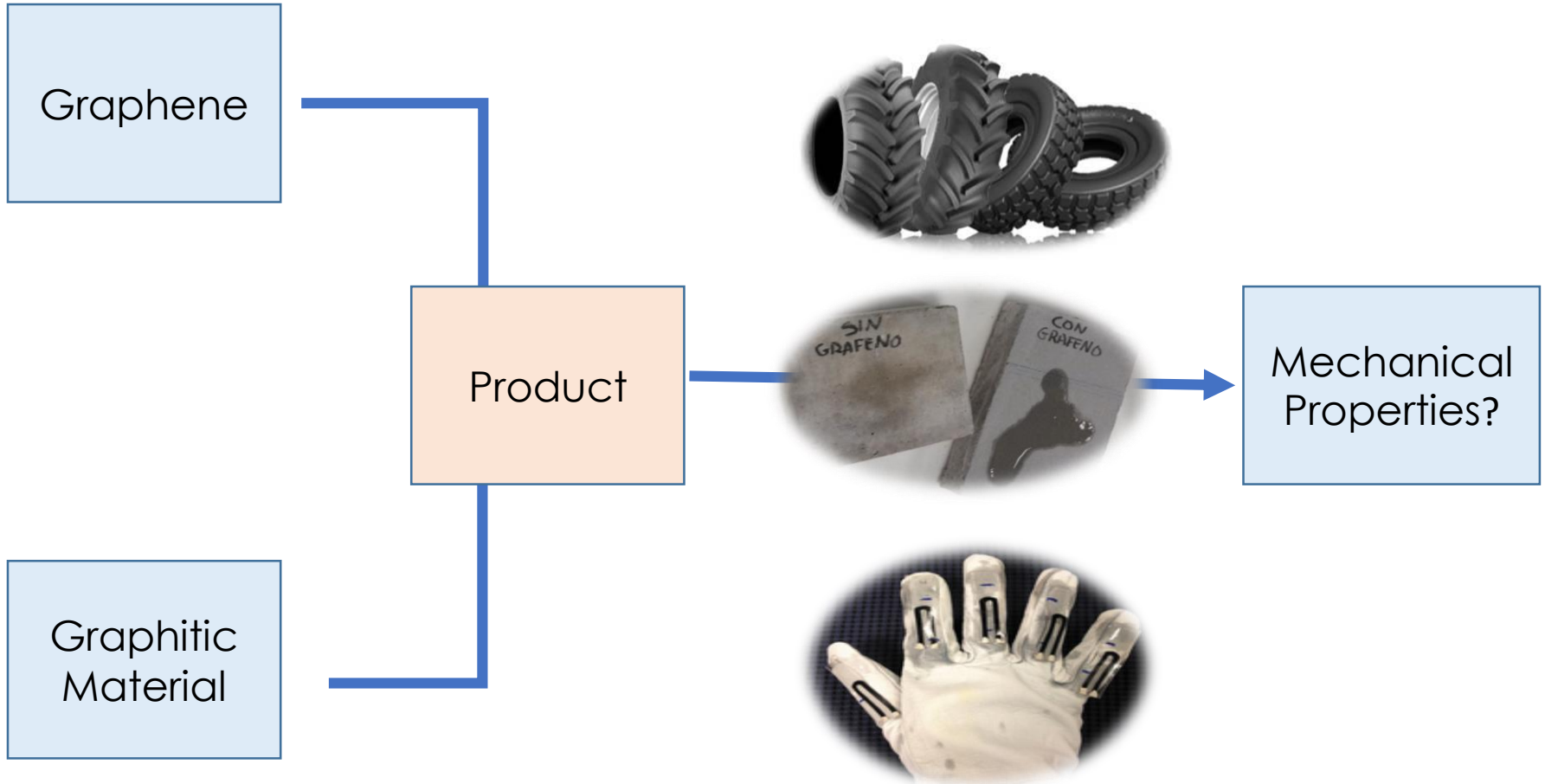
## Definitions

- Terms used are contradictory and unscientific.

Graphene Nanosheet

Graphene Nanoflakes

# Towards Graphene Definition Standardisation





# Graphene players call for uniform standards

Based on primary interviews with industry players, these are the proposed definitions for graphene based on their layers: (2014, LRMJ)

<b>Types</b>	<b>No. of Layers</b>
Single Layer Graphene	1
Bi- and Tri- layer graphene	2 and 3
Multi-layer graphene	4 to 10
Nanostructured graphite	10 to 100

Solidifying a universal definition would help accelerate commercialization efforts.

# Activities 2016

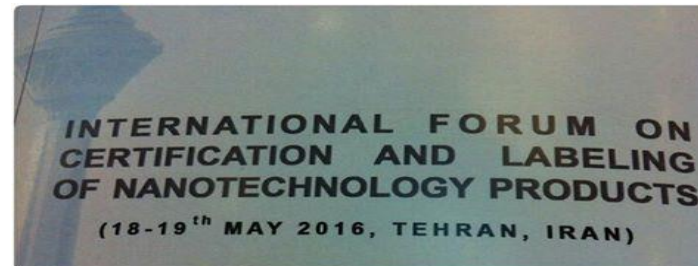
- Certification of products:
  - 1 product certified
  - 14 products in verification process
  - 16 products in pipeline



- Alignment workshop between NanoMark Taiwan & NANOVerify Malaysia on 12<sup>th</sup> April 2016



- MoU Exchange with TANIDA for cross country collaboration between NanoMark Taiwan & NANOVerify Malaysia on 12<sup>th</sup> April 2016



- Alignment with other nanocertification program worldwide on 18<sup>th</sup>- 19<sup>th</sup> May 2016

# Activities 2016



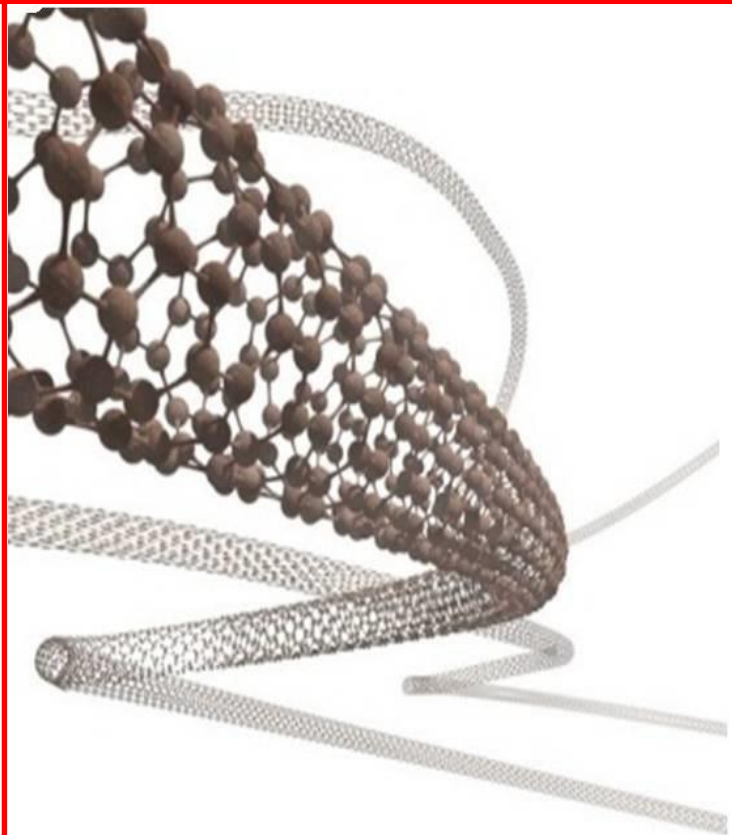
➤ Utusan Publication dated 16 May 2016



➤ Live on Traxx fm – 1<sup>st</sup> June 2016



➤ Live on Nasional fm – 22<sup>nd</sup> July 2016



***BE TRUSTED, BE VERIFIED***

**THANK YOU**

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