

## Past, Present and Future Activities on Developing Thailand Reference Materials

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- Metrology in THAILAND
- Metrology in Chemistry (MiC) of THAILAND
- NIMT & MiC activities related to Food sector of THAILAND



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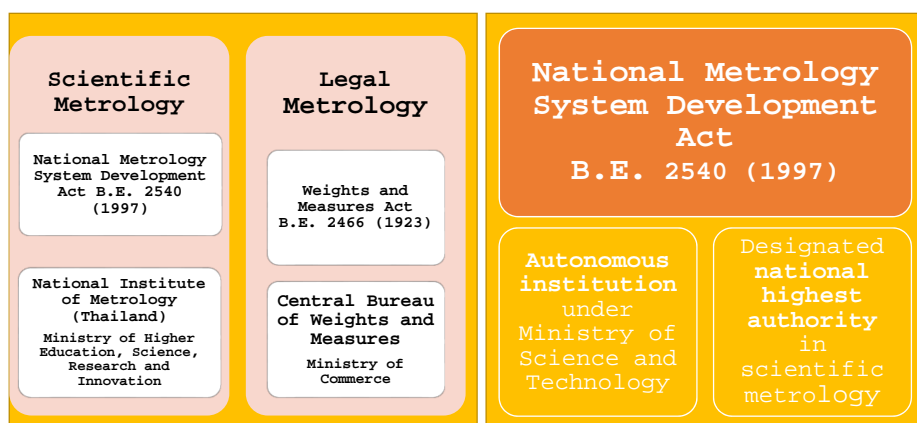


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## Metrology in THAILAND




## Metrology in Thailand



**APFAN PT-2 Workshop**

Food Analysis Workshop: Proficiency Testing and Reference Materials Development



Mart-Thamrong Building  
Inaugurated June 2018

Phadung-mart Building  
Inaugurated August 2006

**ORGANISATION :**

- 5 Metrology Departments
- 2 Administrative Departments
- 26 groups

**STAFF & BUDGET :**

- Staff ~ 210
  - ~ Executives: 3
  - ~ Metrologist: 127  
(Bachelor: 30, Master: 49, PhD: 46, Others: 2)
  - ~ Supporting staff: 78  
(Bachelor: 50, Master: 21, PhD: 1, Others: 6)
- Budget:
  - ~ 20 million USD from government
  - ~ 1.8 million USD from services

**LABORATORIES :**

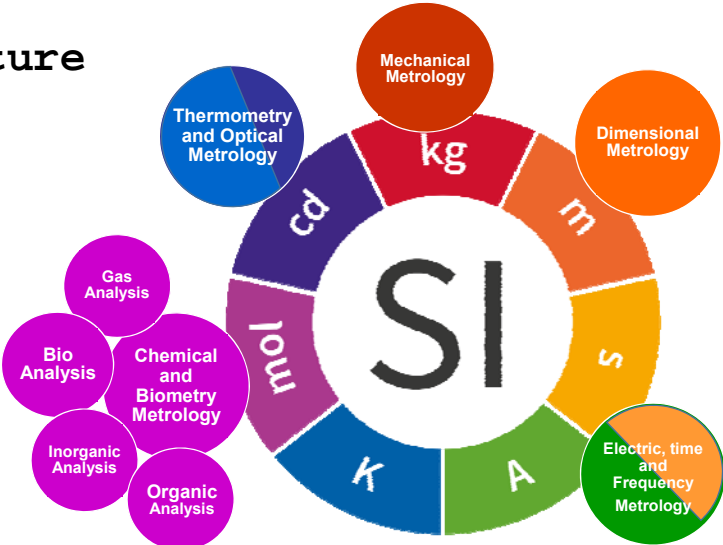
Two (2) campuses:

- One in Pathum thani
- The other in Bangkok

Laboratories with strictly controlled temperature and humidity	Easy maintenance with minimum interruption
Good vibration control	Energy conservation
Good working environment	24 hour operation

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**NIMT :  
Structure**



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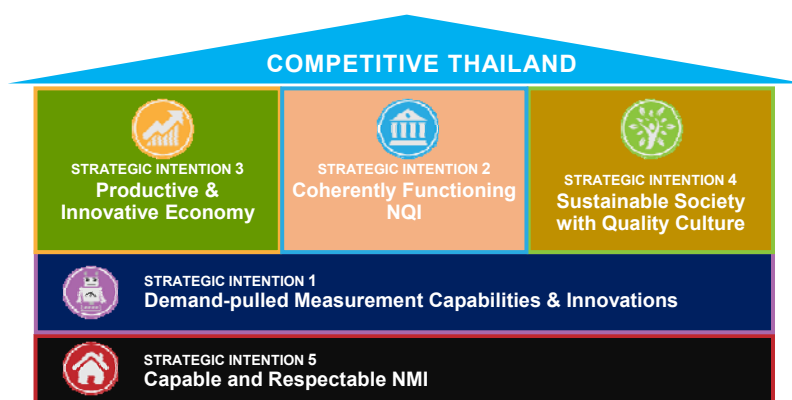
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## Mission of NIMT

- To provide, develop and maintain national Measurement Standards and Reference Materials to fulfill national metrology traceability, including to dissemination of national measurement standard
- To build network and develop measurement capacity of calibration laboratories in the country
- To support and cooperate with other organisations to develop National Quality Infrastructure
- To develop metrological know-how relevant to national needs including innovative capability and industrial capability
- To create tangible impact on people's quality of life.

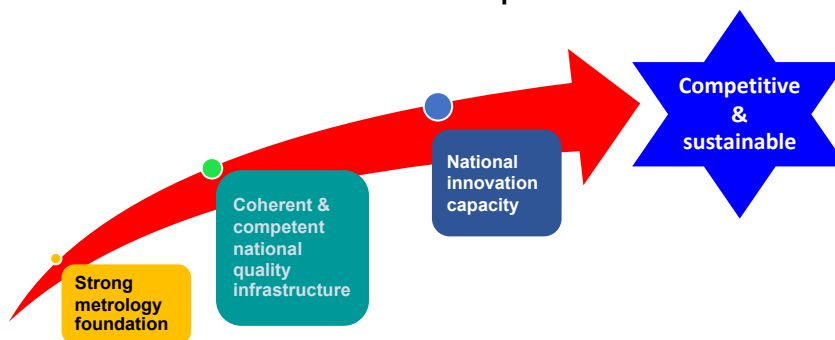


## The third master plan (2017-2021)

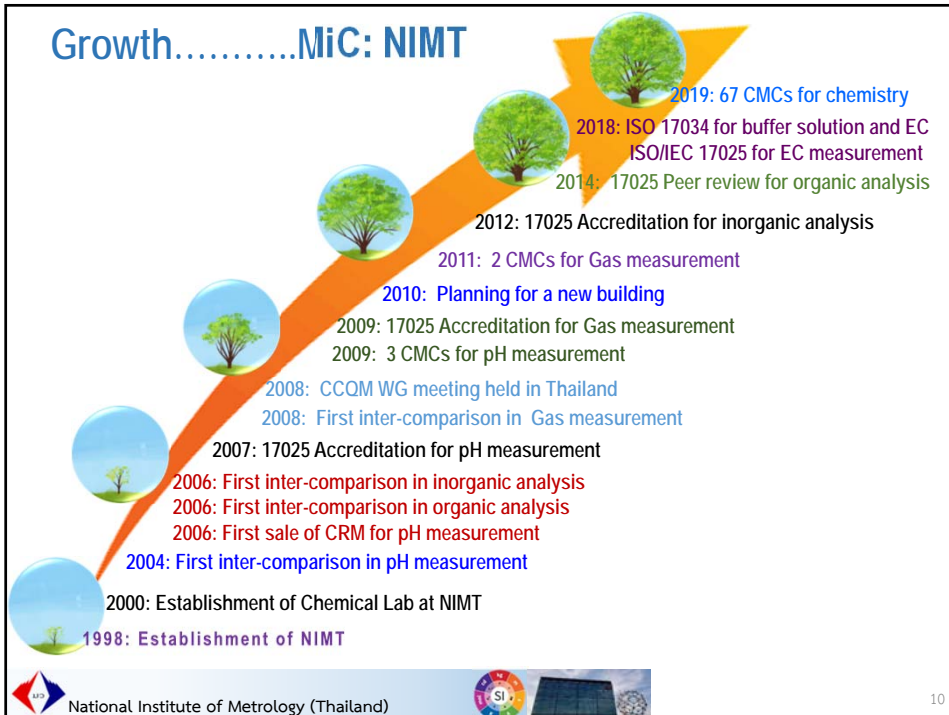


## Vision

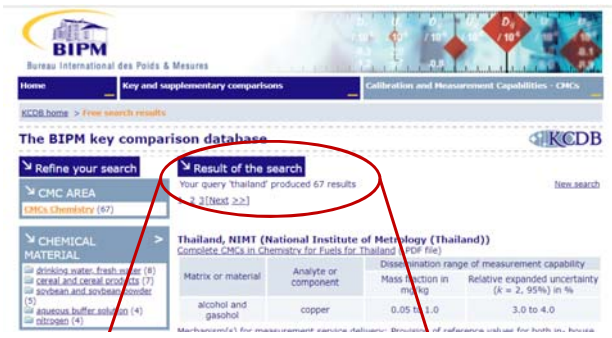
**Strong metrology foundation** for a **coherent and competent national quality infrastructure** to enhance **national innovative capacity** in order to raise **national competitiveness** and enable **sustainable development**



## Growth.....MiC: NIMT



**Calibration and Measurement Capabilities (CMCs)**



Refine your search

CMC AREA  
CMCs Chemistry (67)

Result of the search


Your query 'thailand' produced 67 results  
1 2 3 [Next >>]





**NIMT& MiC activities related to Food sector of THAILAND**




**Food Safety**



**Process**





**GMP, GAP, HACCP**




สินค้ามีปัญหาจากการปนเปื้อนจาก


Pesticide	Microbiology
GMO	Heavy metal
Antibiotic	




ตลาดส่งออกอาหารไทย 9 เดือนแรกปี 2558



ลดปัญหาการส่งกลับโดยการทดสอบโดยวิธีมาตรฐาน ใช้วัสดุอ้างอิงรับรองที่สามารถสอบกลับได้



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**Food Production and Quality Control**

**Production**



**Testing/Quality control**

Physical

- Food Safety and Contamination
- Food additives
- Food Composition and Labelling
- Genetically Modified Food
- Etc.

**Testing method/procedure**

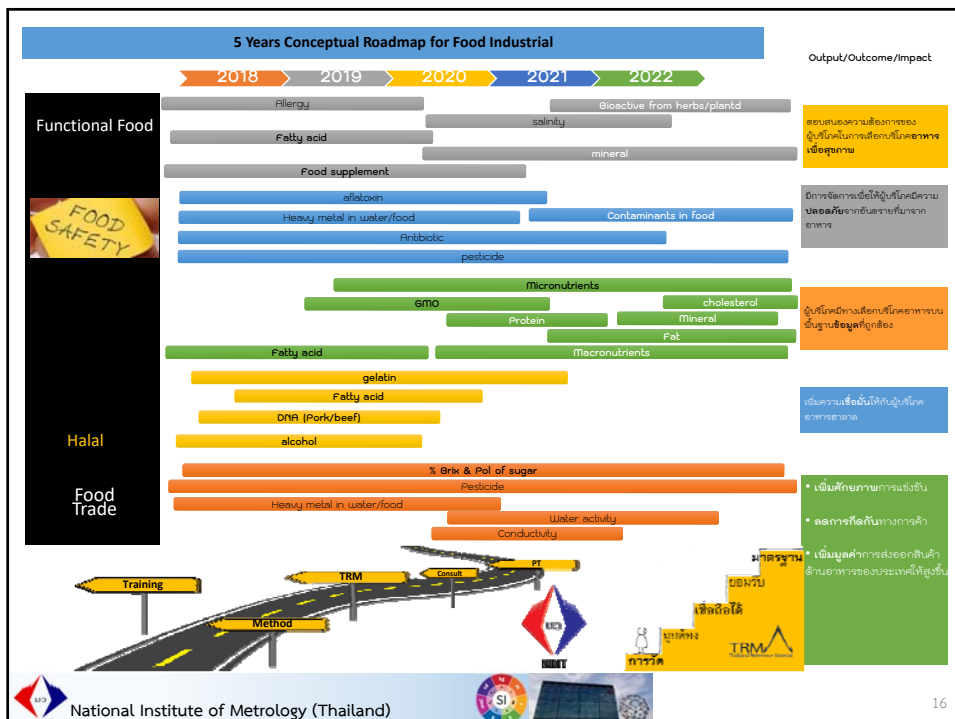
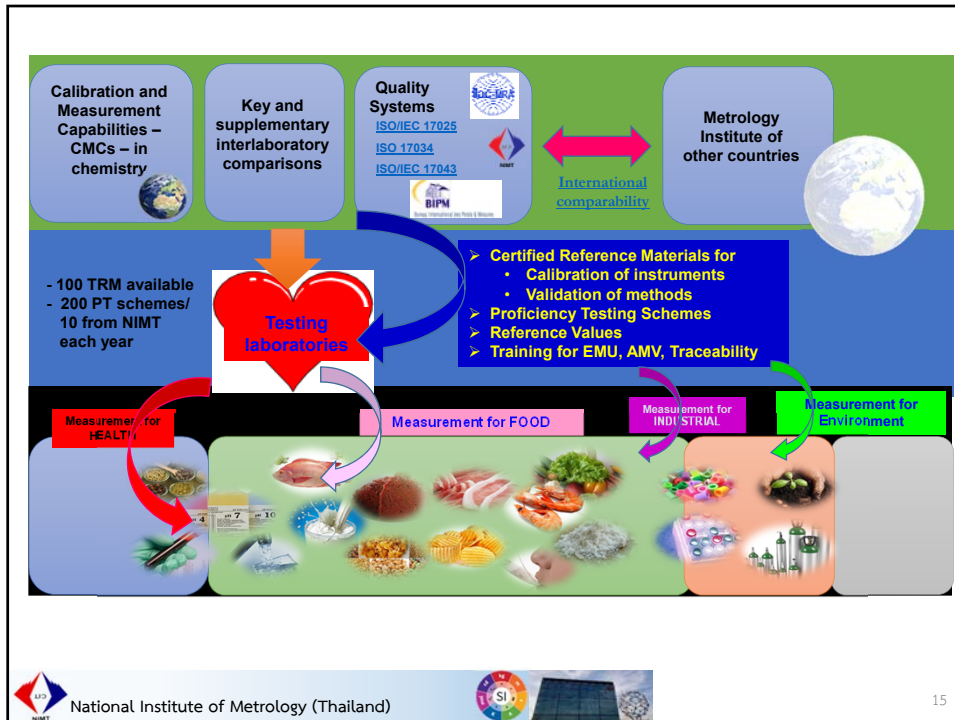


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**APFAN PT-2 Workshop**  
Food Analysis Workshop: Proficiency Testing and Reference Materials Development





**APFAN PT-2 Workshop**  
Food Analysis Workshop: Proficiency Testing and Reference Materials Development




Registered Trademark for Thailand reference material (TRM) in 2015

- Standard solutions
- Pure substances
- Food
- Environments
- Clinical
- Materials



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<http://www.nimt.or.th/etrm/>



TRM (Thailand Reference Material) is a certified reference material issued by the National Institute of Metrology (Thailand), NIMT.



Brochure

TRM (Thailand Reference Material) is a certified reference material issued by the National Institute of Metrology (Thailand), NIMT and its designated institute. TRM with a roof shape logo is a registered trademark of NIMT with the department of Intellectual property, Thailand. TRMs are produced to the highest standards according to ISO Guide 34 ensuring their consistent quality. TRMs are produced with a well-defined traceability linkage to SI unit (Mole). The traceability is established via NIMT criteria using metrologically valid procedures for the certification of reference material given by NIMT.

Static	
TRM Product:	102 Units
Last Modify:	2 Nov 2018
Visitor:	414612



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E-Catalog of CRMs/RMs and Logo of ARMN

ASEAN Reference Material  
(ARM) Catalog

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## New SI นียามใหม่

One mole contains exactly  $6.022\,140\,76 \times 10^{23}$  specified elementary entities. This number is the fixed numerical value of the Avogadro constant,  $N_A$ , when expressed in the unit  $\text{mol}^{-1}$  and is called the **Avogadro number**.

หนึ่งโมลประกอบด้วยสารที่สนใจ  $6.022\,140\,76 \times 10^{23}$  (อาจจะเป็นธาตุ อะตอม โมเลกุล อนุภาค หรือไอออนก็ได้) เรียกค่าคงที่นี้ว่าเลขอาโวคาโดรมีหน่วยเป็น "ต่อโมล" ( $\text{mol}^{-1}$ )

$$1 \text{ mol} = \frac{(6.022\,140\,76 \times 10^{23})}{N_A}$$

1 โมล

เลขอาโวคาโดรม

Strangeness จุดแข็ง

- Independent on the artefact definition of the kilogram
- ไม่ขึ้นกับต้นแบบกิโลกรัมที่เป็นก้อนโลหะ
- Providing a low uncertainty value
- ค่าความไม่แน่นอนต่ำ
- Providing a logical framework
- มีความสัมพันธ์เป็นเหตุเป็นผล

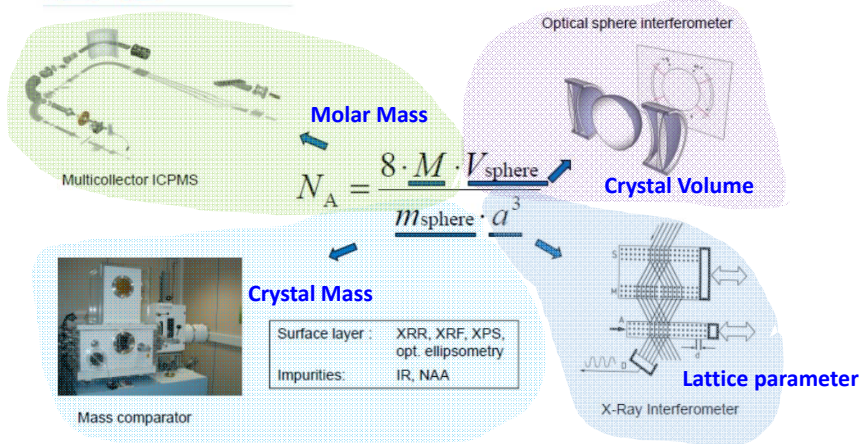
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How to do counting atoms?

เราจะนับจำนวนอะตอมได้อย่างไร?



International Avogadro Coordination



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*Thank you  
&  
Question*



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