

Jotun Paints Visit to Faculty of Applied Sciences, Universiti Teknologi MARA



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Date: 19th November 2015, Thursday

Time: 9.30 am to 1 pm

Venue: Fakulti Sains Gunaan, Universiti Teknologi MARA, 40450 Shah Alam, Selangor

Reported by: Anis Amilah Bt Ab Rahman &
M Shahril Atiqi B M Sharip, PETRONAS GTS
Edited by: Nurul Asni Bt Mohamed, PETRONAS, GTS

A technical insight sharing by JOTUN Paint (M) Sdn Bhd was held at Faculty of Applied Sciences (FSG), Universiti Teknologi MARA (UiTM) on 19th November 2015. It was presented by JOTUN Paint specialist, Ms. Norunn Folsvik and attended by members of Task Force on Coatings Fingerprinting of Institute of Materials, Malaysia (IMM). One of the prime objectives is to understand the paint manufacturer response on the initiative.

The session began with the introduction of all attendees followed by presentation on initiative background, objectives, milestones and future implementation by Ms. Nurul Asni Mohamed from PETRONAS, GTS and Assoc. Prof. Dr. Melissa Chan Chin Han from UiTM. The session then continued with presentation from Ms. Norunn Folsvik, JOTUN Paint Specialist.

According to Ms. Norunn Folsvik, coating failures have been found to be mainly driven by surface preparation and compatibility between layers. However, JOTUN recently had conducted a Round Robin exercise on fingerprinting implementation across four factories worldwide for three products as part of QA/QC verification. Based on Round Robin results, JOTUN findings are consistent with the IMM Coating Fingerprinting Task Force findings in Phase 1 and Phase 2 that was presented in previous Forums on "Towards Fingerprinting of Polymeric Coatings". Generally, it was concluded that:

- Volatile matters are consistent
- Density is coherent across the products
- FTIR correlation achieved 0.99
- Reproducibility is a challenge for 900 – 1300 cm^{-1} range which applies for solvents and extenders. It is important to know limitations and influence of the spectroscopic absorption to the correlation numbers and product performance.
- Different raw materials may affect the correlation although the product performance has been tested and qualified for production.
- ISO 20340 calls for testing of isolated binder instead of full paint. Testing showed that there are differences between these two with clear differences at the binders and extenders range – 700 to 900 cm^{-1} and 1100 to 1500 cm^{-1} . (Note that IMM Task Force does not require such details to avoid issues with formulation secrecy).
- Different instrument manufacturers have different compare algorithms to estimate the degree of similarity (r) for samples and it is important to understand the underlying principles. Different options and parameter checks will give different values. (Note that IMM Task Force has already written an article in the past Materials Mind magazine on these findings).

Sensitivity application for the compare algorithm has been discussed between JOTUN and instrument manufacturer. Normal sensitivity approach is identified as common practice



Figure 1 From left to right: Ms. Joe Set (Research Instruments), Mr. Shahril Atiqi (PETRONAS, GTS), Mr. Abdul Aziz Haron (SIRIM), Mr. Kenneth Way (Perkin Elmer), Ms. Zailawati Hasan (MTE), Ms. Kelly Hong (Research Instruments), Ms. Anis Amilah (PETRONAS, GTS), Ms. Nurul Asni (PETRONAS, GTS), Dr. Siti Norasmah Surip Assoc. Prof. Dr. Norrizah Jaafar Sidik (UiTM), Dr. Azizah Hanom Ahmad (UiTM), Ms. Heidi Lindstrom (Jotun), Ms. Norunn Folsvik (Jotun), Mr. Albert Lee Phiau Seong (Jotun), Ms. Elizah Samat (Shell), Assoc. Prof. Dr. Chan Chin Han (UiTM), Mr. Jarance Teh (Jotun), Mr. Lee Choon Siong (Jotun), Mr. Teh Tiong Poh (Jotun) & Mr. Lim Chuan Gee (SIRIM)

across different industries. High sensitivity algorithms have different mathematical approach as compared to normal sensitivity, which is suitable for coatings industry. Applying raw data for quality control (QC) purpose is more representative and can reduce discrepancies (Note that IMM Task Force has already written an article in the past Materials Mind magazine to address equipment settings).

JOTUN suggested that specifications are to be determined experimentally over a wide range of products over time using different algorithms. Furthermore, reference samples should include spectra from different sites and batches to display the natural variation in the products in order to find a sensible and achievable specification for the benefit of both customers and paint manufacturers. Ms. Nurul Asni mentioned that the library for baseline are to be provided by coating manufacturers and they have the freedom to expand their reference samples as deemed necessary provided that manufactured products can still meet the quality specifications that was guaranteed.

Dr. Melissa also explained the correlation target setting of 0.90 in the **Coating Fingerprint Certificate** was an agreed compromise between Task Force members comprised of various manufacturer's representatives. Four algorithms from different manufacturers have been tested and the correlation was found to be acceptable. Detailed studies were not required on the algorithms.

At the end of the session, both parties agreed that correlation acceptance criteria greater than 0.9 using high sensitivity algorithm set in the coatings fingerprinting is achievable based on findings by the IMM Coating Fingerprint Task Force as presented by Dr. Melissa. The Task Force also agreed to revisit the algorithm principle embedded in several of the FTIR instruments that may affect the sensitivity and correlation of the product as suggested by JOTUN.



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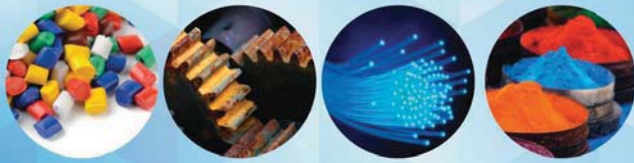
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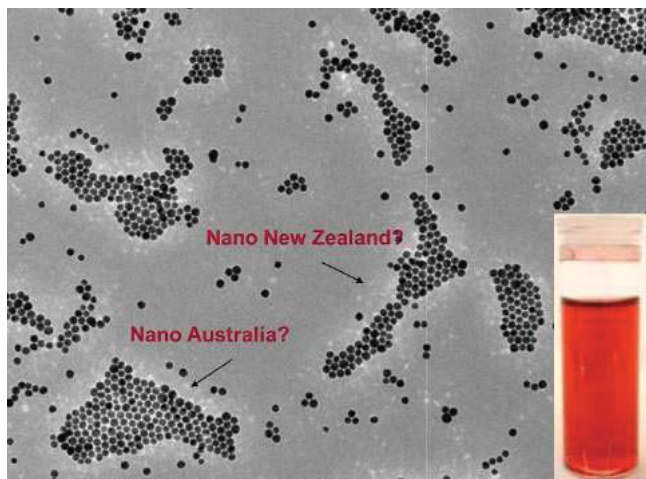
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Materials Mind Photography Competition Winning Photograph Issue 13



Congratulations to Dr. Lim Teck Hock from Faculty of Applied Sciences and Computing, Tunku Abdul Rahman University College, Setapak. He won RM 500 and an award certificate.

Title : NanoGold: A whole new world

Photography description:

A bright-field high resolution transmission electron microscopy (HRTEM) image of monodispersed gold nanoparticles taken at the start of an in-situ study of coalescence at nanoscale. The particles self-assembled into shapes resembling that of New Zealand and Australia - a purely serendipitous and delightful encounter.