

Commercialising Graphene Solutions Via Quadruple Helix Approach

Devandran Krishnan

Rezal Khairi Ahmad, Daniel Bien Chia Sheng, A. Mulia Hafizayatullah Amiruddin, Nurul Aini Azam, Priyaa Darshinie Chanthira Sakaran, Norhaizam Mustaffa, Nur Diyana Syazwani Zambri, Farhan Haziq Azharollah, Muhammad Hidayat Mohtar Apendi, Anis Zafirah Mohd Ismail, Davinder Singh, Nur Lili Suraya

NanoMalaysia Berhad, Level 21-02, Sunway Putra Tower 100, Jalan Putra, 50350, Kuala Lumpur, Malaysia.

devandran@nanomalaysia.com.my

Abstract

RevoluTIONT a programme under NanoMalaysia Berhad encompasses GrapheNovation focussing on Graphene based Innovations aligning to Fourth Industrial Revolution. GrapheNovation includes the sectors of Energy Generation, Energy Storage, Sensor Technologies and Advanced Technologies. These sectors are well aligned to Malaysia's Advanced Materials Technology Roadmap 2022.

In the area of Energy Generation, the usage of Graphene based flexible solar cells exhibits about 10-15% energy generation efficiency. This could provide solution for businesses which require on the go energy with flexible application design. Whereas, the usage of Graphene in pouch cell batteries exhibit better life cycle and performance in general. The rapid development of IOT devices for integrated data uniformity have contributed to the usage of Reduced Graphene Oxide in indoor and outdoor applications. Beyond the above-mentioned application areas, Graphene usage in composites or as part of advance materials have also been greatly explored by Malaysian companies.

As a summary, since the start of NanoMalaysia's commercialisation programmes in 2016, to-date more than 70 technologies, products and solutions has been developed with various industries resulting in more than 50 project Intellectual Properties developed for value creation; with more than 30,000 potential high value job opportunities and more than RM34 billion in potential GNI contribution over the next 5 years. This inclusive of a quadruple helix impact approach with the Universities, Industries, Government and Society.

References

- [1] Industry4WRD: National Policy on Industry 4.0. Ministry of International Trade and Industry. 2020
- [2] National Advanced Materials Technology Roadmap, Malaysia 2022
- [3] Academy of Sciences Malaysia, 2020
- [4] NanoMalaysia Berhad Strategic Report 2020 & 2021 & 2022