

IMRE Industry Day – Nanotechnology Showcase for Industry Commercialization

Executive Summary:

Research institutions need industry partners to accelerate their application R&D and bring their technologies to the market. IMRE has been actively engaging both local and overseas industry to bring forwards the technologies they have successfully develop to the market. Industry Day was organized as a platform for showcasing and matching the technologies and capabilities developed by IMRE with the industry needs. A few technologies showcased include printed electronics, barrier films for solar and display market, polymer nanocomposites, and smart materials for sensors and actuators.

Over 100 participants mostly from industry were invited to participate in half-day forum of IMRE Industry Day on 11 December 2009. IMRE scientists presented four different areas of development, namely Light and Energy, Medical Technology, Advanced Materials, and Advanced Fabrication Techniques. Towards the end of the event, Tera-Barrier Films Pte Ltd, a third spin-off from IMRE shared their experience on lab-to-market, transitioning from scientists to executives and business developers.

IMRE has been very much connected to industry in their research and development activities. Many projects have successfully been licensed out to the industry for example the Atomic Layer Deposition System by Azimuth Technologies. In addition, many industry collaboration projects have been initiated and executed for example with Siemens AG, BASF, Nitto Denko, P&G, Mitsui Chemicals, Sumitomo Chemicals, Boeing Company, Rolls Royce Fuel Cell Systems, and many others.

Impressive progress is made by IMRE's spin-off, Tera-Barrier Films Pte Ltd. Starting their barrier film research development in 1999 with target on flexible OLED display, Tera-Barrier received S\$1.5M in 2006 as part of ETPL (i.e. commercialization arm of A*STAR, a government research agency of Singapore) Flagship Project for scaling up and commercialization. Now they are able to produce world leading performance of moisture & oxygen barrier, one millionth of a gram per square meter per day, a thousand times better than existing products, with roll-to-roll scale up process. ETPL Flagship Project accelerates the commercialization process by helping on new target markets identification, making contacts with potential customers as well as with investors. Tera-Barrier Films Pte Ltd was finally launched in August 2009 with series A investment from Applied Ventures, LLC. Their produced films will be able to significantly increase the life span of organic photovoltaics (OPV) and flexible display.

Besides presenting its track record on commercialization effort, IMRE also shared their technical projects. A few exciting topics caught our attention were new polymer nanocomposite material for many applications including UV curable hard coating, which involves collaboration with Mitsui Chemicals, as well as smart materials for sensors and actuators. IMRE has developed a prototype with the use of smart piezoelectric based materials for battery-less remote control and wireless communication devices. IMRE has also developed impressive capabilities in printed electronics ranging from low-temperature & higher-transmittance ITO technology, printable blue emitter, translucent OPV, and printable semiconductor with non-toxic solvents. The group is currently seeking for industrial partners.

Overall, the Industry Day provided good platform for introducing IMRE's applied technologies and capabilities from lab to market, as well as their track record in commercialization and working with industry. It was also a good venue to gather feedback from the industry on their specific needs of technologies.



Fig. 1. Welcome address of IMRE Industry Day by Dr Lim Kiang Wee, Executive Director of IMRE



Fig. 2. Dr Mark Auch, CEO of Tera-Barrier Films Pte Ltd, sharing his experience from lab to market