

Visit Update to NanoMaterials Technology, Singapore

Abstract

One of a handful successful nanotechnology based company in Singapore, NanoMaterials Technology (NMT) has been successfully developed its two latest technology breakthroughs: high particle loading clear solution based on its well dispersion technology and transparent coating on glass for permanent UV and IR protection. NMT is currently also collaborating with overseas partners in developing the right nanoparticles for drug delivery and hyperthermia applications. NMT has been focusing on designing and synthesizing nanomaterials for pharmaceutical, electronics and specialty chemicals applications, and is now looking into automotive and wood products. In addition, it is interested in solar technology applications whenever the right partners are identified.

In effort to gather detail information about the Singapore nanotechnology capabilities, NanoGlobe team visited one of Singapore's successful nanotechnology companies, NanoMaterials Technology (NMT), on 17 August 2009. Incorporated in Singapore in 2000, NMT specializes in the development, commercialization, and licensing/contract manufacturing of nanomaterials used in the pharmaceutical, electronic material and specialty chemical sectors. NMT's core capability involves the synthesis and mass production of crystalline nanopowders with consistent product quality, narrow particle size distribution, crystal shape and morphology, and most importantly cost competitive, leveraging from NMT's patented technology platform called the High Gravity Controlled Precipitation (HGCP) technology.

Currently, one of NMT's activities focuses on the pharmaceutical R&D for the drug delivery applications, involving the process of formulating the active ingredient and improving the solubility level such as by designing and controlling the nanoparticle shape and size. For example, in the hyperthermia application, NMT is designing the core particles, which have to be very precise in terms of its crystallinity, shape and size, to provide the desired response to magnetic field and produce the desired level of heat.

And during our visit, the CEO of NMT, Dr. Jimmy Yun, showed NMT's two latest technology breakthroughs: high particle loading clear solution and IR-UV protector coating. NMT is probably the only company in the world who is now able to produce a scalable clear solution with high particle loading up to 70% w/w. The particle size is tuneable based on the needs; which ranges from 10 to 40 nm. NMT has also successfully developed a transparent coating on glass for permanent UV protection

based on its well dispersed Zinc Oxide nanoparticles. The applications being explored for this nanoparticles dispersion include automotive and wood products. In addition, NMT has come up with a significant energy saving solution by developing a cost effective transparent coating on glass for IR protection, to block heat radiation coming from the sun. Its novel solution of antimony tin oxide (ATO) dispersion practically cut the cost of the typical indium tin oxide (ITO) coating by half.

While working hard in developing novel materials and applications, NMT is very open to new ideas and collaborations, including in solar technology, pharmaceutical, and green construction applications.



NMT's CEO, Dr. Jimmy Jun with NMT's latest breakthrough, clear solution of nano Zinc oxide dispersion with solid content of 70% w/w