

納米研發中心核心領域
Core Area of Nano R & D Center

納米材料及納米應用產品
Nanomaterials and nano enabled products

Nanotechnology and Nano Drug
納米技術 與 醫藥

Nano-Sized Bomb Targets Tumors 革新癌症療法 - 「納米炸彈」

Bioengineers at the MIT have engineered a drug-delivering nanocell to 'bomb' a tumor. The nanocell shut down its blood vessels and detonated a dose of cancer-killing toxins.

美國麻省理工學院的生物工程科學家利用納米技術研製了一種「納米細胞炸彈」破壞癌細胞。它們只會被癌腫瘤細胞吸收，既能截斷惡性腫瘤的血液供應及釋放化療藥物破壞癌細胞。

Nano Drug Delivery 納米投藥過程

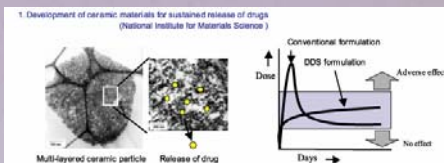
Nano-enabled drug delivery is unique to create systems that can better deliver drugs to tiny areas within the body. 納米科技是一項極為細少單位的技術，可以順利投藥在人體極細微的地方。

Controlled drug release

釋藥控制

The drug is controlled-released in body at optimum level.

藥物在身體內被控制釋放至最有效劑量。



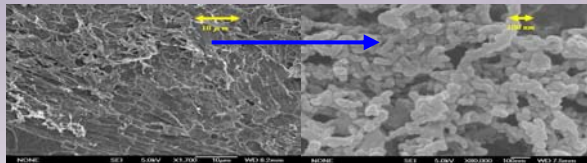
Source: Biomaterials Center, National Institute for Materials Science

Supercritical Crystallization Technology

超臨界結晶技術

The drug particle size decreases from 50µm to 60nm after supercritical crystallization process.

經過超臨界結晶處理，藥物粒子由 50 微米縮小至 60 納米。



左圖: 未經納米技術處理的藥粒子 右圖: 經納米技術處理的藥粒子
Left: Unprocessed drug particles Right: Nano-sized drug particles
Pictures provided by Prof. K. M. Ng (HKUST)



Source: Wenweipo

Health Care Products with Nanotechnology
納米健康保健產品

Many health care products have been developed with nanotechnology around the world, such as sunscreens, tooth protection products, mattress, disinfectants, skin care cosmetics, textiles, etc.

全球很多健康保健產品已經加入了納米技術，包括床墊、消毒劑、牙齒保護產品、護膚化妝品、紡織品等。

Washable Bed Mattress

可洗的床墊



Source: Simmons Bedding Company

Washing of the bed is possible because of the zip-off mattress top design with 3 layers
床墊內有三層物料，可以用拉開拉鍊拆下來清洗

1st Layer: Fibers wick away sweat and allow fabric to dry quickly
第一層: 高帶汗及快乾纖維

2nd Layer: Nano material creates a semi-impervious layer that traps fluids and particles
第二層: 不透水納米紡織品

3rd Layer: Teflon fabric provides an extra protection
第三層: 特富龍保護纖維

Environmental Friendly Disinfectants

環保清潔劑



Source: EnviroSystems

Advantages of nano disinfectants

納米環保清潔劑特點

-The nanoemulsion formulation requires only small amounts of active ingredients. Thus, there are no harmful skin, eyes, breathing effects

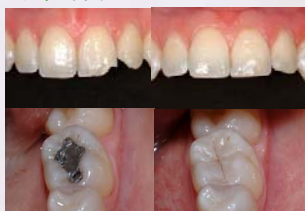
-清潔劑的納米乳化物只需要很少份量的殺菌成分，所以對人體皮膚、眼睛、呼吸道均無傷害

-The nanospheres carry surface charges on microorganisms' membranes, much like breaking through an electric fence

-清潔劑的納米分離子附著在病菌有效貫穿、滲透破壞病菌

Tooth Protection Products

牙齒保護產品



Source: 3M

Advantages of tooth restorative with nanocomposite

納米補牙物料比一般物料優勝之處

- Unusually high aesthetics

- 補牙後牙齒能保持美觀

- Excellent polish retention

- 牙齒光澤更持久

- High wear resistance

- 牙齒更能抵抗磨損

Skin Care Cosmetics

護膚化妝品



Source: Fandl

Advantage of nano mild cleansing oil
納米卸妝液特點

Natural oil that comprises a unique blend of ingredients lifts off make-up and dirt instantly, deconstructing components to a nano-size

採用納米技術，以超微細因子卸妝及淨化毛孔

Textiles

紡織品



Source: Nano-tex

Advantage of nano textiles
納米紡織品特點

Nano-whiskers are attached to cotton or synthetic fibers at molecular level, so the textile has superior stain, water and oil repellency

納米衣服可以阻擋醬油或水漬停留在衣服表面，所以不怕衣服被弄髒，下雨也不怕被弄濕

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納米科技推動可持續發展的知識型經濟 NanoTech: for a knowledge-based sustainable economy