**Tech Highlight**

**Next generation sunscreen**

Good UV-radiation protection, anti-oxidative and non-toxic? Sounds like an ideal combination for skin care products.

Lignin, found in plant cell walls, is also a by-product of the paper pulp industry. It is a biodegradable and sustainable material which can absorb UV light. Nanodiamonds, which are very, very small diamonds invisible to the naked eye, are found in the natural environment. They are formed by impact events, e.g., an explosion or meteoritic impact. Fullerenes, which are yet another form of carbon arranged in a spheroidal shape, much like a football, are also naturally occurring. Like lignin and nanodiamonds, they have excellent anti-oxidative and UV absorption properties.

“One of the challenges in developing sunscreens is to ensure the stability of anti-oxidative properties. Vit C, commonly used in certain products, will degrade under sunlight. Lignin, nanodiamonds and fullerenes on the other hand, are more stable under sunlight and hence have more stable anti-oxidative properties. Besides functioning as excellent antioxidants, they have great UV absorption properties and do not generate reactive oxygen species, which may cause photo-aging and skin cancer”, Dr. Zhang explained.

All these desirable properties can be incorporated into multi-functional skin care products such as sunscreens with anti-oxidative functions and anti-aging skin care products in the form of skin-care serums, creams and lotions.

The team hopes to collaborate with skin care companies to develop new generation sunscreen products, or with packaging companies to develop anti-UV packaging.

For more information, please contact industry@imre.a-star.edu.sg

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*References:
