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Singapore develops novel film for small wearable devices

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Very effective in evaporating sweat from our skin to keep us cool and comfortable

A team of researchers from the National University of Singapore (NUS) has created a novel film that is very effective in evaporating sweat from our skin to keep us cool and comfortable when we exercise, and the moisture harvested from human sweat can be used to power wearable electronic devices such as watches, fitness trackers, and more.

Sweating is a natural process for our body to reduce thermal stress. “Sweat is mostly composed of water. When water is evaporated from the skin surface, it lowers the skin temperature and we feel cooler. In our new invention, we created a novel film that is extremely effective in evaporating sweat from our skin and then absorbing the moisture from sweat. We also take this one step further - by converting the moisture from sweat into energy that could be used to power small wearable devices,” explained research team leader Assistant Professor Tan Swee Ching, who is from the NUS Materials Science and Engineering.

The main components of the novel thin film are two hygroscopic chemicals – cobalt chloride and ethanolamine. Besides being extremely moisture-absorbent, this film can rapidly release water when exposed to sunlight, and it can be ‘regenerated’ and reused for more than 100 times.

The NUS team now hopes to work with companies to incorporate the novel moisture-absorption film into consumer products.

Image caption- Asst Prof Tan Swee Ching (seated, left) and Prof Ding Jun (seated, right) and their team from NUS Engineering developed has developed a novel film that is extremely effective in evaporating sweat from our skin.