

TECH OFFER

Low-Cost Photochemical Coating for Development of Water-Repellent Materials



KEY INFORMATION

TECHNOLOGY CATEGORY:

Chemicals - Coatings & Paints

Environment, Clean Air & Water - Filter Membrane & Absorption Material

Manufacturing - Surface Finishing & Modification

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **HONG KONG**

ID NUMBER: **TO174817**

OVERVIEW

Water-repellent materials have attracted a lot of attention due to their importance in various applications, such as oil-water separation for oil waste treatment, self-cleaning for corrosion prevention, and microfluidics for electronics and medical devices. Surface modification can be applied to existing materials to introduce water repellency. However, industrial applications of conventional methods are very limited due to low reaction efficiency, high costs of chemical reagents, and instability for recovery/reuse.

To overcome the limitations, the technology owner has developed a new photochemical coating technology using visible light as an excitation source and low-cost chemicals as raw material. The invented coating technology can transform a wide variety of materials into versatile functional materials with excellent water repellency and oil attraction, providing a cost-effective solution to fabricate water-repellent materials.

The technology is available for IP licensing and R&D collaboration with industrial partners who are looking for a cost-effective solution for the development of water-repellent and oil-absorbing materials.

TECHNOLOGY FEATURES & SPECIFICATIONS

The technology owner adopts a two-step photochemical coating method using low-cost chemicals and visible light. Surface pre-treatment has also been applied so the surface modification can be applied to a wide range of surfaces, such as paper, wood, glass, natural fibers, textiles, and cement-based materials.

The features of this technology are:

- Low-cost and readily accessible chemicals
- High effectiveness (less than 0.1 wt% of coating attached on the surface)
- Improved hydrophobic function compared to single-step thermal method
- Applicable to a wide range of natural and synthetic materials
- Produce patterned coating by using a suitable photomask

POTENTIAL APPLICATIONS

This technology can be applied to the development of functional water-repellent materials with selective oil absorption. The potential applications include but are not limited to:

- Environmental sector: oil pollution treatment, remediation of marine oil spills
- Aquaculture industry: grease cleaning, oil waste treatment
- Food industry: aqueous/organic biphasic separation
- Construction industry: waterproof cement, exterior and interior decoration
- Water-repellent products: filter paper, cardboard, textile, plant-based and polymer-based sponge

UNIQUE VALUE PROPOSITION

- Cost-effective method using low-cost chemicals and visible light
- Applicable to a wide range of natural and synthetic materials
- Development of functional materials with water-repellency, selective oil-absorbing and self-cleaning properties

The technology is available for IP licensing and R&D collaboration with industrial partners who are looking for a cost-effective solution for the development of water-repellent and oil-absorbing materials.