

Method for Commercial Production of Super-Hydrophobic Materials

Tech ID: 27219 / UC Case 2015-477-0

SUMMARY

UCLA researchers in the Department of Mechanical and Aerospace Engineering have developed a novel method for industrial production of super-hydrophobic material.

BACKGROUND

Hydrophobic materials are used in all aspects of daily life. For example surfaces of metal instruments, electrical instruments, cardboard packaging and clothing need to be water repellent. Coating the surface with hydrophobic materials can prevent water damage. However, it adds to the cost and is prone to failure and so far no material has been developed that is repellent to all known liquids such as acids, oils and polar solvents.

INNOVATION

UCLA researchers have developed a novel method to make any material super-hydrophobic. Their proposed molding-based microfabrication method can be used for mass production of super hydrophobic materials. The method is compatible with common industrial techniques and can be easily translated for commercial use.

APPLICATIONS

- ▶ Production of super-hydrophobic materials for electrical equipment
- ▶ Production of super-hydrophobic metal materials for marine equipment
- ▶ Production of oil and water repelling material for aerospace equipment

ADVANTAGES

- ▶ Low cost
- ▶ Scalable for industrial production
- ▶ Compatible with any material including glass, metals and polymers
- ▶ Material remains hydrophobic even at elevated temperatures of 1000 °C

RELATED MATERIALS

- ▶ [T. Liu and C.-J. Kim, "Turning a Surface Super-Repellent Even to Completely Wetting Liquids", Science, 2014](#)

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,927,005	02/23/2021	2015-477

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Membraneless Fuel Cell with Self-Pumped Fuel and Oxidant](#)
- ▶ [Methods of Restoring and Maintaining Gas Film on Superhydrophobic Surfaces while Underwater](#)
- ▶ [A Low-Profile Flow Shear Sensing Unit](#)
- ▶ [Complete Transfer of Liquid Drops by Modification of Nozzle Design](#)

CONTACT

UCLA Technology Development Group
 ncd@tdg.ucla.edu
 tel: 310.794.0558.



INVENTORS

- ▶ Kim, Chang-Jin

OTHER INFORMATION

KEYWORDS

Microfabrication, super-repellent, super hydrophobic material, anti-corrosive, anti-wetting

CATEGORIZED AS

- ▶ **Materials & Chemicals**
 - ▶ Ceramics
 - ▶ Other
 - ▶ Polymers
 - ▶ Thin Films
- ▶ **Engineering**
 - ▶ Other

RELATED CASES

2015-477-0

- ▶ [Stereo Image Acquisition By Lens Translation](#)
- ▶ [Method of Fluid Manipulation By Electrodewetting](#)
- ▶ [A Built-In Mechanism Of Gas Maintenance In Microfeatures On A Submerged Surface](#)
- ▶ [No-Assembly Devices for Microfluidics Inside a Cavity](#)
- ▶ [Liquid-Repellent Surfaces Made of Any Materials](#)
- ▶ [On-chip, Real-time Feedback Control for Electrical Manipulation of Droplets](#)
- ▶ [Micropumping of Liquids by Directional Growth and Selective Venting of Bubbles](#)
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UCLA Technology Development Group

10889 Wilshire Blvd., Suite 920, Los Angeles, CA 90095

tdg.ucla.edu

Tel: 310.794.0558 | Fax: 310.794.0638 | ncd@tdg.ucla.edu

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