

Mitsui Chemicals Completes Development of New 3D-Printed Mask with Nagoya University and Spinoff Venture

Achieving equivalent performance with 90 percent less nonwoven fabric

Mitsui Chemicals, Inc. (Tokyo: 4183; President & CEO: HASHIMOTO Osamu) today announced its completion of the new, reusable 3D-printed mask that it has been developing*¹ with Professor HORI Katsutoshi of the Graduate School of Engineering at Nagoya University*² and Friend Microbe Inc. (President & CEO: NISHIDA Katsuhiko),*³ a spinoff venture from Nagoya University.

The new mask, θ (Theta), consists of a reusable body and a disposable filter, the replaceable nonfabric*⁴ for which is supplied by Mitsui Chemicals. After exhaustive consideration, the project partners succeeded in cutting the quantity of disposable nonwoven fabric in the mask filter to just 10 percent of that used conventionally – while also maintaining the same level of performance. The key to the breakthrough lies in having optimized the filter's fit within the body.

■ Features of the New Mask

1. The reusable resin body is easy to wash and keep hygienic.
2. The use of resin for the body cuts the quantity of nonwoven fabric required to 10 percent of that needed for conventional masks.
3. The mask's three-dimensional design minimizes the area in contact with the skin, reducing perspiration and makeup soiling.
4. The resin body is available in a range of shades, ensuring that the mask is stylish as well as functional.
5. The structure of the removable part has been designed so that the mask can readily be hung around the neck, keeping it hygienic when taken off for short periods.



Examples of colorways



■ An Environmentally Friendly Mask

As the coronavirus pandemic drives up global demand for masks, a problem has emerged in the form of increased waste from disposable masks. Made from biodegradable polylactic acid (PLA) resin, θ (Theta) is environmentally friendly, as it is reusable and requires just 10 percent of the quantity of disposable nonwoven fabric used in conventional masks.



■ Future Developments

Friend Microbe will begin accepting pre-orders of θ (Theta) from Friday, August 7, 2020, via the crowdfunding site Makuake^{*5}. Friend Microbe has also decided to donate some of the new masks to Miyoshi City, Aichi Prefecture, which had approached the company some time ago about the masks. Along with Professor HORI, the company will participate in a presentation ceremony at Miyoshi City Hall at 14:30 Friday, August 7.

Further Information

*1 Professor HORI Katsutoshi, Graduate School of Engineering, Nagoya University

<https://www.chembio.nagoya-u.ac.jp/labhp/life3/index.html>

*2 Friend Microbe Inc. <https://friendmicrobe.co.jp/>

*3 Previous news release: https://jp.mitsuichemicals.com/en/release/2020/2020_0511.htm

*4 Reports on tests by Nelson Laboratories, LLC attest to the viral filtration efficiency (VFE) and particle filtration efficiency (PFE) of the nonwoven fabric for use in the new mask.

*5 Pre-order site from 7th August 2020 <https://www.makuake.com/friendmicrobe>
