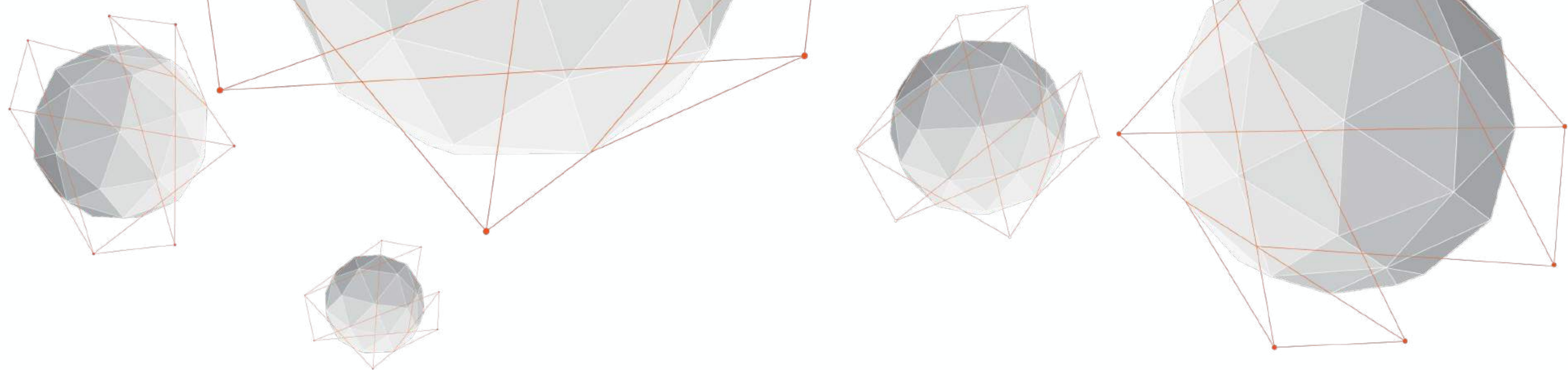




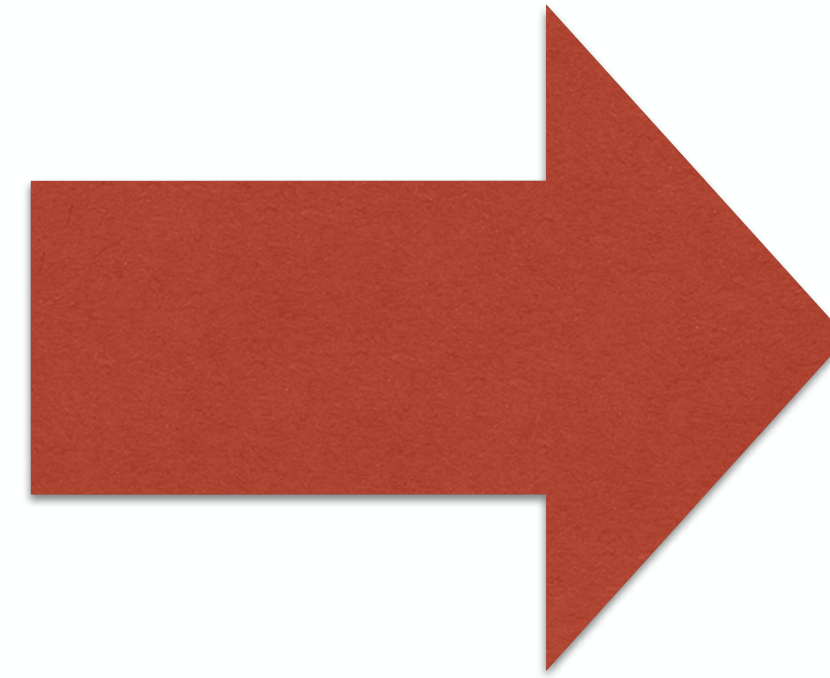
COPPER 3D

ANTIMICROBIAL INNOVATIONS

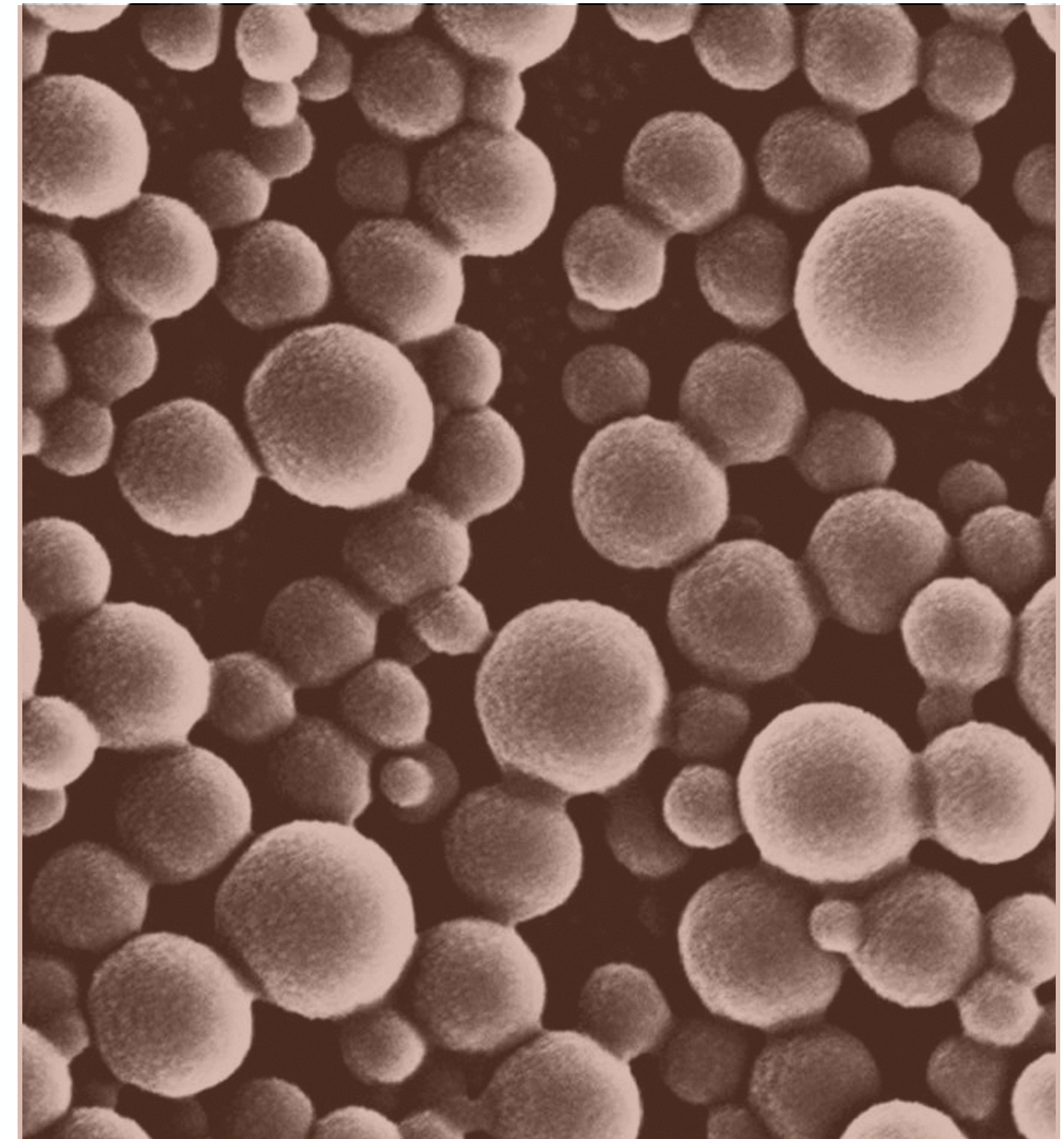
Daniel Martínez Pereira, Co-Founder & CINO Copper3D

Supported by:    

From Copper...



To Nano-Copper!



Opportunity



“3D Printing is ***rapidly disrupting*** the Medical Devices Industry”

(Wohlers Report)

“By 2022, **25%** of **medical devices** companies will make use of 3D printing”

(Gartner Inc.)

Our Challenge:



How can we create 3D Printed Medical Devices
with "antibiotic properties"?

First Antimicrobial 3D Printing Materials Portfolio

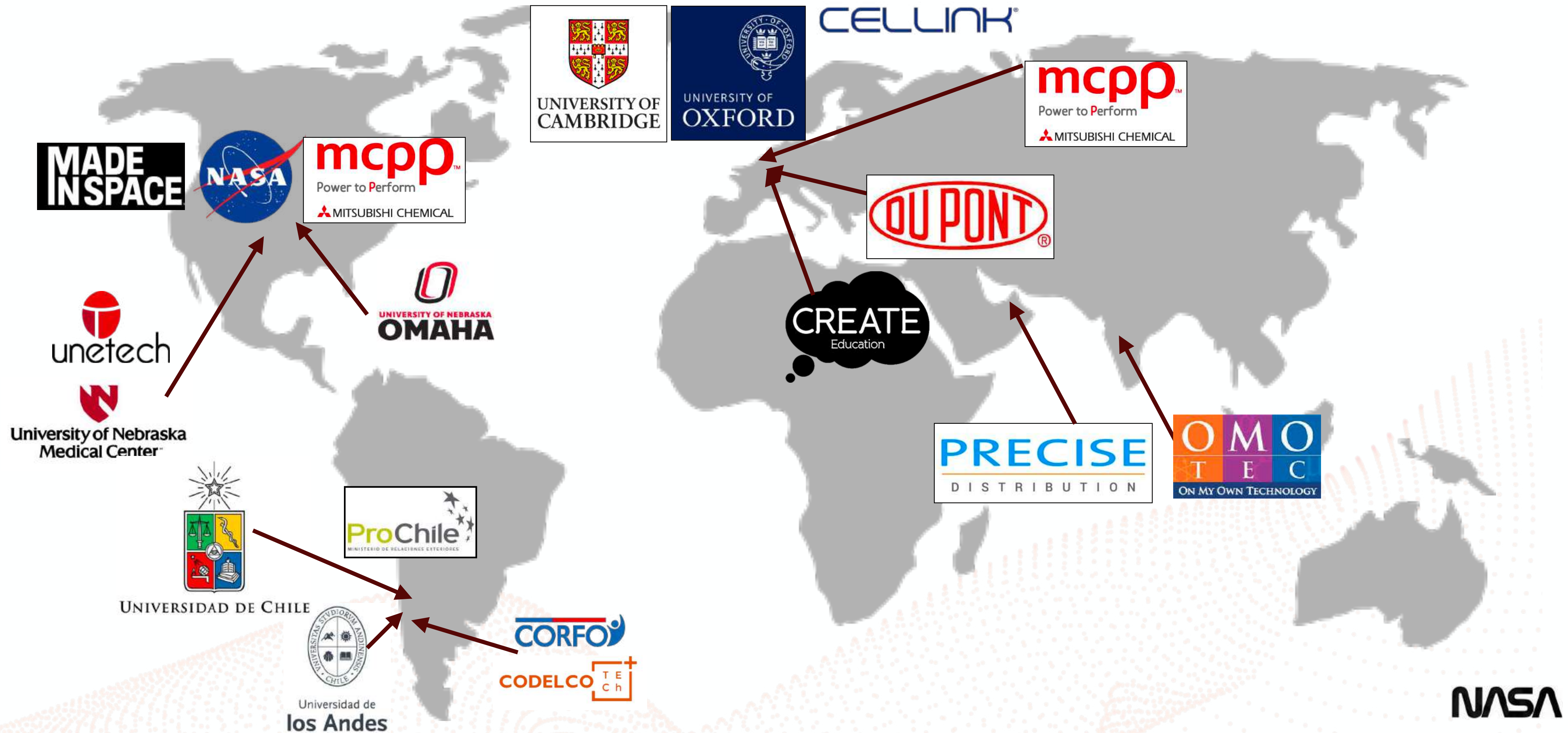


ONE REVOLUTIONARY MATERIAL, INFINITE ANTIMICROBIAL SOLUTIONS!

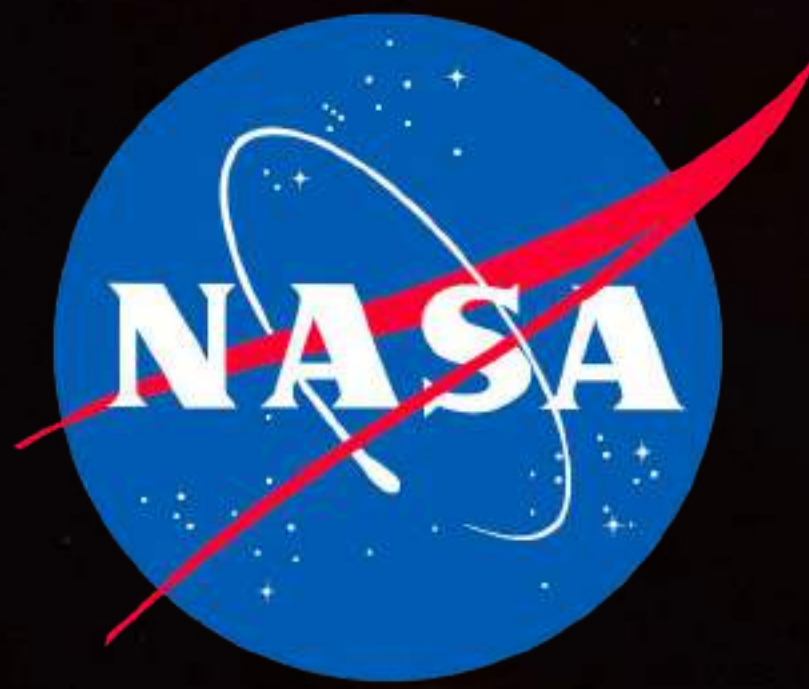
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ANTIMICROBIAL INNOVATIONS



Key Collaborations



(Sept 2018)



Houston!!!

(We have a problem!!!)

- ISS Contamination
- Super resistant/aggressive bacteria
- Immune System Dysregulation

(Urgent need for Antimicrobial Solutions)

Exploration of this new
antimicrobial materials in space
conditions



**“Contamination of ISS & Immune
System Dysregulation during
Long Term Space Missions”**



NASA Nebraska Space Grant

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FACULTY RESEARCHERS 2018-2019

The NASA Nebraska Space Grant is excited to highlight our innovative faculty research projects this year.



DEVELOPMENT AND TESTING OF ANTIMICROBIAL 3D PRINTED MEDICAL DEVICES FOR ASTRONAUTS

Jorge Zuniga, Department of Biomechanics, UNO

Current flight experiment data indicates alterations in microbial virulence and astronaut immune function during spaceflight indicating the potential for increased risk of infectious disease during spaceflight missions. Astronauts experienced an altered immune response during long space mission aboard the International Space Station. This altered immune behavior may be linked to radiation, microbes, stress, microgravity, altered sleep cycles and isolation. In a prolonged space mission, these factors could cause increased susceptibility to illness and, in turn, limitations to human space exploration. Furthermore, studies have demonstrated that the methicillin resistant *Staphylococcus aureus* strain demonstrated enhanced antibiotic resistance in microgravity-analogue conditions suggesting potential alterations in antibiotic efficacy during long-duration spaceflights missions. Given that medical conditions will occur during human spaceflight missions, there is a possibility that adverse health outcomes may decrease crew's performance during these missions. The current proposal has the potential to contribute to reducing NASA's "Risk of Adverse Health Outcomes & Decrements in Performance due to Inflight Medical Conditions" for deep space journeys and long-durations spaceflight missions.

In collaboration with our industry partner, Copper 3D Inc, the current proposal seeks to develop and validate new antimicrobial 3D printing materials for the development of medical devices to serve as a preventive countermeasure to mitigate microbial risks during long-durations spaceflight missions. To accomplish this purpose, we have developed two specific aims:

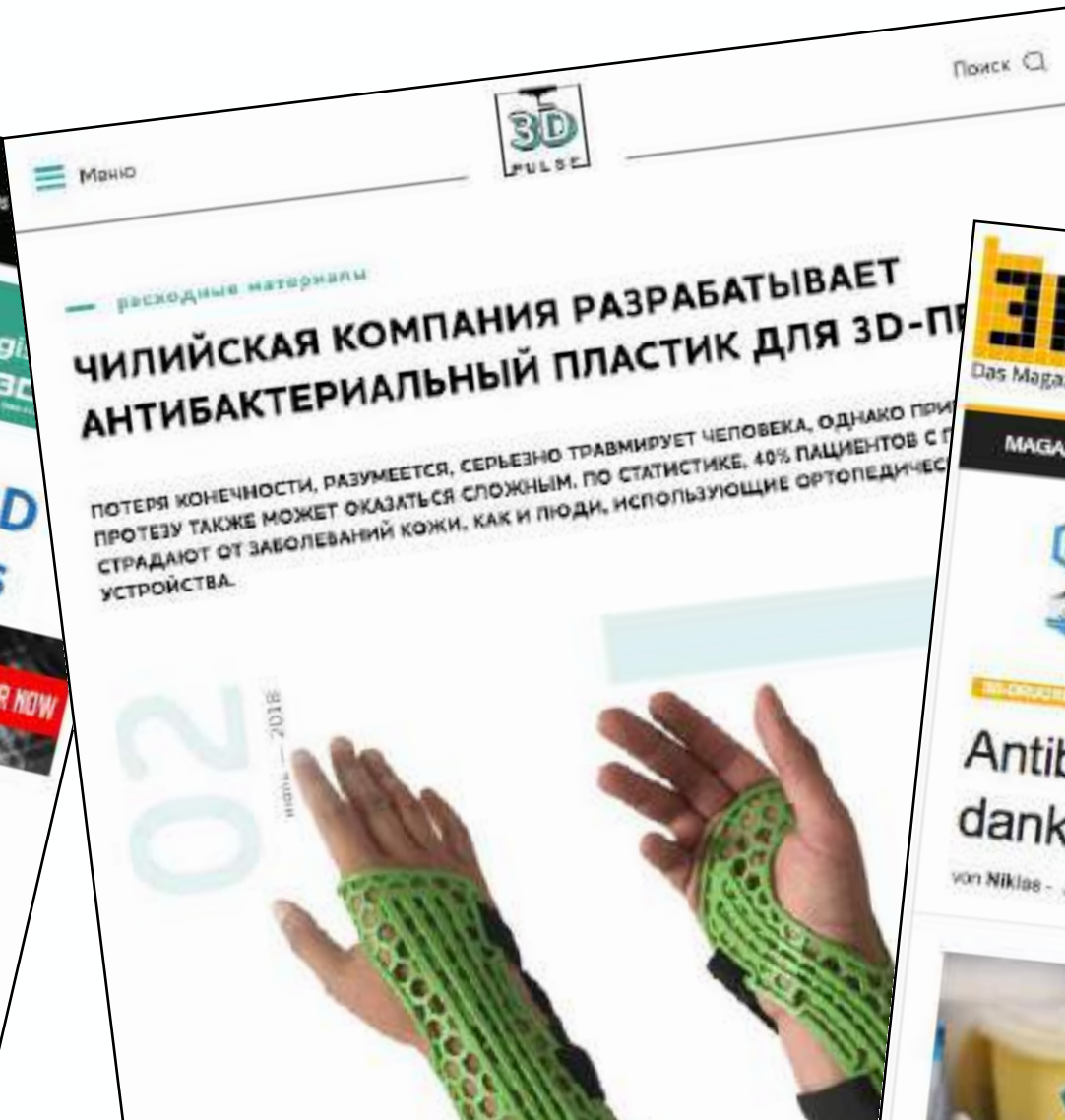
Aim 1: Perform antimicrobial effectiveness and longevity assessments of new antimicrobial 3D

COPPER 3D
ANTIMICROBIAL INNOVATIONS



International Media

COPPER 3D
ANTIMICROBIAL INNOVATIONS



Tecnología chilena será testeada por la NASA para viajes a Marte

La firma local Copper3D desarrolló filamentos para impresión de artículos en 3D que podrían ser claves para la carrera espacial.

PABLO TIRADO

Una innovación chilena podría llegar donde ningún otro compatriota ha llegado jamás.

Se trata de los filamentos de impresión 3D de la compañía Copper3D, que cuentan con nanopartículas de cobre, una tecnología de vanguardia en el mundo que permite crear prótesis y órtesis con propiedades antibacteriales.

Con un método ideado por el kinesiólogo Daniel Martínez, el ingeniero electrónico Andrés Acuña y el fisiatra Claudio Soto y tras la cooperación del destacado investigador chileno radicado en EE.UU., Jorge Zúñiga, la compañía fue una de las tres seleccionadas para recibir el Nebraska Space Grant, un fondo de apoyo que entrega la NASA para el desarrollo de nuevas tecnologías y que permitirá, entre otras cosas, probar las prótesis en una atmósfera de gravedad cero. "El uso de esta nueva tecnología de impresión 3D antibacteriana tiene varias aplicaciones potenciales. Nuestro enfoque principal han sido aplicaciones en el campo de la medicina y la rehabilitación, pero ahora queremos ir un paso más allá y verificar el potencial de esta tecnología en otros tipos de desafíos asociados con los problemas del

futuro de las misiones espaciales de larga duración", dice Martínez.

En efecto, parte del proceso al que serán sometidos los productos de la compañía tiene que ver con evaluar sus potencialidades para que sean proveedores de la NASA, en su estrategia que busca llevar humanos a Marte y a otros confines del espacio.

Para nadie es un misterio que la agencia espacial estadounidense está pensando en el uso de impresoras 3D para facilitar la colonización de otros planetas, tanto para la fabricación de módulos habitacionales, como para herramientas. Y es en este último punto donde la compañía chilena podría transformarse en un aporte sustancial, ya que permitiría la fabricación de elementos de uso médico y también cotidiano, pero con propiedades antibacteriales, lo que reduciría notablemente las posibilidades de infecciones en el espacio.

Aunque las pruebas aún no se concretan, en el equipo chileno están optimistas, pues creen que los resultados de la impresión no debiesen variar demasiado en un ambiente sin gravedad.



Los aparatos impresos en 3D con la tecnología chilena cuentan con propiedades antibacteriales.

COPPER 3D

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NASA testing antibacterial 3D printing material

NASA is studying a variety of methods to control, reduce microbial contamination while delivering quick access to customized medical applications, parts, or medical instruments manufactured on demand.

October 3, 2018

Elizabeth Engler Modic



3D/Additive/Alternative

Materials

One of the current research priorities of NASA is related to long-term space missions, which undoubtedly will bring enormous technical and human challenges to be carried out successfully and safely.

Some of these challenges have to do with the health and well-being of astronauts during these missions, challenges that can range from quick access to customized medical applications, parts, or medical instruments manufactured on demand, prosthetics, orthoses, or elements for emergency treatment and rapid wound closure, among many others.

NASA Studying Antibacterial 3D Printing Filament For Use On Space Missions

Become a 3D Printing Expert
— **Top Five** Lessons Online



by Clare Scott | Sep 6, 2018 | 3D Printing, 3D Printing Materials, Medical 3D Printing |



COPPER 3D ANTIBACTERIAL INNOVATIONS A few months ago, Chilean startup [Copper3D](#) introduced [PLACTIVE](#), an antibacterial 3D printing filament designed for the production of medical devices such as prosthetics and braces. The company pointed to the worrying statistic that 40% of prosthetic uses suffer from some sort of skin condition, some of which can be severe or even life-threatening. PLACTIVE includes, among other materials, copper nanoparticles, which are active in the elimination of microorganisms, making devices 3D printed from the material effective in preventing infection.

One organization that has taken an interest in PLACTIVE is NASA. Last year, the first medical devices were [3D printed in space](#), as astronauts at the International Space Station are moving toward the 3D printing of more and more necessities. Because of the porous nature of 3D printing materials, as well as the complex geometries of 3D printed devices, bacteria is always a concern, so NASA was intrigued by the notion of an antibacterial 3D printing filament.

**THE FUTURE OF
ANTIBACTERIAL 3D PRINTING,
NOW!**



Trending Desktop Metal launches new Studio System+ i...

Home / Materials / Advanced Materials / NASA tests Copper3D antibacterial 3D printing filament for space

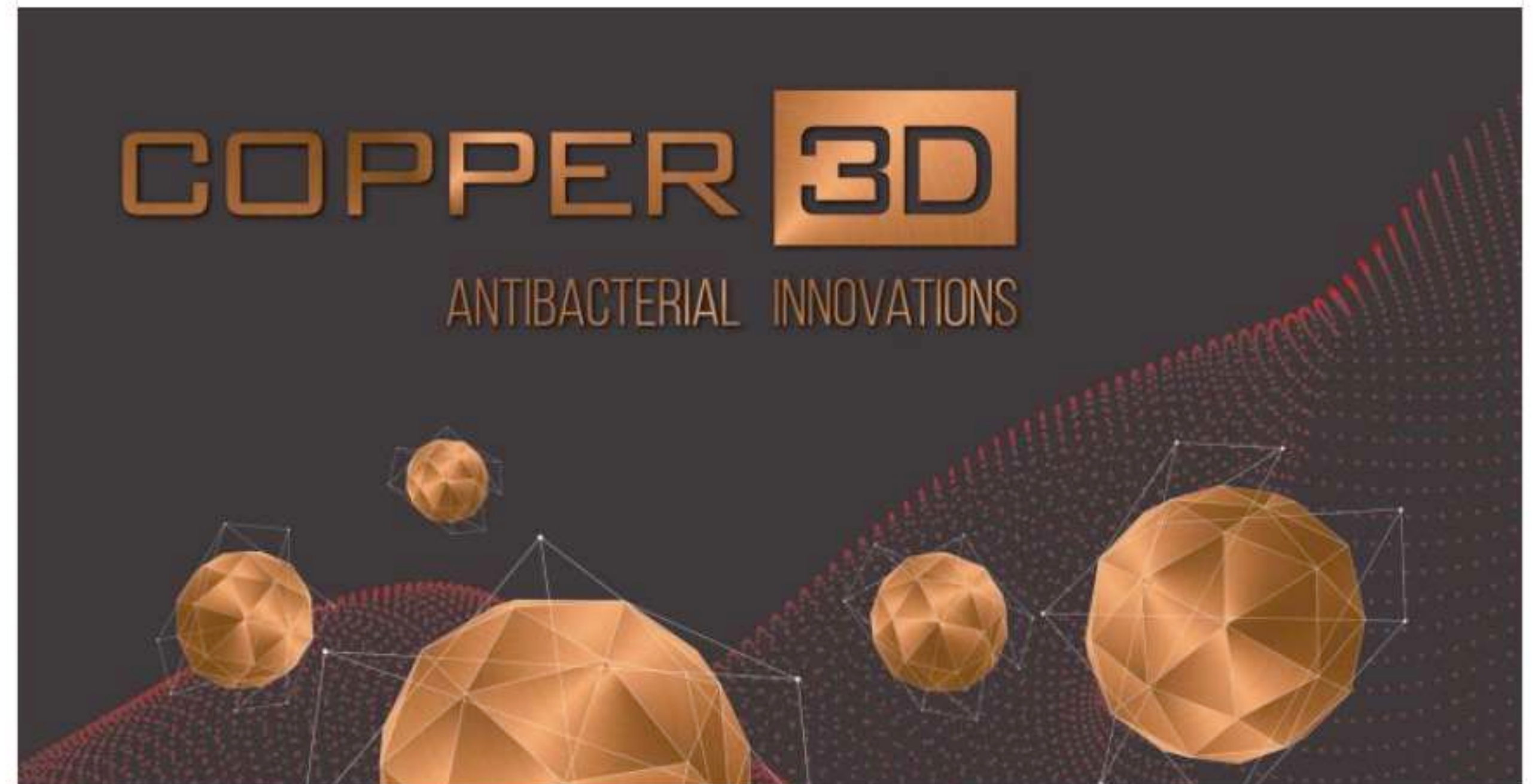
Advanced Materials Materials

NASA tests Copper3D antibacterial 3D printing filament for space

Studies focus methods to reduce microbial contamination for interplanetary protection.

Davide Sher • September 5, 2018

0 274 2 minutes read



LA NASA teste un filament d'impression 3D antibactérien pour soigner ses astronautes



La Nasa continue d'expérimenter la fabrication additive et ses bienfaits pour ses missions spatiales. Celle qui dévoilait cet été un nouveau procédé d'[impression 3D métal par ultrasons](#), teste actuellement un nouveau filament d'impression 3D antibactérien.

Dans un article publié par la revue scientifique [Applied Sciences](#), on apprend que l'agence spatiale américaine étudie le développement de prothèses imprimées en 3D avec des filaments antibactériens pour surmonter les problèmes de santé rencontrés par ses astronautes dans l'espace. Pour l'aider dans sa tâche, la Nasa s'est associée à l'[université du Nebraska](#) et la compagnie chilienne [Copper3D](#) spécialisée dans les filaments antibactériens pour l'impression 3D.



NASA testet antibakterielles Copper3D Filament für Weltraumeinsatz

von Dominik - Sep 8, 2018



Die Nasa testet aktuell das antibakterielle Copper3D Filament in Zusammenarbeit mit der University of Nebraska in Omaha und dem Materialhersteller.

Copper3D wurde von einem Physiotherapeuten zusammen mit einem Bauingenieur gegründet. Zusammen haben die beiden das Filament PLACTIVE entwickelt, das zahlreiche Mikroorganismen abtöten kann. Aktuell

arbeitet und forscht die NASA unter anderem für Raummissionen die eine längere Zeit in Anspruch nehmen. Bei solchen Missionen ist die Sicherheit der Besatzung natürlich oberstes Gebot. Natürlich kann trotzdem etwas passieren – auch wenn es nur eine Sehnenscheidenentzündung oder Ähnliches ist. In vielen Fällen kann ein 3D-Drucker dann helfen: mit Wundabdeckungen, Stützen oder sogar Prothesen.

Bisher gab es allerdings ein Problem mit der Technologie: Poröse 3D-gedruckte Kunststoffstrukturen hatten ein erhöhtes Risiko für die starke Besiedelung und



La NASA sta studiando il filamento antibatterico PLACTIVE di stampa 3D di Copper 3d per l'utilizzo nelle missioni spaziali

Good bye past...

Hello FUTURE!

COPPER 3D
ANTIBACTERIAL INNOVATIONS

#Antibacterial3DPrinting
www.copper3d.com

POSTED BY: MARGIOV MARGIOV SETTEMBRE 8, 2018

La NASA sta studiando il filamento antibatterico di stampa 3D per l'utilizzo nelle missioni spaziali

Alcuni mesi fa, la startup cilena Copper3D ha introdotto PLACTIVE, un filamento antibatterico per la stampa 3D progettato per la produzione di dispositivi medici come protesi e bretelle. L'azienda ha

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Акции +1

Объявления +12

NASA заинтересовалось антибактериальными филаментами для 3D-принтеров

news3dtoday 11.09.18 610 2

НОВОСТИ



Национальное управление США по авиации и исследованию космического пространства (NASA) заинтересовалось разработкой чилийских ученых – специальными филаментами, позволяющими печатать на 3D-принтерах медицинские инструменты, ортезы и протезы с антибактериальными свойствами.

This is an Antibiotic



+

This is an Object



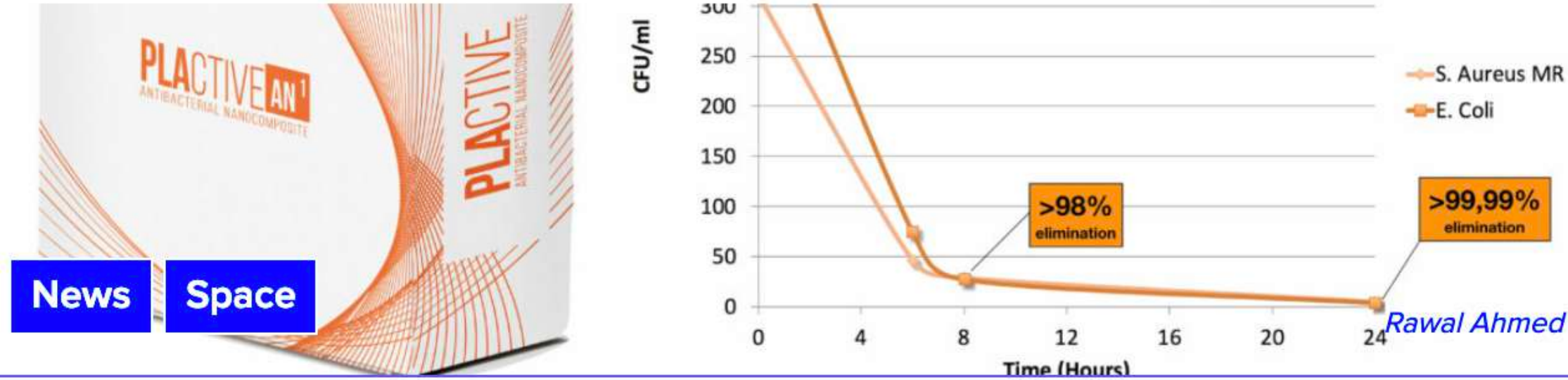
This is an "AntibiObject"



- Fully Antibacterial
- Fully Customizable
- Re-Usable
- Low Cost

Разработкой специализированных материалов занимается компания Copper3D в лице физиотерапевта Даниэля Мартинеса, инженера Андреса Акуньи и врача-реабилитолога Клаудио Сото. Филаменты под названием NANOCLEAN и PLACTIVE представляют собой композиционные материалы из ПЭТ-Г и ПЛА-пластика с антигрибковыми и антибактериальными добавками, включая медные наночастицы.

Copper3D Researching Antimicrobial Printing Aboard ISS



News Space

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February 4, 2019

NASA's Nebraska Space Grant office has just issued Copper3D a research grant for thermoplastic printing applications in space. Both organisations are looking test the antimicrobial properties of Copper3D's PLACTIVE filament at the International Space Station. The research could be a massive boon in developing medical devices for long-term interstellar missions.

While NASA has often engaged in 3D printing experiments for space-travel, [bioprinting ventures have really taken off recently](#). Copper3D certainly fits the [mold of this new branch](#) of space research due to their expertise in antimicrobial 3D printing. Considering how common plastics are in the medical field, it would be quite important to find ones that can ensure a lack of infection and the production of cleaner medical tools. This is also important in space travel, where minor illnesses can become major issues.

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Copper3D wins new grant from NASA

Grant will cover the study and development of antimicrobial 3D printed medical devices in the International Space Station (ISS).

[Home](#) / [Materials](#) / [3D Printing Filaments](#) / [Copper3D wins new grant from NASA for antimicrobial 3D printing on the ISS](#)[3D Printing Filaments](#)[AM for Space Exploration](#)[Medical Additive Manufacturing](#)

Copper3D wins new grant from NASA for antimicrobial 3D printing on the ISS

PLACTIVE filament to be used for making medical devices in long terms space missions



Davide Sher • February 4, 2019

🔥 944 📖 2 minutes read

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ANTIBACTERIAL INNOVATIONS



AEROSPACE

NASA AWARDS COPPER 3D GRANT FOR 3D PRINTING ANTIBACTERIAL MEDICAL DEVICES IN SPACE

UMAIR IFTIKHAR - FEBRUARY 04TH 2019 - 11:53AM ↻ 0 💬 0

67 shares



67



0



0



Copper 3D, a US-based Chilean 3D printing materials company, has received another grant from NASA. The money has been awarded to test the properties of antibacterial 3D printing materials for medical devices on the International Space Station (ISS).

The funding was issued by NASA Nebraska Space Grant, one of the 52 space grant consortium in the U.S. Dr. Jorge Zuniga, assistant professor at Department of Biomechanics, University of Nebraska Omaha and contributing researcher for Copper 3D said that the funding is “to examine the development, validation, and mechanically characterization of antimicrobial 3D printed medical devices for astronauts. The objective is to test the antimicrobial properties of this material in the ISS”.



No Germs in Space

NASA and Copper 3D Test Antimicrobial 3D Printing Material in Space



by Hanna Watkin
Feb 6, 2019

MADE IN SPACE™

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ANTIMICROBIAL INNOVATIONS

**1. Printing
instructions
are beamed
from Earth**

**2. The Zero-G
3D Printer
begins printing
aboard the
International
Space Station**



**3. The printed object
is removed from the
printer, ready for use.**



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ANTIMICROBIAL INNOVATIONS





29th November 2019 | Orchid Hotel, Mumbai, Prive Hall.
Time : 12:00 noon to 01:00 pm.

KNOWLEDGE | NETWORKING | BUSINESS

SESSION: Medical Application

SPEAKER



Daniel Martinez Pereira,
PT. MBA Healthcare,
MSc of Innovation,
CINO of Copper 3D Inc.

Topic :

"Antimicrobial 3D Printing, Active Materials and the Future of Biomedical 3D Printing"

Plenary Session - " 3D Ecosystem - Future is Here"

- Medical Application.
- Design & Manufacturing
- Architecture & Civil Engineering
- Investor & Business Meet
- Jewellery, Fashion, Art & Entertainment
- 3D Bioprinting & Tissue Engineering.

To register visit the conference page:

<http://www.3dprintingworld.in/conference.html>
or call us on 9867682002



Things we are PROUD of....

Antimicrobial - Personalized 3D Printed toys for Immunosuppressed childs with Cancer

Hospital de Niños
Dr. Luis Calvo Mackenna
Hospital Autogestionado de Alta Complejidad Fundado en 1942



Home / Medical Additive Manufacturing / Copper 3D and Toylisto collaborate to produce antimicrobial 3D printed toys for sick children

Medical Additive Manufacturing Toys

Copper 3D and Toylisto collaborate to produce antimicrobial 3D printed toys for sick children

The "Art Toys" are destined to immunosuppressed children in oncology units and clinical isolation.

 Davide Sher · August 13, 2019

🔥 921 📖 3 minutes read

TOYLISTO

+

COPPER 3D

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COPPER 3DとToylistoは協力し、病気の子供向けの抗菌3Dプリント玩具を開発

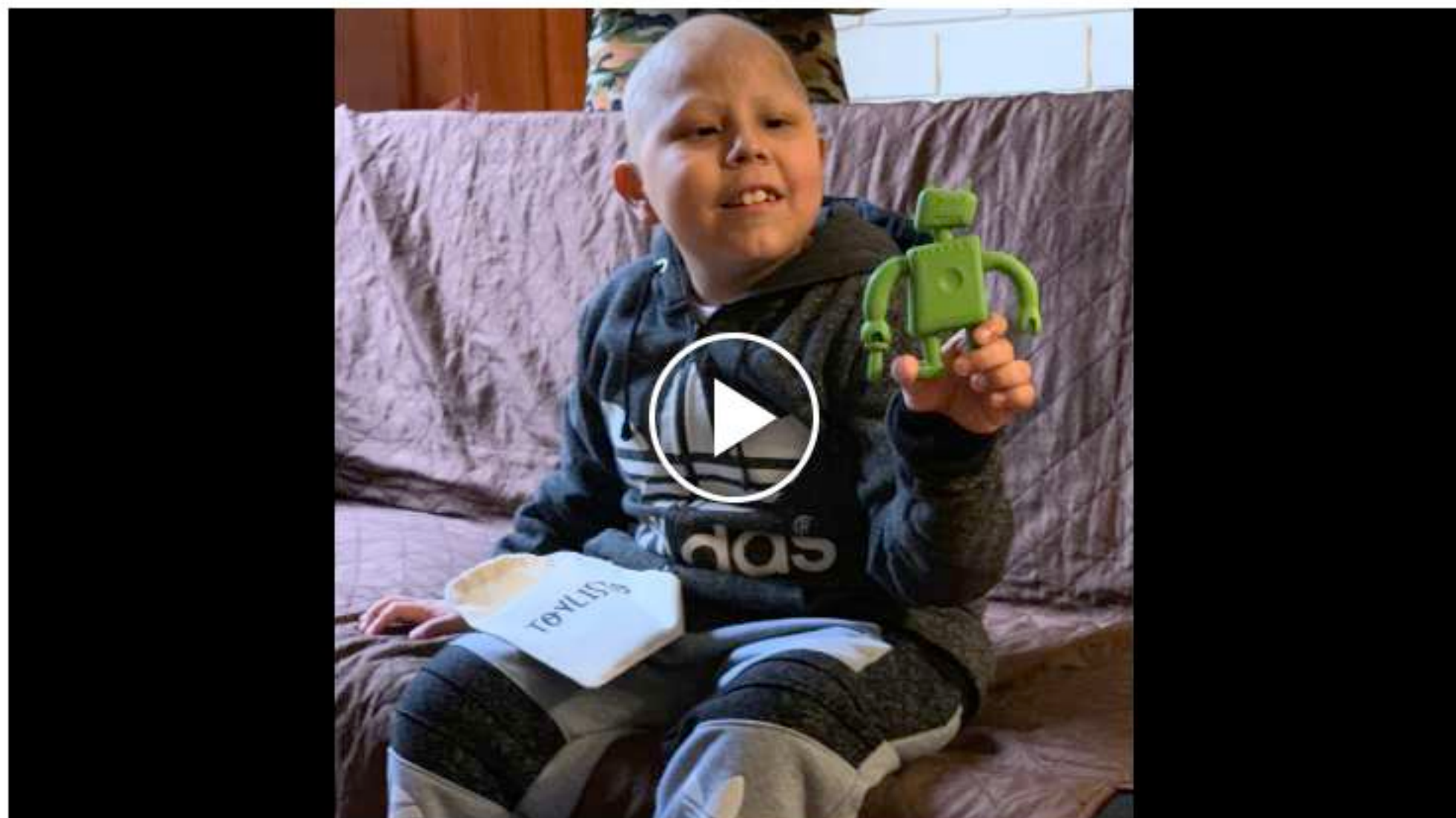
Additive Manufacturing (AM) 業界向け抗菌ナノ材料を開発するチリの企業 [COPPER 3D](#) は、2D画像を3Dプリント可能なデザインに変換するオンラインプラットフォームを提供する [Toylisto](#) と協力し、複雑な病気や免疫不全などに苦しむ子供たちのための3Dプリント玩具を開発した。



COPPER 3DとToylistoは、同プロジェクトに理解を示すカルボマッケンナ小児病院と協力し、入院中の100人の子供たちが描いた絵をオンラインプラットフォーム「Art Toys」を利用して3Dプリント可能なデータに変換。生成された3Dデータは、様々な病気で苦しむ子供にも安全に利用できる高い抗菌特性を有した「[PLACTIVE](#)」材料でプリントされる。

Empresas chilenas crean juguetes antimicrobiales para niños con inmunodepresión

Toylisto y Copper3D, empresas de impresión 3D eligieron al departamento de oncología del Hospital Doctor Luis Calvo Mackenna, para pilotar el proyecto "Art Toys", donde fabrican los dibujos de los jóvenes pacientes.



DESTACAMOS



Fundación
Ecoscience y
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participar del Premio
Ecoscience 2019

MIRA MAS DATA



STAMPARE IN 3D

LE ULTIME NOVITÀ DAL MONDO DELLA STAMPA 3D

Copper 3D e Toylisto giocattoli stampati in 3D antimicrobici per bambini malati immunodepressi



POSTED BY: MARGIOV MARGIOV AGOSTO 13, 2019



NE WYDRUKI 3D SZKOŁY/ UCZELNIE ZAMÓWIENIA SPECJALNE



abawki ? pilotażowy projekt Antimicrobial Art Toys

ANTYBAKTERYJNE ZABAWKI ? PILOTAŻOWY PROJEKT ANTIMICROBIAL ART TOYS

0

Dodano: 13-08-2019 w kategorii: Zastosowania druku 3D, Filamenty antybakteryjne, Filamenty Copper3D autor: Monika Bożek



TOYLISTO
+
COPPER 3D
ANTIBACTERIAL INNOVATIONS
=
Antimicrobial
Art Toys!

Druk 3D stwarza szerokie spektrum możliwości przed każdym z użytkowników, a to w jaki sposób wykorzystamy jego potencjał – zależy w dużym stopniu od nas. O zastosowaniu druku 3D w szeroko pojętej medycynie pisano już wielokrotnie. Nikogo już nie dziwią drukowane środki zaopatrzenia ortopedycznego (np. ortezy), modele stosowane w stomatologii czy też w planowaniu zabiegów chirurgicznych. Jednak jak się

okazuje jest jeszcze wiele ciekawych zastosowań druku 3D i właśnie jeden z takich unikatowych na skalę światową projektów stworzyła w Chile firma Copper3D – producent specjalistycznych filamentów antybakteryjnych we współpracy z Toylisto.

3DHEALS



Home About Media Events Blog Initiatives



Antimicrobial 3D Printing “Art Toys” for Immunosuppressed Children

Category: [3dheals Community Activities](#), [Blog](#)

Daniel Martínez Pereira Aug 13, 2019

Oncology

3D printing is a spectacular technology, there's no doubt about this.

The amount of new applications and solutions in various industries is impressive, but perhaps the new applications in healthcare are the ones that most impact and give us light on how the future of medicine could be.

Diarrhoeal Disease

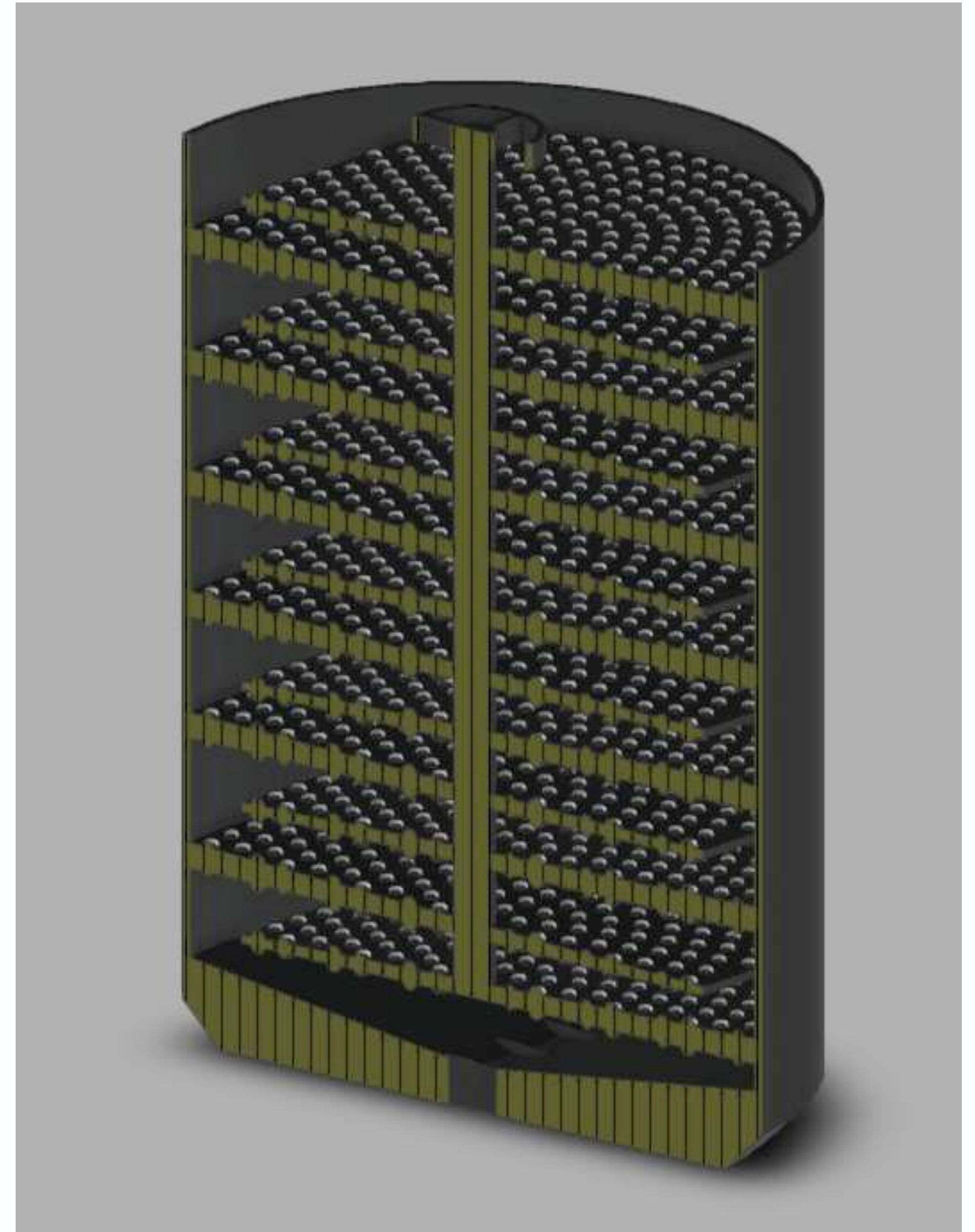
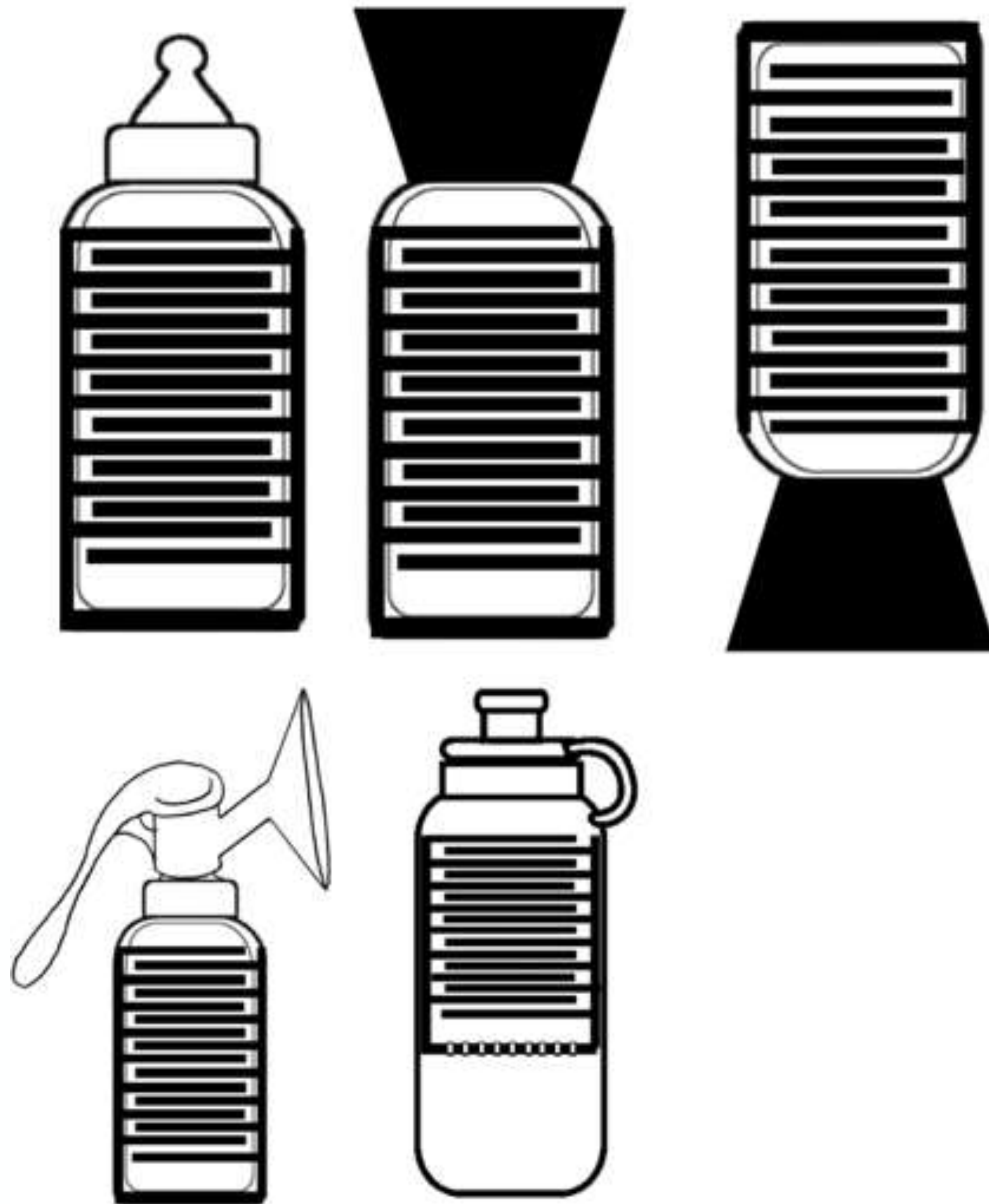
1.3 Million deaths annually

25% children <5 years
living in Africa and
South-East Asia



Collapsible Antimicrobial and Viral Inactivation Maze System

(US Patent Pending)



Collapsible Antimicrobial and Viral Inactivation Maze System

(US Patent Pending)

COPPER 3D
ANTIMICROBIAL INNOVATIONS



Collapsible Antimicrobial and Viral Inactivation Maze System

(US Patent Pending)

COPPER 3D
ANTIMICROBIAL INNOVATIONS



Mother-to-Child Transmission of HIV



60%

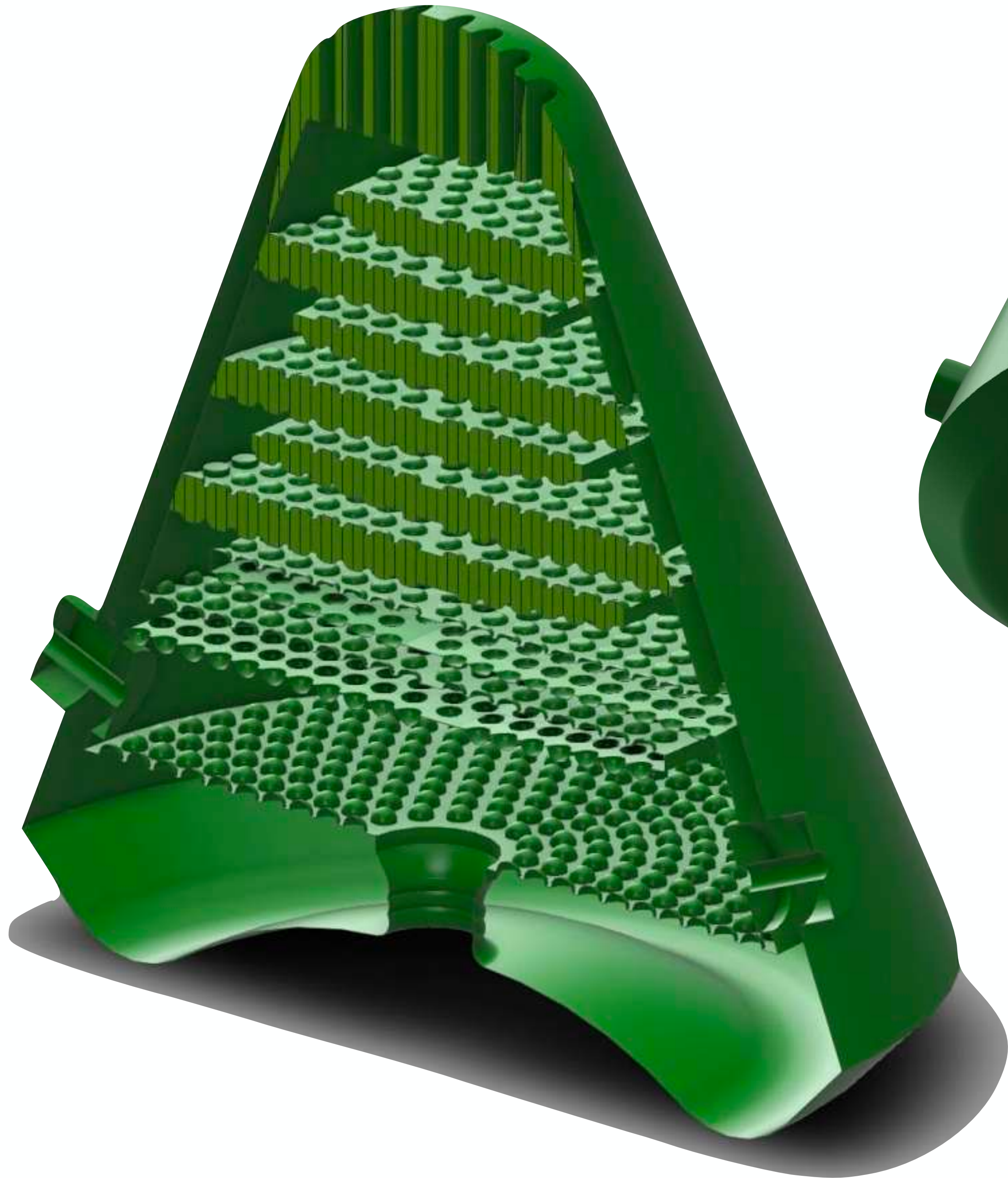


40%

+300.000/year



<https://www.who.int/hiv/topics/mtct/about/en/>



Viral Inactivation System for a Breastmilk Shield to Prevent Mother-to-Child Transmission of HIV (US Patent Pending)

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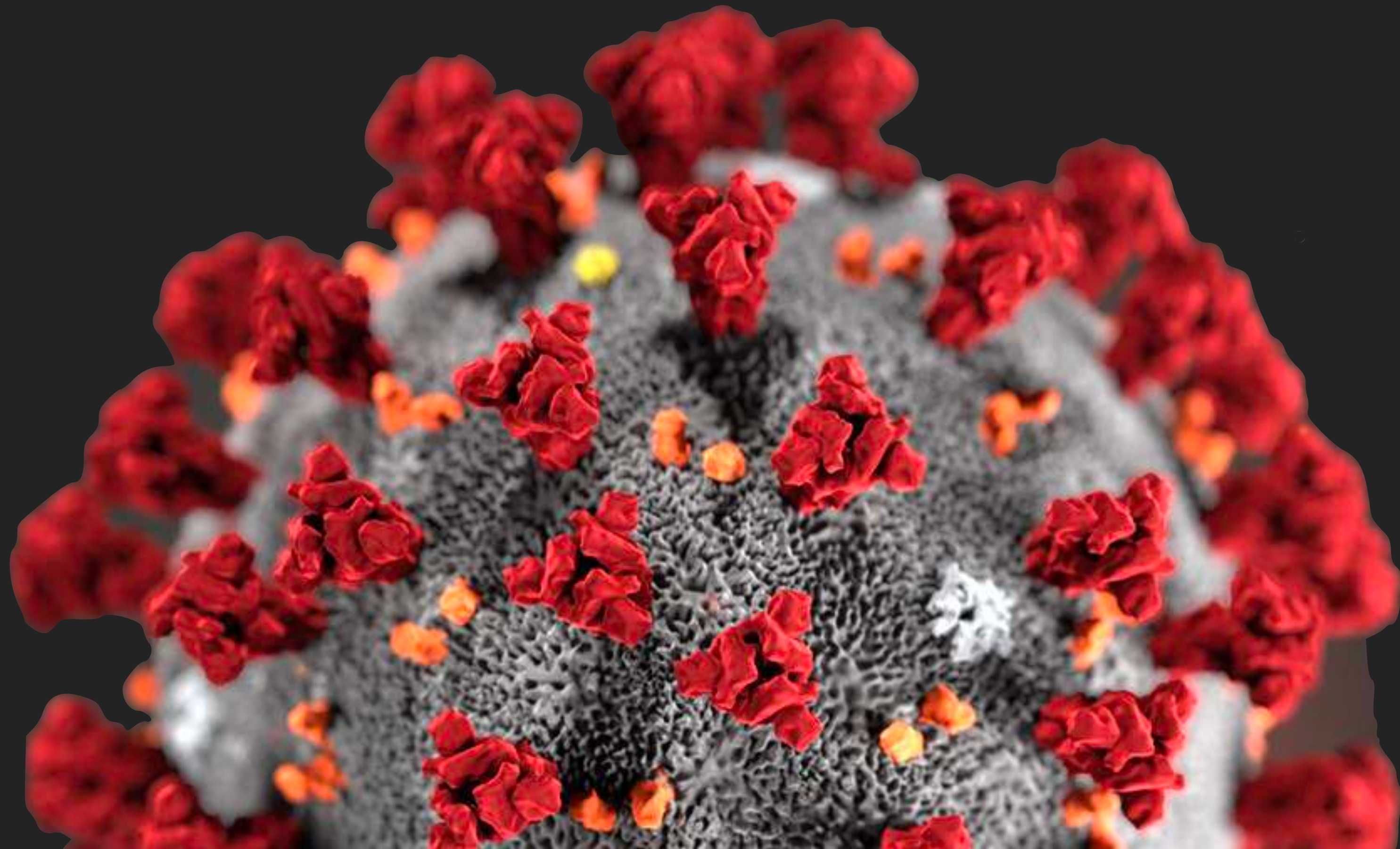


Viral Inactivation System for a Breastmilk Shield to Prevent Mother-to-Child Transmission of HIV (US Patent Pending)

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ANTIMICROBIAL INNOVATIONS



PANDEMIC!



Some Hospitals Are Close to Running Out of Crucial Masks for Coronavirus

N95 masks are essential for protecting health care workers and controlling the epidemic, but some hospitals have been unable to get new shipments as supplies dwindle.

March 9, 2020





Can we “Hack the Pandemic”?

NanoHack Mask

3D Printed N95-like Face Mask

Antimicrobial monobloc

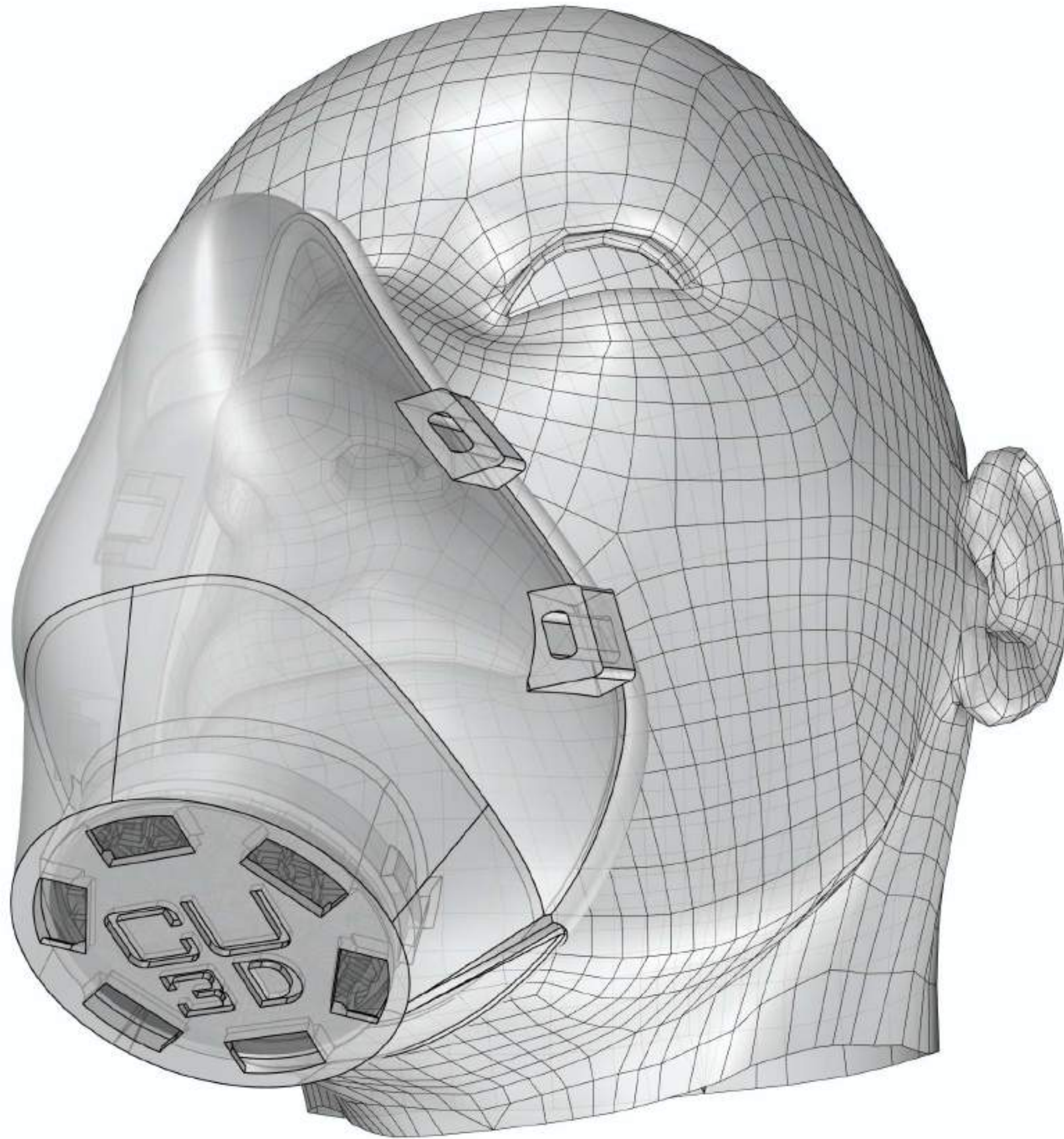
Modular system of filtration

Open Source + Distrib. Manuf.



(Patent submitted on 16 March, 2020)

NanoHack Mask

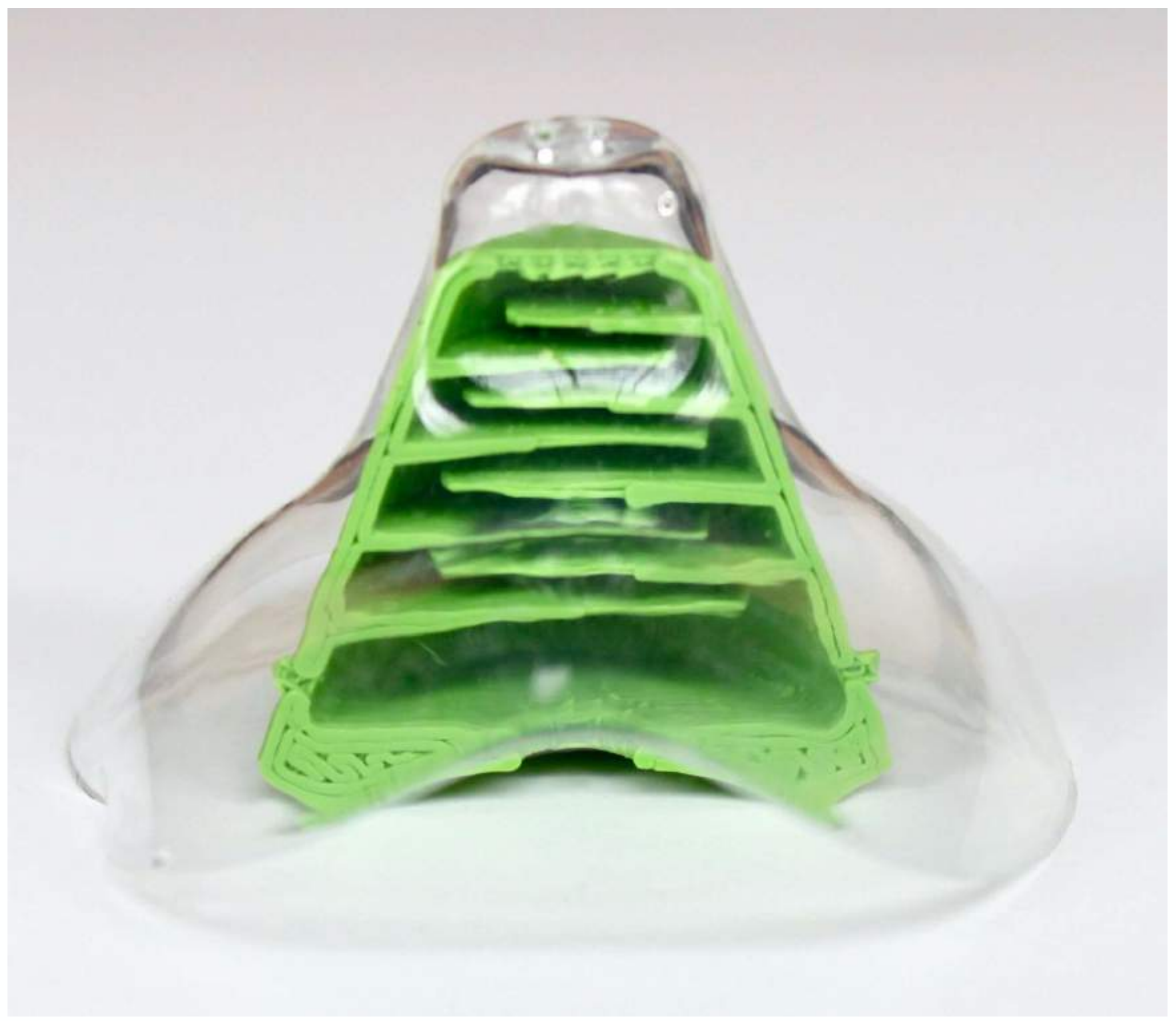
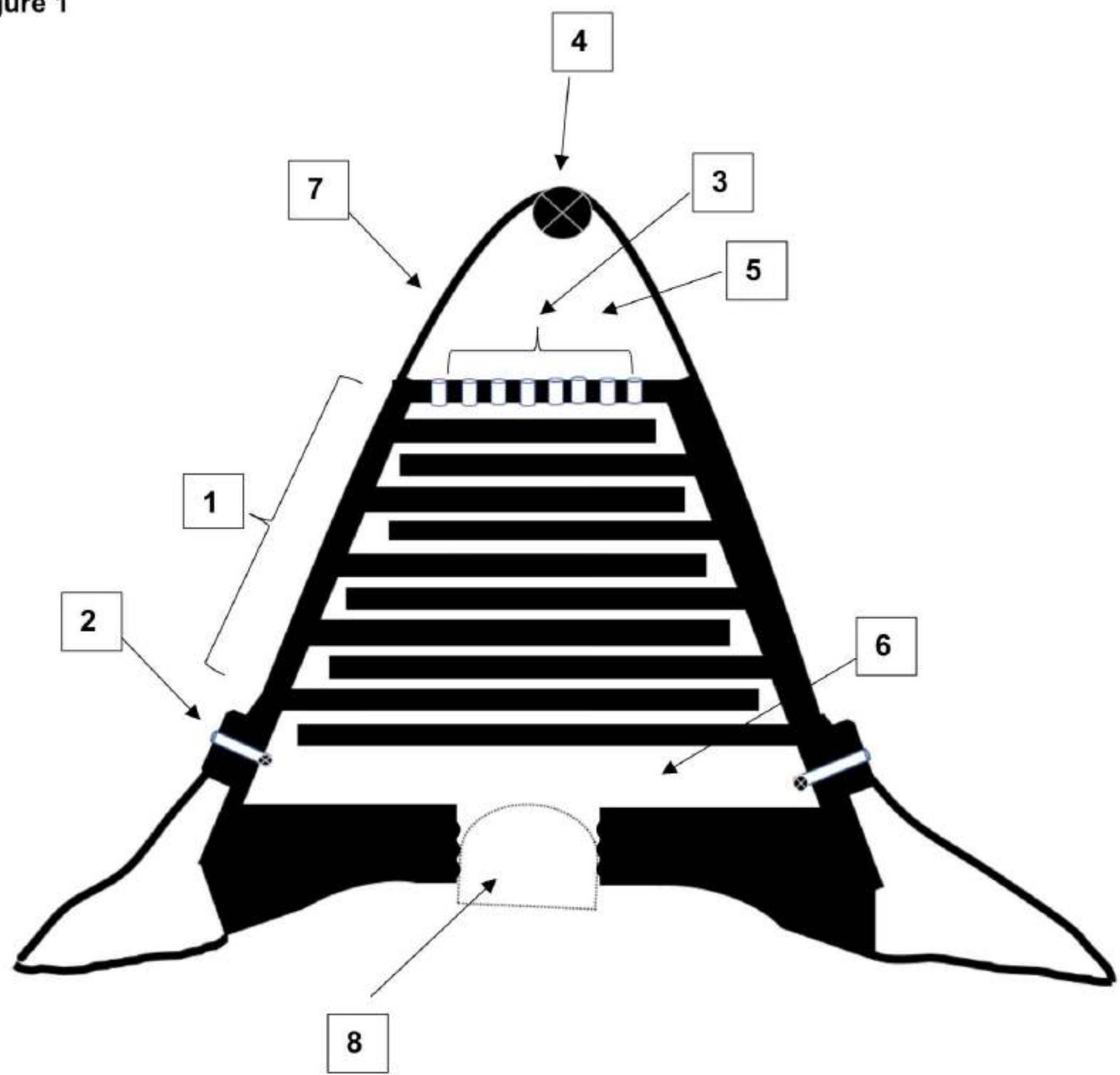


- Launch March 17, 2020
- Open Source, free download**
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- A LOT of media coverage
- Great feedback from around the world, a lot of things to improve...

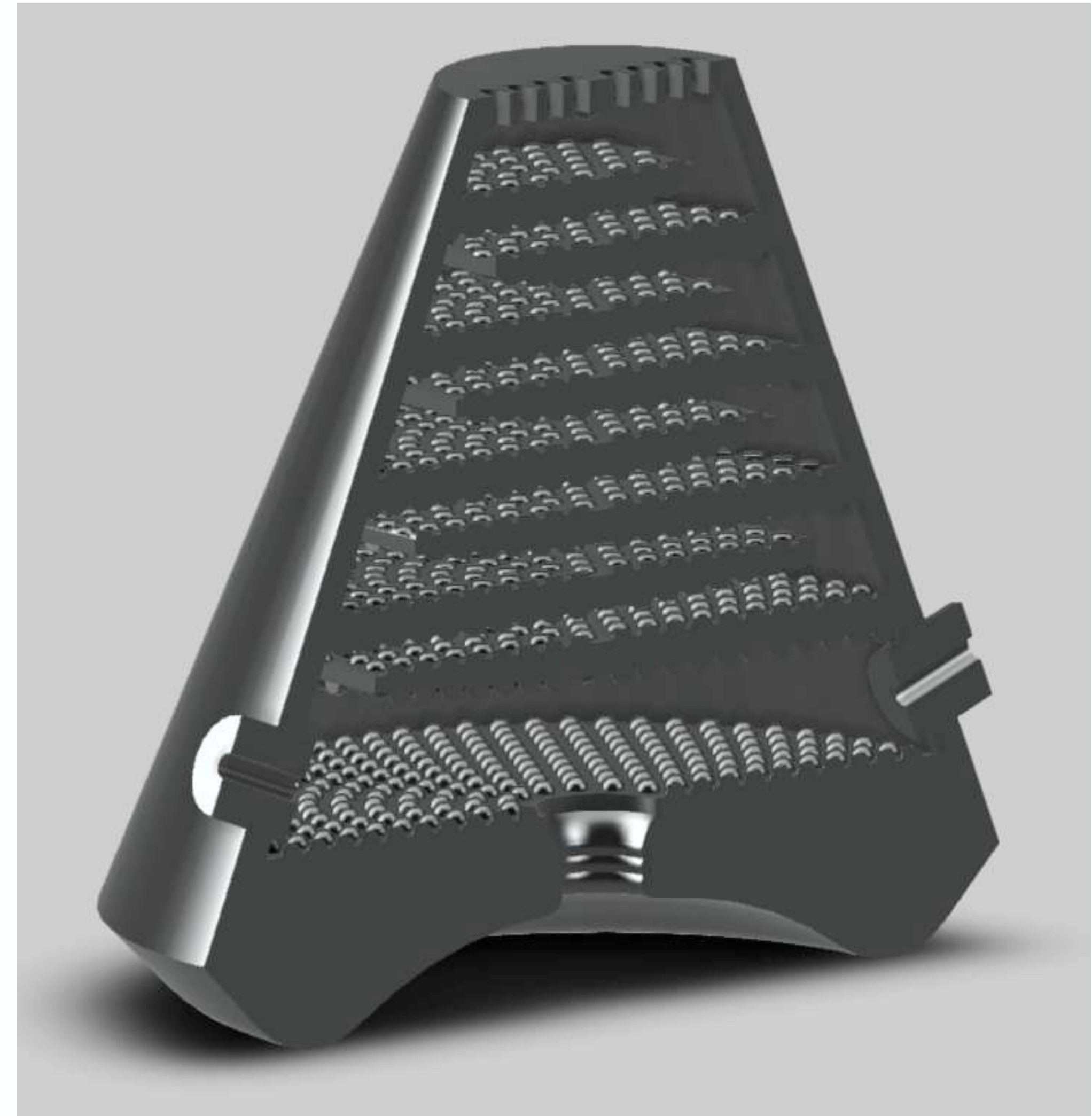
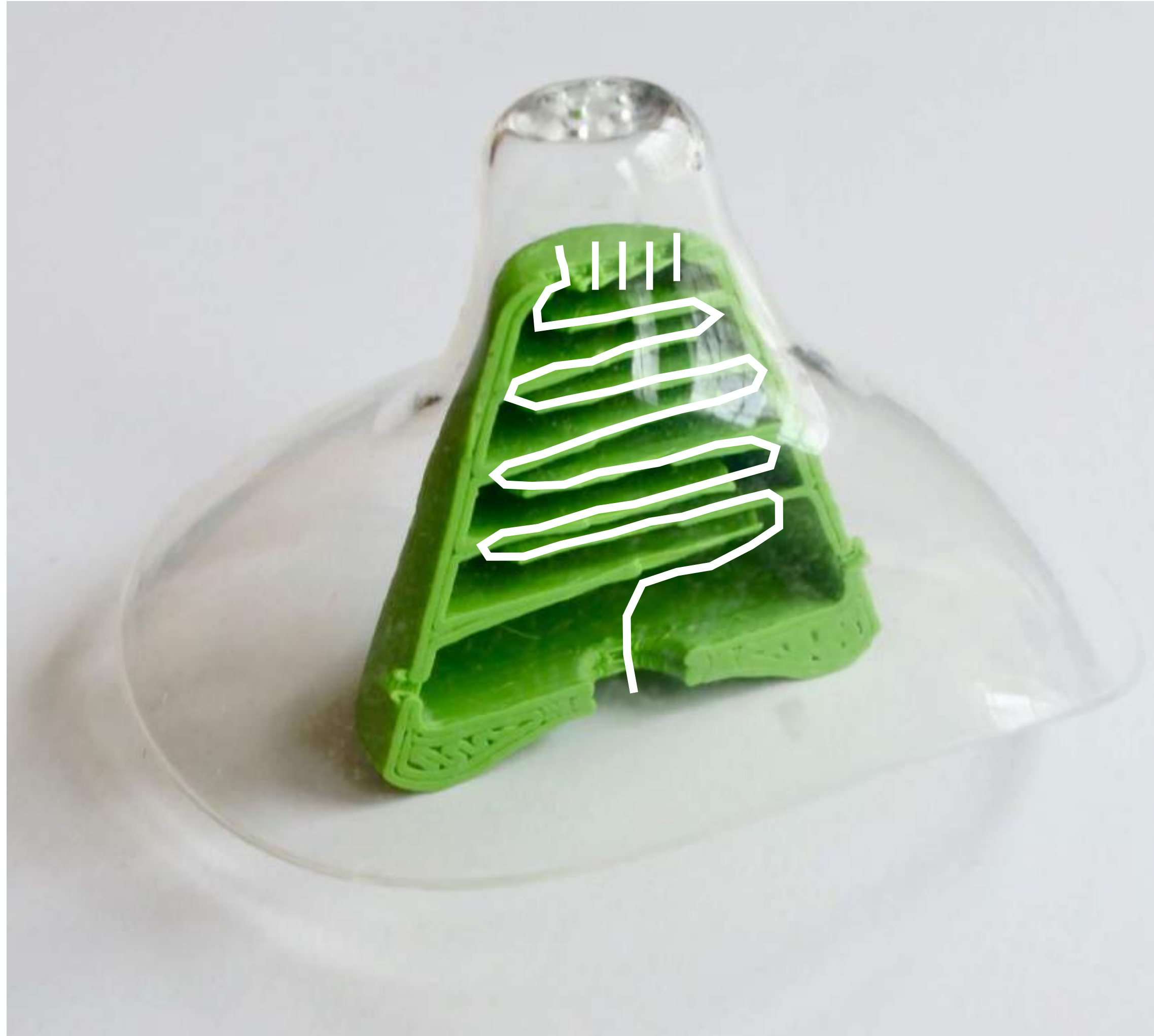
Viral Inactivation System for a Breastmilk Shield to Prevent Mother-to-Child Transmission of HIV

(US Patent Pending)

Figure 1

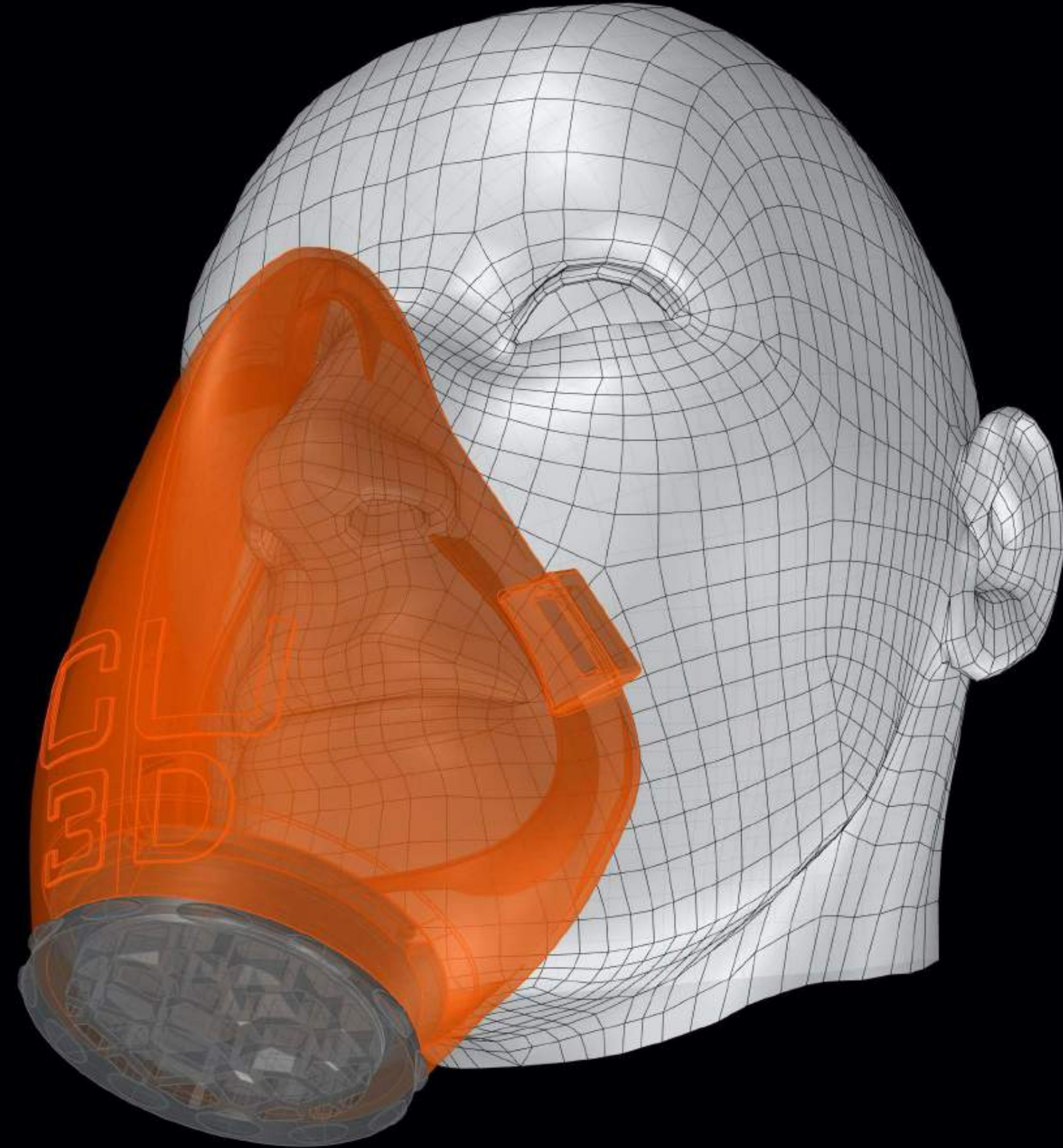


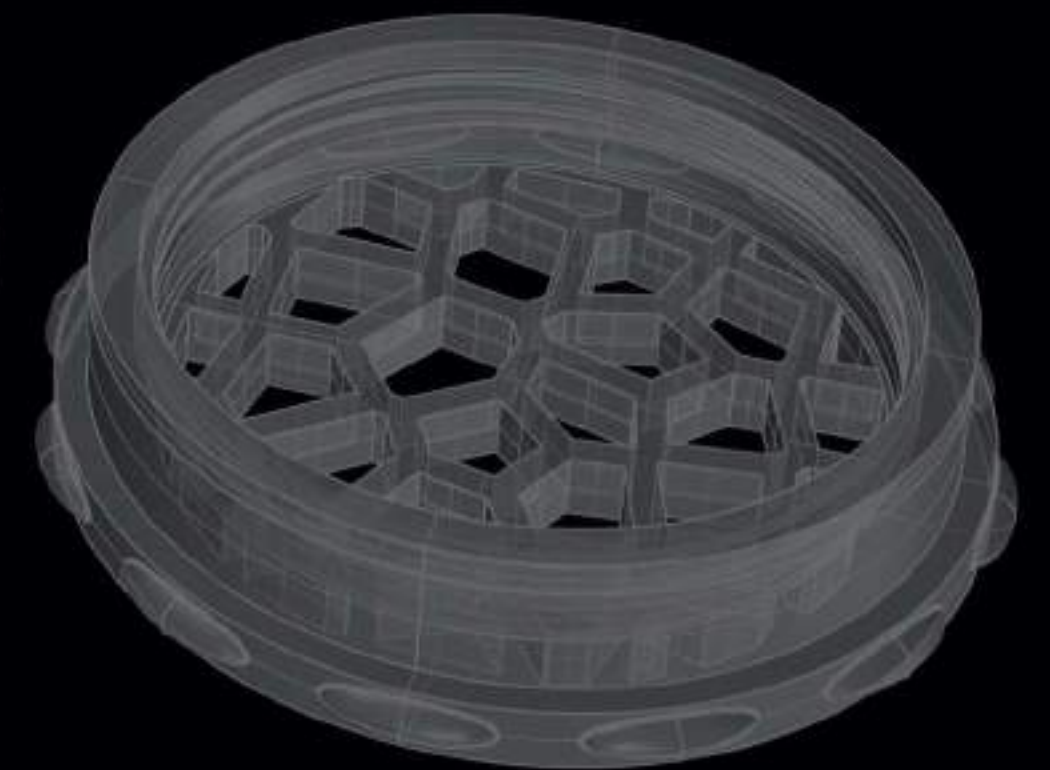
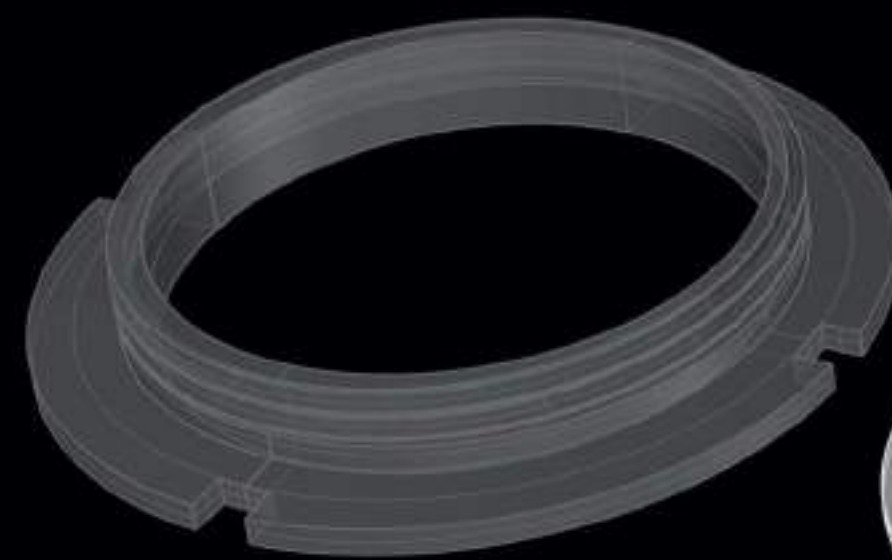
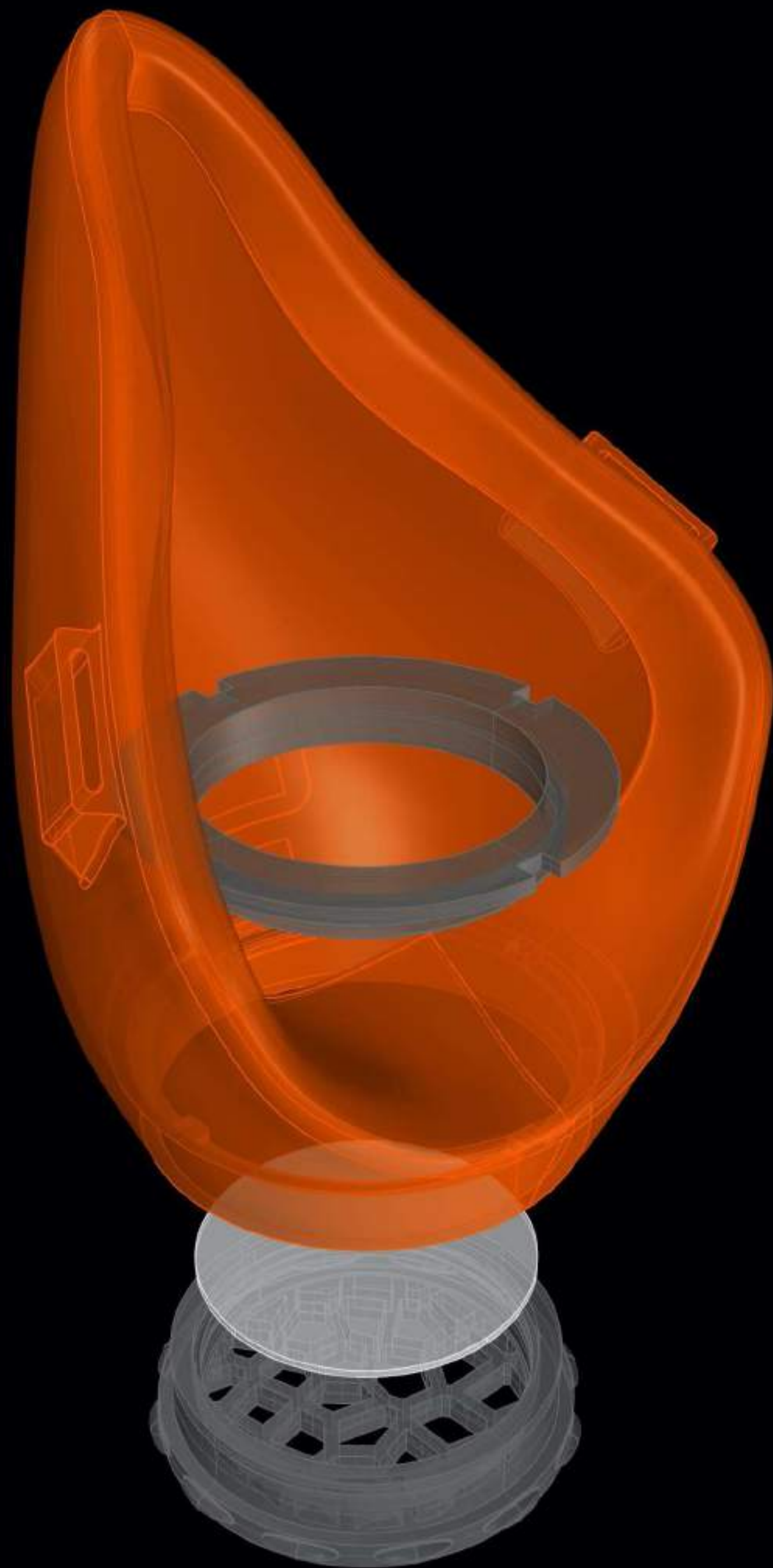
Viral Inactivation System for a Breastmilk Shield to Prevent Mother-to-Child Transmission of HIV (US Patent Pending)



NanoHack 3.0

COPPER 3D
ANTIMICROBIAL INNOVATIONS

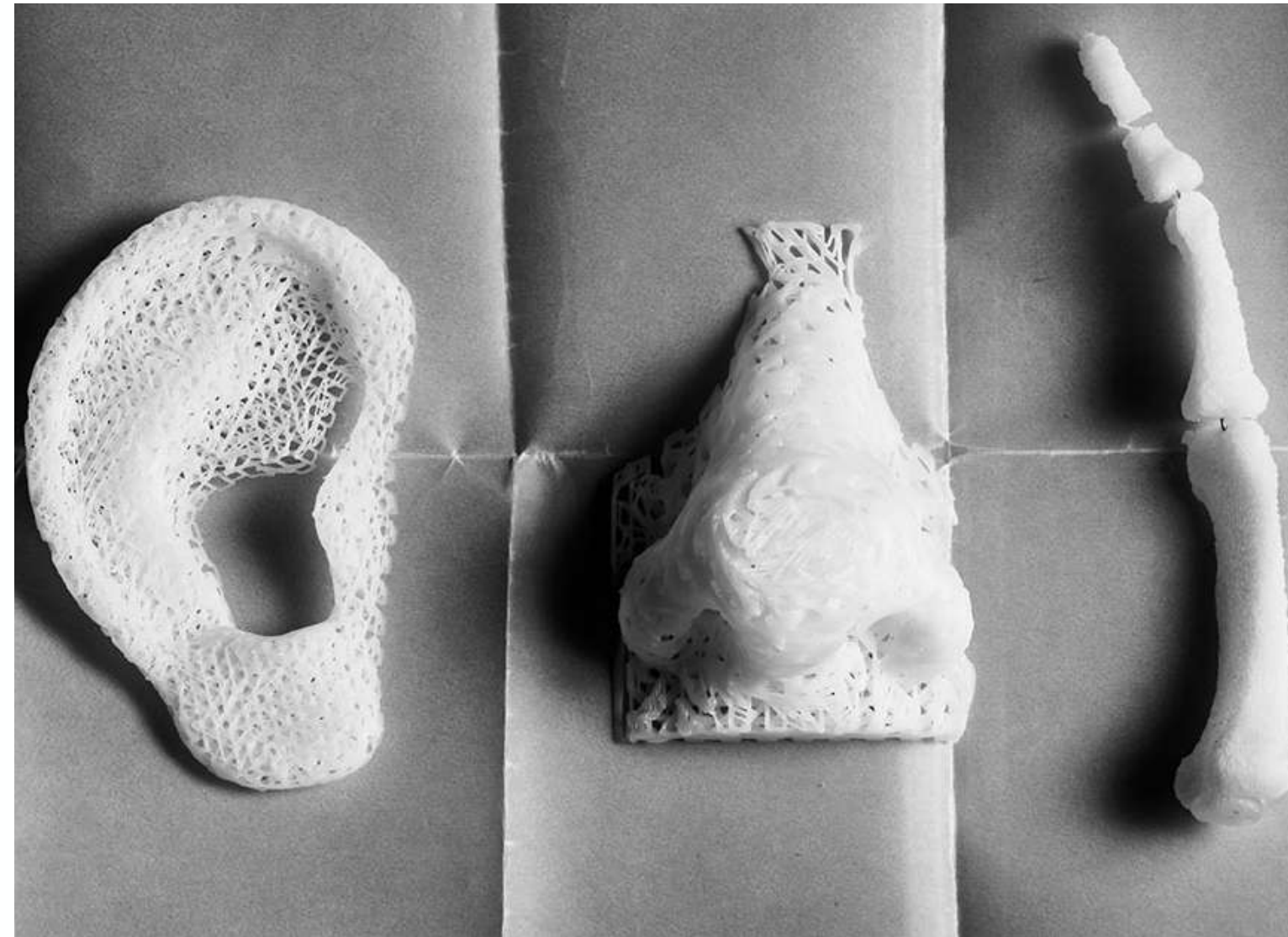




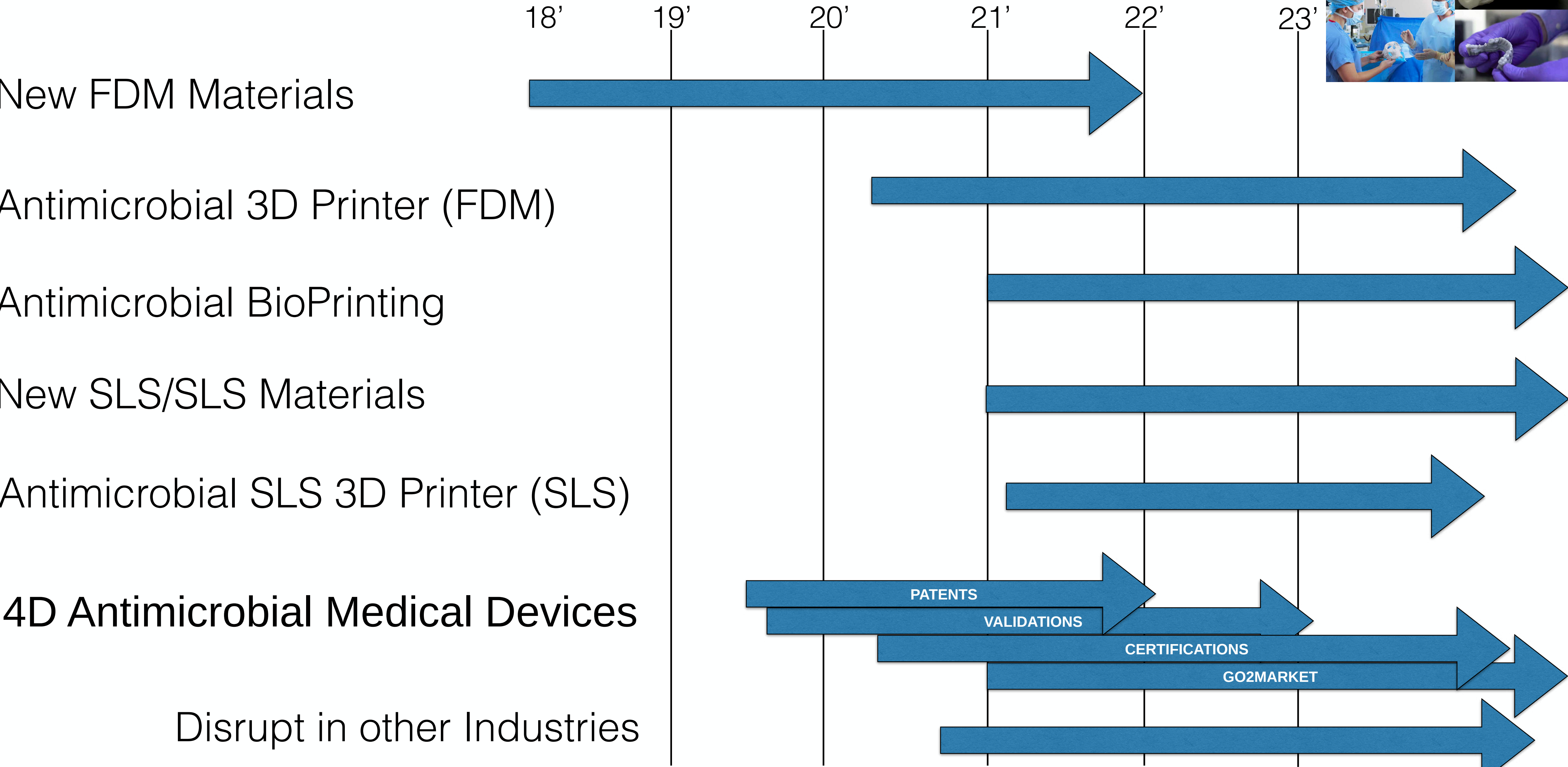
What's next?

Plan 2020-2023

Position Copper3D
as a **Global Leader**
in Antimicrobial 3D
Printing



Next Business Verticals



New Materials

Antibacterial and Biological
Materials for Additive
Manufacturing



ANTIMICROBIAL INNOVATIONS

We see the future of Copper3D in three main domains:

- New Materials:** With the development of R&D related to new antibacterial materials for 3D printing and later antibacterial biological materials for BioPrinting.
- Solutions:** Integrated solutions "packaged" for specific problems in biomedicine, including equipment like printers, softwares and materials.
- Platforms:** That rely on the power of the cloud to connect provider and patient capacities.



Solutions

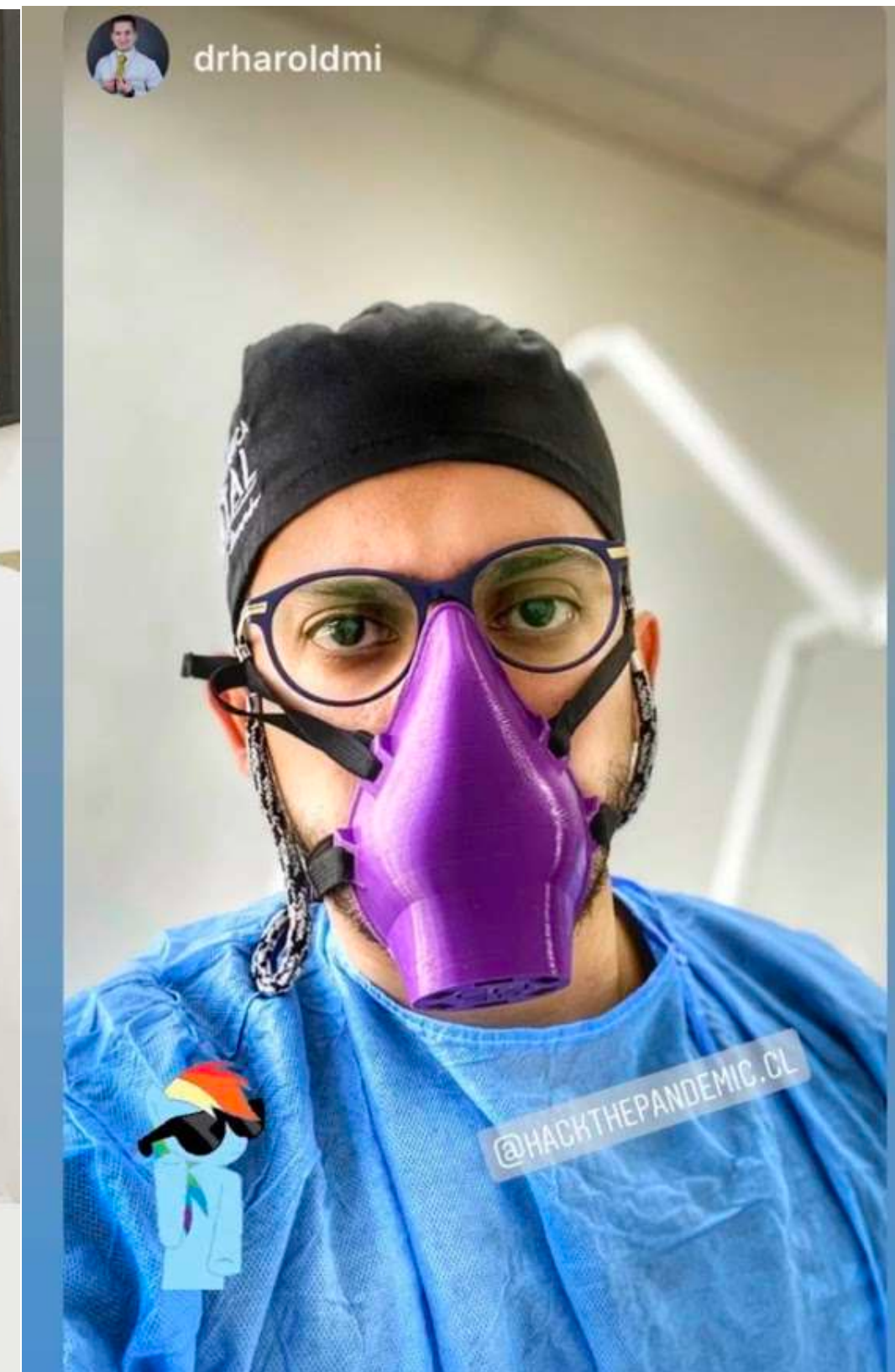
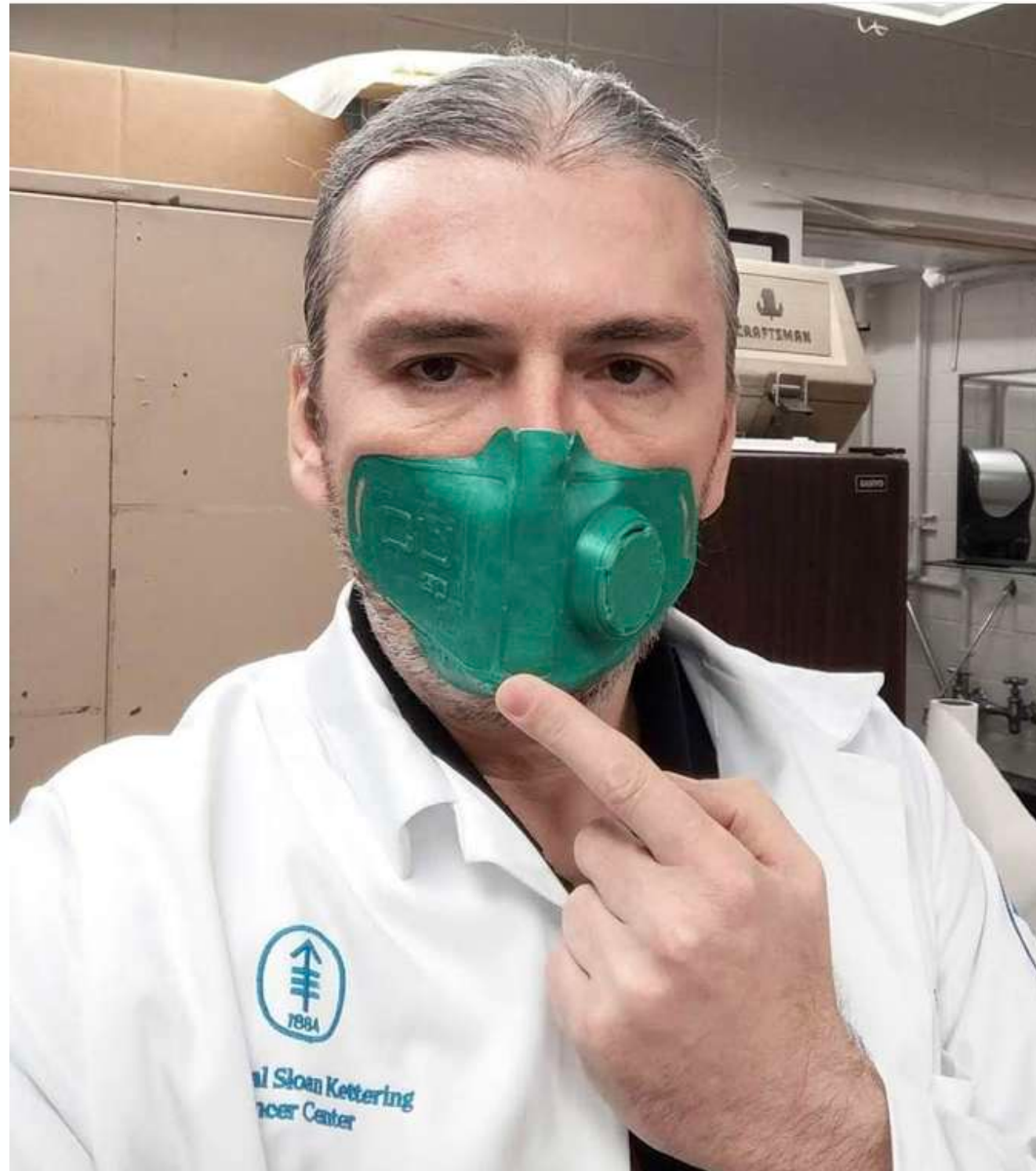
Integrated systems (Softwares, Hardwares and Materials) and solutions for specific applications of Medicine and Bio-Printing

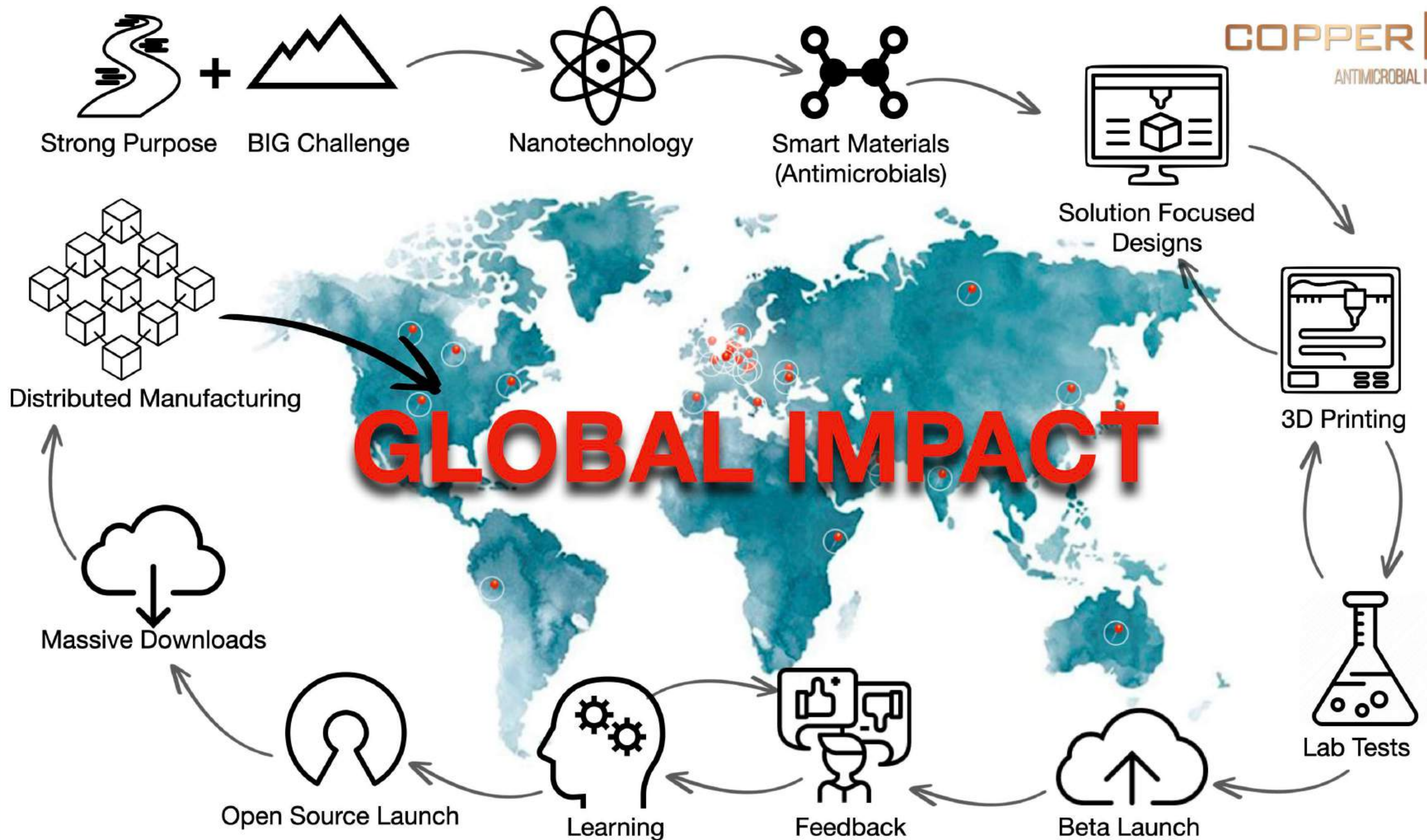
Platforms

Connecting Needs with Capacities of Medical Devices in the Cloud

Great adoption of Healthcare Professionals around the world

savasbalaban01 · Seguir
Memorial Sloan Kettering Cancer Center





Our Antibacterial 3D Printing Ecosystem with great added value for ALL:

- Patients
- Hospitals
- Doctors
- Universities, R&D Centers
- Startups & Makers
- Big 3D Print Developers
- Resellers



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