

# New Scientist

WEEKLY January 22 - 28, 2022

CAN YOU LIVE FREE OF TOXIC CHEMICALS?

MISSION TO NEPTUNE

A NEW KIND OF QUANTUM COMPUTING

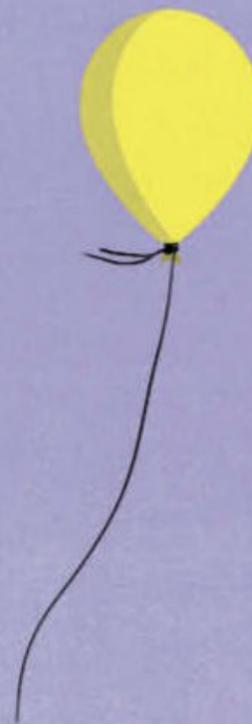
HINTS OF A HUGE EXOMOON

HOW LETTERS GET THEIR SHAPES

SPECIAL REPORT

## *The* PURSUIT *of* HAPPINESS

What it means to be happy...  
and how to get better at it



**LIVING WITH COVID**

How and when will the pandemic end?

**PLUS** EDIBLE STRAWS / STATION ELEVEN, REVIEWED /  
DOOMSDAY SHIPWRECK / ROBOT POWERED BY ALGAE

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## Lots in space



Agency **ESA/Remedia**

THIS selection of objects appears random, but it reflects the history, achievements and ambitions of the European Space Agency's key establishment, the European Space Research and Technology Centre (ESTEC). ESA ESTEC in 99 Objects is an online project that uses a diverse collection of items amassed from ESA missions and experiments to tell ESTEC's technological story. Here are a few highlights.

The top row shows (left to right): an optical microcamera used for measuring mechanical shifts on satellites during testing; a plant glowing by chlorophyll fluorescence, a phenomenon that ESA plans to study in orbit when its Fluorescence Explorer spacecraft launches in the mid 2020s; and an artificial bone made by 3D bioprinting, which could one day improve medical care in space by providing skin and bone grafts.

The middle row shows: a microsection of a circuit board that ESA may use in future satellites; an arm of ESTEC's Interact Centaur robot, which was controlled on Earth from the International Space Station in 2019; and the helmet of a prototype spacesuit designed in the 1990s to be donned in just 2 minutes in microgravity.

The bottom row shows: a simulant of moon dust, used in tests exploring how best we could extract the oxygen in real moon dust for use in breathable air, fuel and other materials in future lunar settlements; an instrument called an internal occulter that creates an artificial solar eclipse to enable the study of the sun's corona; and a 3D-printed nut and bolt made of a high-performance engineering plastic called PEEK.

The entire collection can be viewed at [99estec-objects.esa.int](https://99estec-objects.esa.int). ■

**Gege Li**

