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HYPER-ABSORBANT BIKINI COULD HELP TO CLEAN THE OCEANS

 WORK & LIFESTYLE

The Sponge Suit is an innovative, high-tech item of swimwear that could enable people to remove pollution from the oceans while they are swimming.

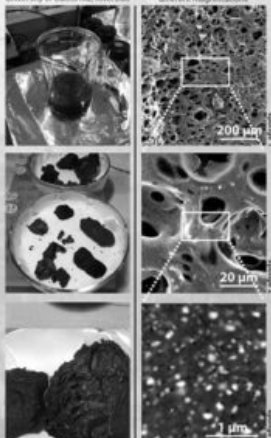
Seawater covers 71 percent of Earth's surface, so cleaning up the mess we've made is a mammoth task. Citizens can help with beach clean up efforts and be rewarded with anything from training and micro-loans to designer shoes. But now, an innovative new high-tech swimwear design could help swimmers remove pollution from the water, while they are in the water.

THE TECHNOLOGY


Sponge is a super-hydrophobic carbon based material with multi-modal porosity which allows it to be a light yet strong absorber. Absorbing everything but water, the material is a powerful cleantech for water and contaminant separation. To merge this cleantech into everyday life, we have designed a bikini model influenced by the super-porous texture of the Sponge technology. The moulded Sponge layer is casted into a 3D print elasto plastic which has the necessary flexibility to fit the body, along with the sufficient strength to encapsulate the Sponge itself.

Technology Production Images from the laboratories of University of California, Riverside


Scanning Electron Microscopy images at different magnifications




HOW DOES IT WORK




SUGAR
The main precursor of the Sponge technology is sugar.



CRAFTING
The liquid Sponge form is oven-heated with encapsulation of structural materials obtain the solid Sponge.




MODELLING
The Sponge is moulded and cast to match our Sponge-Suit design.




THE CLEANING CYCLE
A future where everyone, with any shape and form of swimming outfit, can contribute to the cleanliness of the seas by a sports activity or a summer vacation, and stores recycling the suits much like our daily dry cleaning.

MATERIALS


3D print elasto plastic structure




SPONGE technology filler



Sponge Suit final product





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The **Sponge Suit** — created by Pinar Guvenc, Inanc Eray, Gonzalo Carbajo and Marco Mattia Cristofori — is an environmentally proactive swimsuit design, that recently won first prize at the 2015 Reshape Wearable Technology Competition. The eco apparel is made from an outer layer of 3D printed elasto-plastic, that is both flexible and strong, and a hydrophobic, carbon-based filler material, which acts as a sponge. In combination, the two elements enable the suit to absorb everything except water, when submerged in the ocean. Effectively the suit enables the wearer to help clean the ocean while swimming by absorbing pollutants in their surroundings. The suit weights 54 grams and can absorb up to 25 times its own weight. After multiple uses, the swimsuit can be heated to high temperatures causing it to release the materials it has absorbed and returning the suit to a liquid form, which can then be recycled and remolded into a new suit.



The design is only a prototype and a large suit-cleaning infrastructure would need to be created for it to be used en masse: the designers envision businesses similar to dry cleaning stores that would service the suits. The product has a host of obstacles to overcome, but it is an interesting first step towards thinking about how wearables could be used to help clean the environment. How else could apparel be adapted to make recreational activities more environmentally productive?

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