Biodegradable alternative to replace microplastics in cosmetics and toiletries

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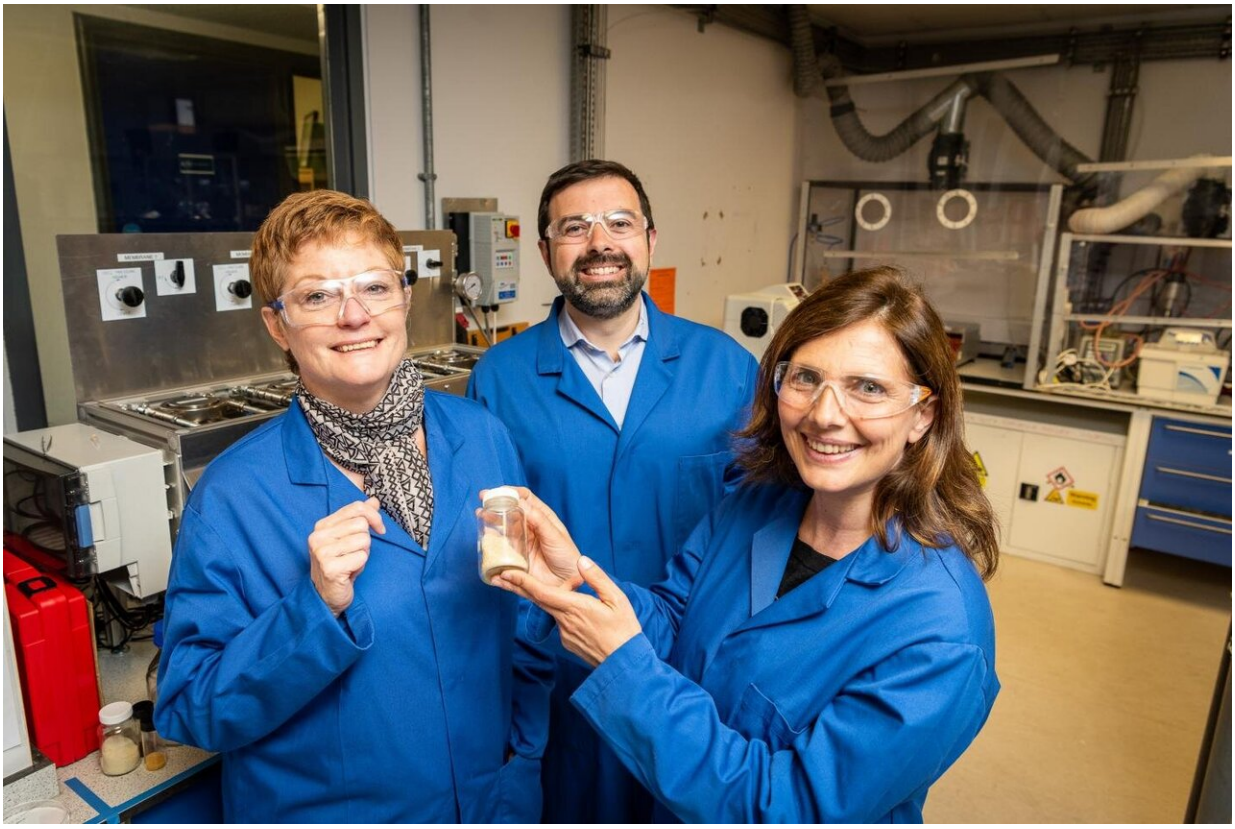

Janet Scott, Davide Mattia and Giovanna Laudisio of Naturbeads. Credit: Naturbeads

Plastic microbeads were banned from shower gels and toothpaste in the UK last year, but could still be hiding in your suncream or lipstick. Now

start-up company Naturbeads, based at the University of Bath, is working with companies to replace microplastics in these products with biodegradable microbeads made from cellulose.

Whilst plastic microbeads were recently banned in the UK from rinse-off products, they are still found in many other personal care products such as suncream and cosmetics.

An estimated 30,000 tonnes of microplastics from consumer products end up in our world's oceans every year. This is equivalent to three times the Great Pacific Garbage Patch, or the plastic pollution generated by 5 billion plastic bottles.

Some of these microplastics are eaten by marine life, passing up the food chain and ending up on our own plates.

Naturbeads' biodegradable alternative to plastic microbeads could reduce microplastic pollution in our oceans, so that traces from suncream, cosmetics and other personal care products don't end up in your fish fingers.

The technology to create the cellulose microbeads was developed at the University of Bath by Professors Janet Scott and Davide Mattia from the Centre for Sustainable Chemical Technologies in 2017.

They co-funded spin-out company Naturbeads in 2018 to commercialise the technology together with Dr. Giovanna Laudisio, CEO of the company. Naturbeads has now been awarded funding by a partnership between UK Research and Innovation (UKRI) and Sky Ocean Ventures (SOV), through the Plastic Research and Innovation Fund.

Naturbeads creators Davide Mattia, Giovanna Laudisio and Janet Scott. Credit: Naturbeads

It will receive £582,842 to build and test a scaled-up prototype rig for the manufacture of cellulose microbeads used in cosmetic and personal care products.

Jamie Rowles, Head of Investment at Sky Ocean Ventures, said: "Despite some legislative bans, harmful plastic microbeads are still in a range of products and continue to leak into our environments. Finding equivalent replacements to these types of low-cost plastics has been a challenge for industry.

"By investing in Naturbeads, we are able to support a highly innovative technology and a passionate entrepreneurial team that is aiming to provide a biodegradable alternative that can perform like plastics and ensure the many products do not leave harmful residues in our environments for longer than nature intended."

Professor Davide Mattia, from the Centre for Sustainable Chemical Technologies at the University of Bath and co-founder of Naturbeads, said: "Our microbeads are produced using cellulose, the most abundant bio-material on Earth, and what plants and trees are made of.

"We are excited to see our technology deployed commercially and to contribute to reducing plastic pollution in our oceans."

The biodegradable microbeads are made using a solution of cellulose, which is forced through tiny holes in a tubular membrane, creating spherical droplets of the solution that are washed away from the membrane using vegetable oil. The beads are then collected, set and separated from the oil before use.

The prototype rig in this project will be used to produce kilogram-scale samples of cellulose microbeads. These will be sampled to companies in the personal care and cosmetic industry to be tested in formulations.

Naturbeads CEO and co-founder Giovanna Laudisio said: "We are thrilled to start our first project thanks to an Innovate UK grant and the support of an investor like Sky Ocean Ventures that shares our mission of reducing plastic pollution and understands the challenges of a deep tech start-up like Naturbeads."

Provided by University of Bath