Popular science summary of the PhD thesis

PhD student	Myka Mae Duran
Title of the PhD thesis	Liquid Behavior Control in Hearing Aids via 3D Printed Surface Microstructures
PhD school/Department	DTU Construct

Science summary

* Please give a short popular summary in Danish or English (approximately half a page) suited for the publication of the title, main content, results and innovations of the PhD thesis also including prospective utilizations hereof. The summary should be written for the general public interested in science and technology:

This research explores how liquids behave on specially designed surfaces made using advanced 3D printing techniques. The goal is to develop surfaces that can repel liquids effectively, which could be useful in many fields. By studying these interactions on intricate 3D-printed surfaces, this work aims to improve liquid-repellent technology, with potential applications in devices like hearing aids.

This study used 3D printing to create special surface shapes, known as "reentrant structures," which can repel water and other liquids better than flat surfaces. The research showed that surfaces constructed with reentrant features can repel liquids like water and even other substances with lower surface tension. By printing molds and casting them in silicone, these surfaces achieved liquid-repellent properties that prevent oil from entering. This shows potential in keeping the earwax out of the hearing aids. Additionally, this research's hearing aid microfilter design matched the performance of conventional, chemically-coated surfaces but avoided using environmentally harmful coatings.

In summary, this study offers a new way to protect delicate devices from liquids by relying on surface structures instead of chemical treatments. This approach could lead to better, more sustainable protection in medical devices and other liquid-repellent technologies.

Please email the summary to the PhD secretary at the department