

# 3D Printed Reactors for Nanoparticles

3D printing inexpensive and precise scientific aids for research.

## Challenge

Creating accurate reactors for nanoparticles can be a challenge because of the sizes scientists have to operate on. Even though the material is widely accessible, the technology to make high-quality reactors isn't. The team at Warsaw University of Technology, Faculty of Chemical and Process Engineering needed two sizes of reactors for their work on precipitation of hydroxyapatite nanoparticles. The time and cost, as well as the precision of production were crucial factors during their project. Here's where a 3D printer can be used to minimize costs while maintaining the quality of the reactors.

## Solution

The team of scientists and teachers at the university used ZMorph Multitool 3D Printer to make 3D printed Y-shaped reactors for nanoparticles that were later used for their project. The reactors were printed from ABS in two sizes; the inlet channels were 50 mm long in both reactors, while the outlet channel was either 10 mm or 150 mm. ABS is stable under the conditions of hydroxyapatite precipitation and provides the necessary durability during the process. The use of a 3D printer allowed to quickly make various iterations of the Y-shaped reactors that could be tested before using during the actual project.

## Result

Thanks to a high-quality 3D printer such as ZMorph Multitool 3D Printer, scientists and teachers are able to use 3D printing technology, which is much cheaper and faster than outsourcing, to create accurate aids that will help during scientific research. Because ZMorph 3D Printers have the ability to print with closed covers, the results of 3D printing with ABS are precise and good enough for elaborate scientific research. The 3D printed reactors were used to produce HAp-LE particles that were later measured and studied. You can find a full report of the research at [ScienceDirect](#).



