

## **Hot news: micro 3D printing with heat-resistant material now possible**

High-performance polymers for use in high-temperature range developed by Cubicure and UpNano for 2PP 3D printing

*Vienna, October 27<sup>th</sup>, 2022.* A new high-performance polymer with exceptional heat resistance is ideally suited for ultra-precise 2-photon polymerization (2PP) 3D printing. This will enable micro-3D printing to meet the specific requirements of the electrical industry for the first time. This breakthrough in the 3D printing industry is made possible by a successful collaboration between two high-tech companies, Cubicure and UpNano. The jointly developed material „UpThermo powered by Cubicure“ is available now. It will be exhibited at Formnext in Frankfurt, Germany in November 2022.

Ultra-precise 2PP 3D printing requires special starting materials. However, until now, these have not allowed the production of temperature-resistant components with the stability needed, for example, in the electrical industry or for the production of micro-injection molds. With the UpThermo material powered by Cubicure, a heat-resistant high-performance polymer is now available for the first time that is suitable for 2PP 3D printing.

### **Top value in heat resistance**

The UpThermo material, which is available immediately, is stable up to 300 degrees Celsius (HDT-B, the test specimens were printed with a length of 35 mm). This unprecedented value for a 2PP 3D printable material allows it to be used wherever higher temperatures prevail and maximum precision is required. Components for the electrical industry, for example, are one of the possible areas of application for the material.

The prerequisite for this innovation was the hot lithography technology developed and patented by Cubicure GmbH. This allows the processing of highly viscous materials in precision 3D printing and thus creates components with unimagined material quality. Dr. Robert Gmeiner, CEO of Cubicure, comments: "Hot Lithography opens up a wider process window – also for light-polymerizing micro 3D printing. With our technology, polymers can be tailored to their application purpose and high-temperature-resistant components can also be produced. That was the basis of our collaboration with UpNano."

UpNano GmbH produces the NanoOne series of 2PP 3D printers, currently the fastest and most precise printers of their kind, which have their field of application in industry as well as in research. The ability to print structures with nanometer resolution as well as in centimeter sizes makes the series extremely desirable and successful. Although the printers' applications already include electronics in addition to micro-optics and biocompatible applications in cell and medical research, the use of 2PP 3D printing in this industry has been limited by the lack of heat resistance of the printable materials. The increase of that has now been achieved in collaboration with Cubicure. The company already successfully offers an extensive portfolio of performance

## Press release

materials: Precision materials, high-temperature materials with good fire resistance, impact-resistant photopolymers, and elastomer-type materials that are widely used in industry.

### Material matters

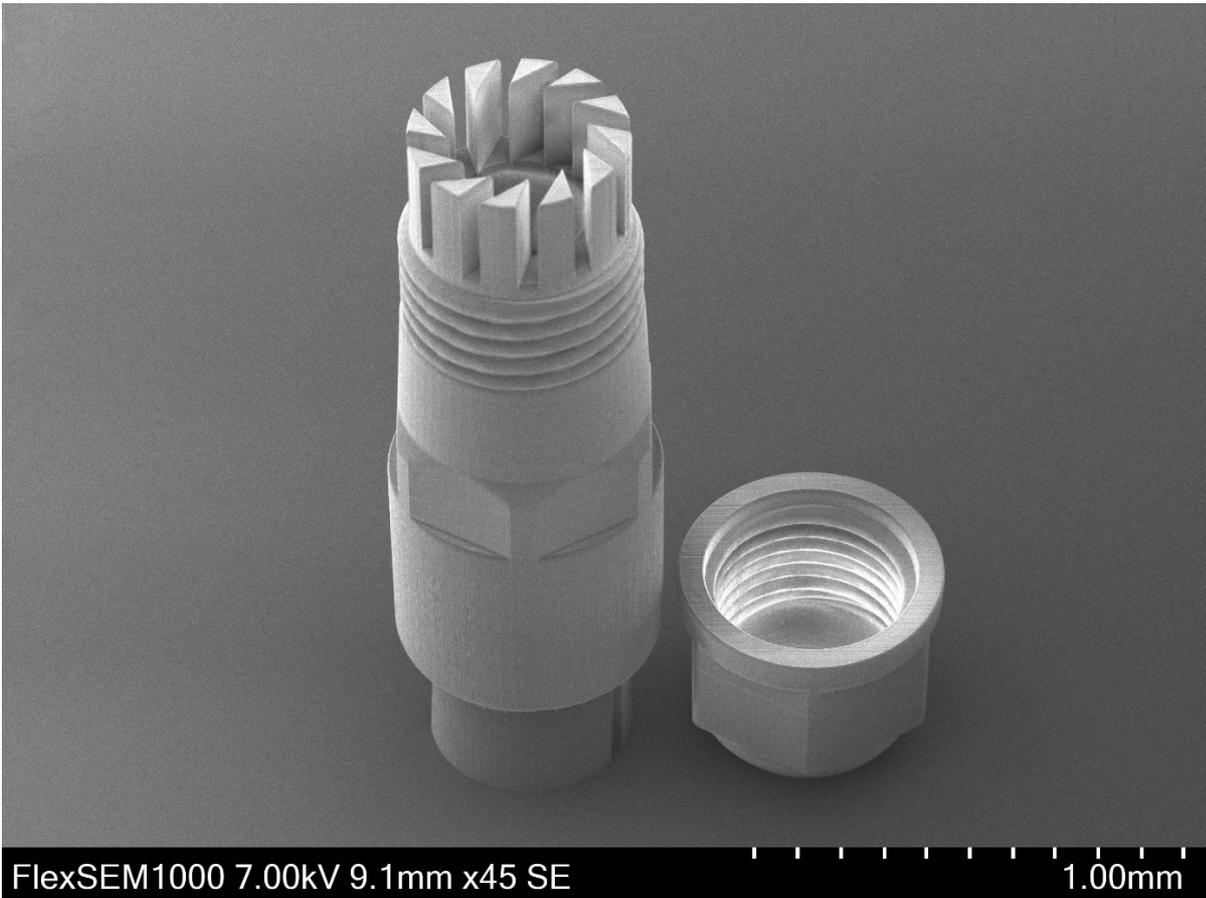
The joint material development of Cubicure and UpNano now makes it possible to combine the advantages of hot lithography with the precision of 2PP 3D printing. This allows the scope of micro 3D printing to be extended to new areas. Existing NanoOne 3D printers can also be retrofitted with Hot Lithography technology to produce a wider variety of components. Once again, UpNano is leading the pack when it comes to opening up new application areas for 2PP 3D printing with new materials. The company has already demonstrated its expertise in materials development in the past with the introduction of the industry's first black material (UpBlack), an optically translucent material (UpOpto), and one suitable for printing with living cells (X Hydrobio INX©).



With the material UpThermo powered by Cubicure, a heat-resistant high-performance polymer is available for 2PP 3D printing for the first time.



## Press release



FlexSEM1000 7.00kV 9.1mm x45 SE

1.00mm

A micro connector made of UpThermo powered by Cubicure.

Images: UpNano GmbH

**Cubicure GmbH** develops, produces and distributes industrial 3D printing solutions for polymer parts. With roots in academia and the ambition to help shape the digital future of manufacturing, this Vienna-based company has been setting the course for agile production since 2015. Their Hot Lithography process enables the unprecedented additive manufacturing of resilient precision components. Learn more at [cubicure.com/en](http://cubicure.com/en).

Founded in September 2018 as a spin out of the TU Wien, **UpNano** is a Vienna-based high-tech company with the focus on development, manufacturing and commercialization of high-resolution 3D-printing systems based on 2-photon polymerization. With the first commercial product, the printing system NanoOne, microparts with structure details  $\geq 170$  nm can be printed. Due to the very fast printing process, also meso scale parts up to several centimeters in height can be realized.

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