

[Channels](#)[Articles](#)[Materials](#)[Events](#)[Brands](#)[Sign in](#)[Join now](#)

This article is part of the following channel(s)

[BIOBASED](#)[CONCEPT](#)[INNOVATION](#)

SUSTAINABLE PEF 3D PRINTING MATERIAL IS MADE WITH CELLULOSE

[Share](#)[Tweet](#)[Share](#)[Email](#)

15 January 2018

3D printing is becoming increasingly popular, as it is a relatively fast method to produce objects with little waste material. The most commonly used filaments are PLA, ABS, and PETG, of which only PLA is **biobased**, but a new challenger has entered the arena! Researchers from the **Zelinsky Institute of Organic Chemistry** developed a 100 per cent cellulose-derived PEF material for 3D printing that has a higher chemical resistance than other filaments.

The new poly (ethylene-2,5-furandicarboxylic acid) or PEF material is made from cellulose, which is turned into HMF (Hydroxymethylfurfural), which, in turn, is oxidised to make FDCA (2,5-Furandicarboxylic acid). This material has a chemical reaction with methanol, which turns it into PEF. While this may sound quite complicated, the process is in fact pretty simple and can be done at an industrial scale.

The material can be used in common 3D printers,

without any hardware adjustments necessary.

The researchers note that there are some drawbacks to commercially available filaments, as plastic products made from PLA, ABS, and PETG lose their structural integrity when exposed to organic solvents. The new PEF material, however, does not.

The material shows key advantages for 3D printing, such as optimal

adhesion, thermoplasticity, lack of delamination and low heat shrinkage. The material can even be recycled several times, which makes the carbon neutral material even more sustainable.

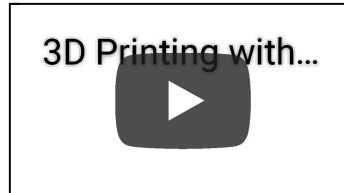


Photo: Zelinsky Institute of Organic Chemistry

Channels

Articles

Materials

Events

Brands

SEARCH



Sign in

Join now

COMMENTS

You must be [logged in](#) to post a comment.



francois Bujold says:

[January 16, 2018 at 1:42 am](#)

Is this material available for consumers, price, details pls



Sigrid says:

[January 16, 2018 at 9:08 am](#)

Hi Francois,

This material is still in the research phase, so it is unfortunately not yet available for consumers. However, the researchers say the process can be scaled up, so hopefully it will become available in the future!

– Team Materia

[PREVIOUS ARTICLE](#)
[NEXT ARTICLE](#)

[HOME](#) / [ARTICLES](#) / SUSTAINABLE PEF 3D PRINTING MATERIAL IS MADE WITH CELLULOSE [BACK TO TOP ▲](#)

HOME

MATERIA

CONTACT

[About Materia](#)
[Contact](#)
[Advertise](#)
[Privacy Statement](#)
[Register](#)
[Sitemap](#)

[Materia Exhibitions](#)
[Naarden](#)
[The Netherlands](#)
[+31 \(0\)20 71 30 650](#)
info@materia.nl

CONNECT

RECEIVE OUR WEEKLY NEWSLETTER

Channels

Articles

Materials

Events

Brands

SIGN UP NOW!

SEARCH

Q

Sign in

Join now

© 1998-2018 Materia Exhibitions B.V., All rights reserved