Supplementary materials

Supplementary data 1

Degradation study

Accelerated degradation was performed for filaments Bioflex® (Filoalfa, Italy) and F-TPU, using 5M KOH and 2M HCl media. Cut samples (1,5 cm length) were immersed in the respective dilutions and incubated at 37°C for 30 days. At each respective time point (7, 14, 2 and 30 days), degradated samples were carefully rinsed out with deionizer water and dried in laboratory oven at 40°C for 48h. Mass loss was calculated as following;

$$Ms\ (\%) = \frac{m_0 - m_1}{m_0} * 100\ \% \qquad (1)$$

Where, (m_0) is initial mass of sample and (m_1) is residual mass.
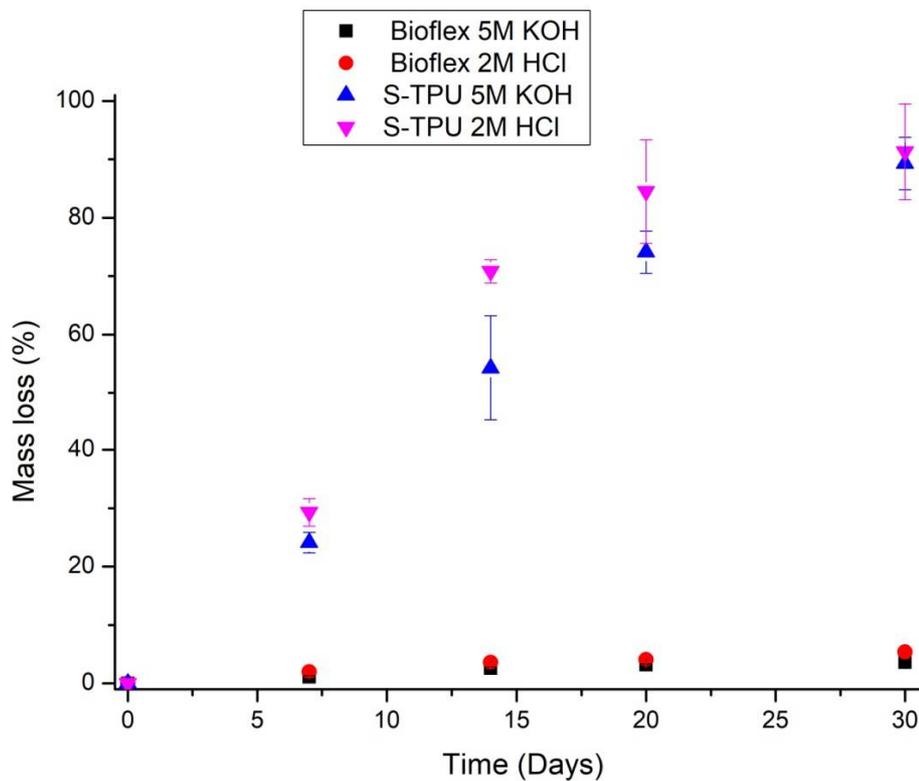
The test result is shown in the graph below.

Figure S1 Accelerated degradation of Bioflex® and F-TPU filaments in 5M KOH and 2M HCl medium. Results are represented as mean ± SD (n = 4)

Optical microscopy

The surfaces of pristine and degraded filaments were analyzed by using optical microscope (OM) Delta Optical Genetic Pro (at x80 magnification).

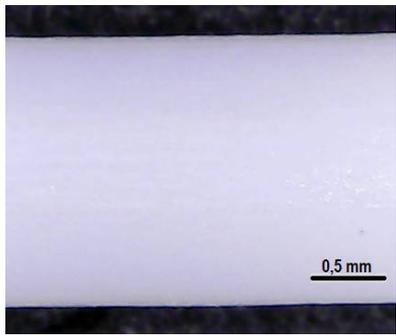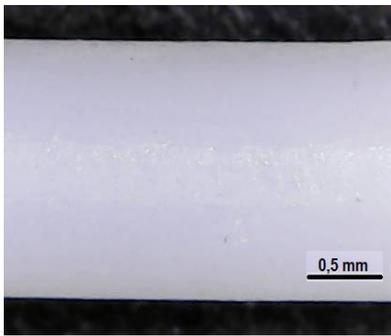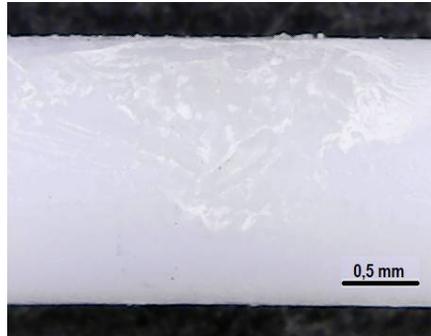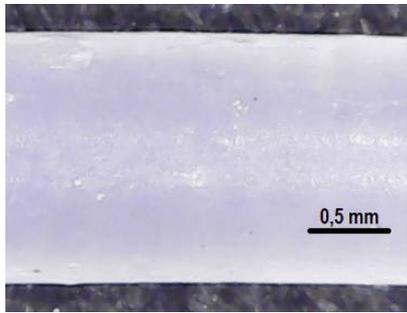**Table S1** OM images of pristine and degradated filaments in KOH medium (x80).

Sample	0 days	7 days	20 days
Bioflex®			
F-TPU			
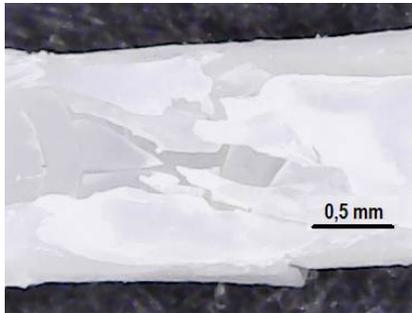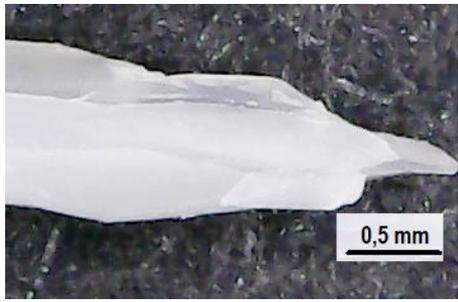
Table S2 OM images of pristine and degradated filaments in HCl medium (x80).

Sample	0 days	7 days	20 days
Bioflex®			
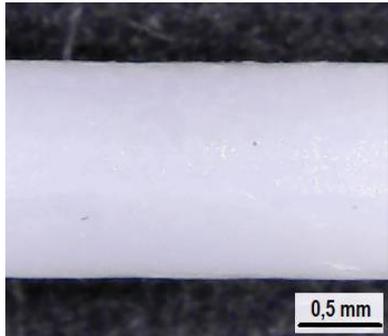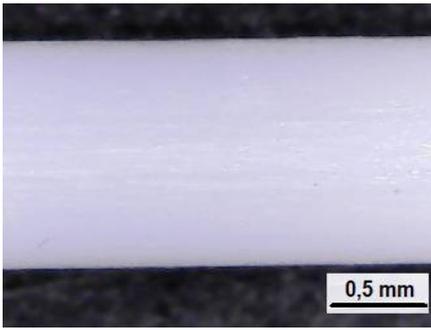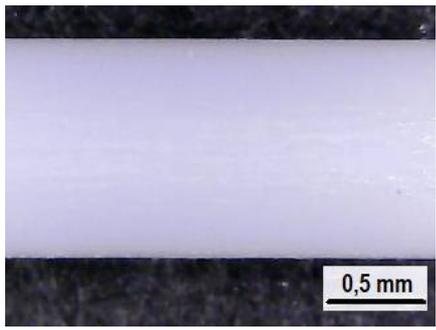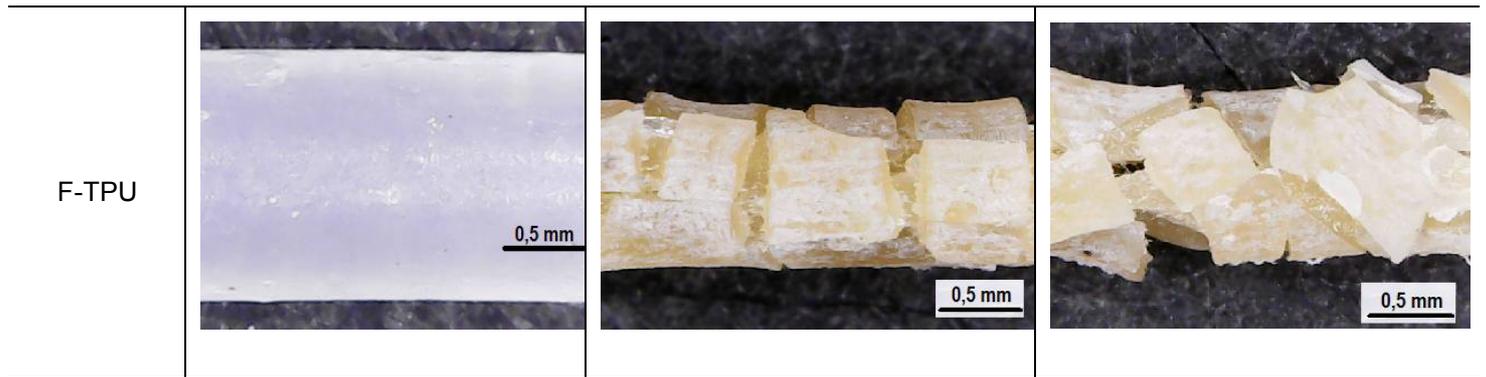
F-TPU	

Table S3 Comparison of Bioflex and F-TPU after 20 days of incubation in KOH and HCl medium (x80)

20 days in KOH	20days in HCl

a) Bioflex
b) F-TPU
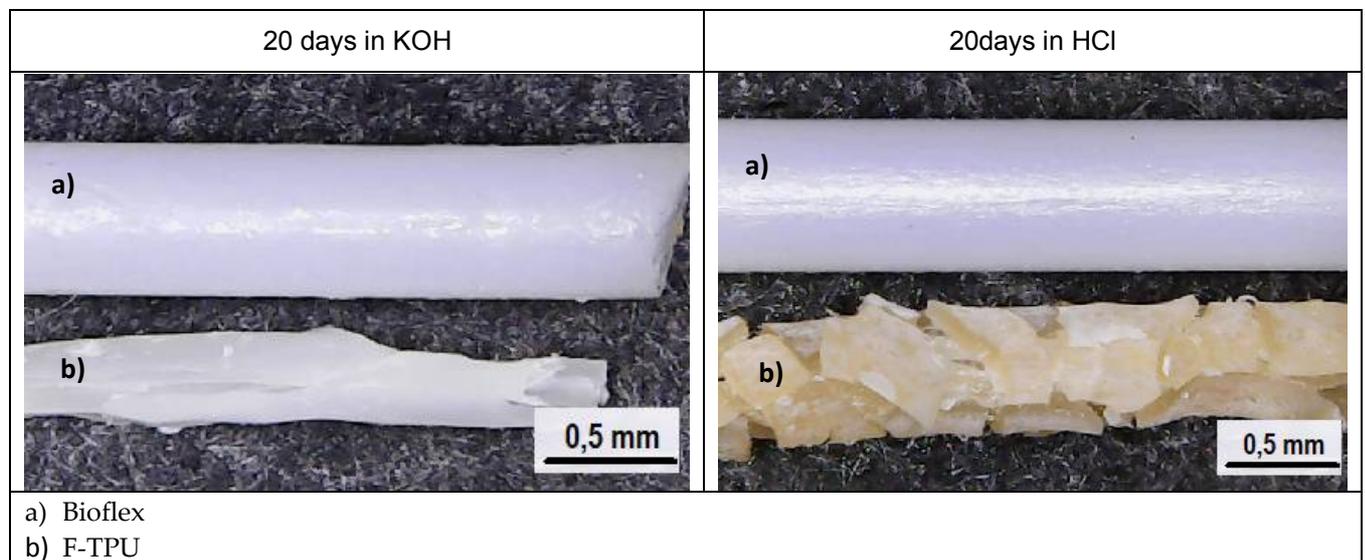
Supplementary data 2

Initial FDM 3D printing of F-TPU filament

For preliminary evaluation of F-TPU filament potential use in FDM 3D printers,the test of printing was performed. For this purpose, we used ready-made SLT. format file of anatomical heart, available on 3dprint.nih.gov website (NIH 3D Print Exchange – an open-source community). This STL. file was converted into the printer control code "g-code" using an open-source program (Slic3r 1.2.9). The model was printed using single-head FDM-type 3D printer (self-made printer, Gdansk, Poland) (Figure S2.). The proper parameters of printing were as follow; printing speed, 25mm/s; printing temperature, 205-210°C; bed temperature, 55°C, fill density, 80%; layer thickness, 0.4mm.
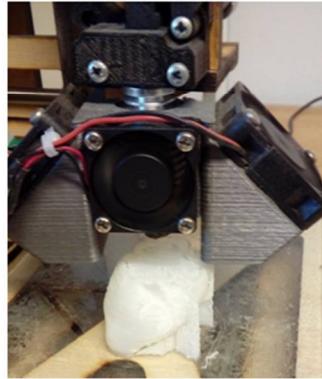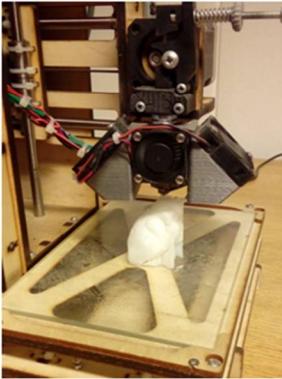
Figure S2 Scheme of the initial FDM 3D printing of heart by using F-TPU.

The initial evaluation of FDM print with the use of obtained F-TPU filament allows to conclude that obtained F-TPU filament is suitable for 3D printing in the FDM type technology.