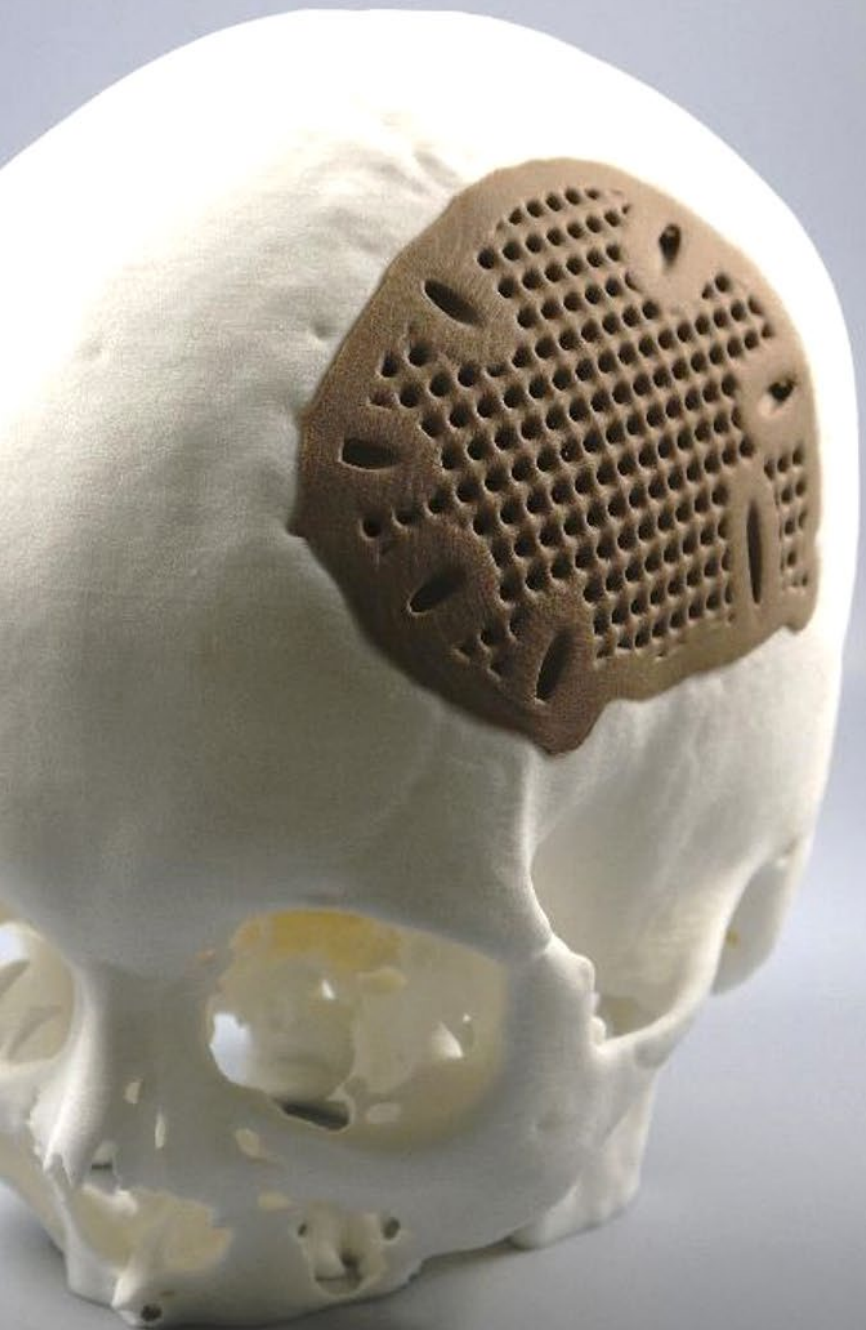


# ADDITIVE MANUFACTURING

WITH VICTREX LMPAEK™ POLYMERS



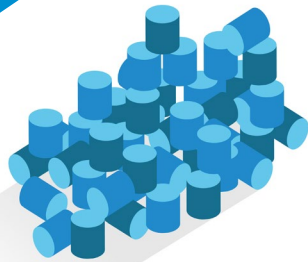


**WHAT BECOMES  
POSSIBLE  
WHEN THE  
COST OF COMPLEXITY  
IS REDUCED?**

**ADDITIVE  
MANUFACTURING**  
+ VICTREX LMPAEK POLYMERS

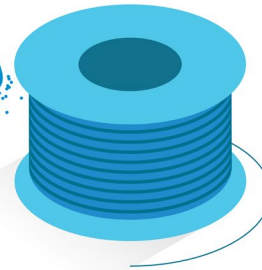
# ADDITIVE MANUFACTURING

+ VICTREX LMPAEK POLYMERS



## NEW POLYMERS

New, advanced PAEK  
Polymers optimised for  
Additive Manufacturing



## OPTIMISED FORMS

Filaments with improved z-strength  
and printability for filament fusion  
(FF)

Powders with improved strength and  
reuse of material in laser sintering  
(LS)

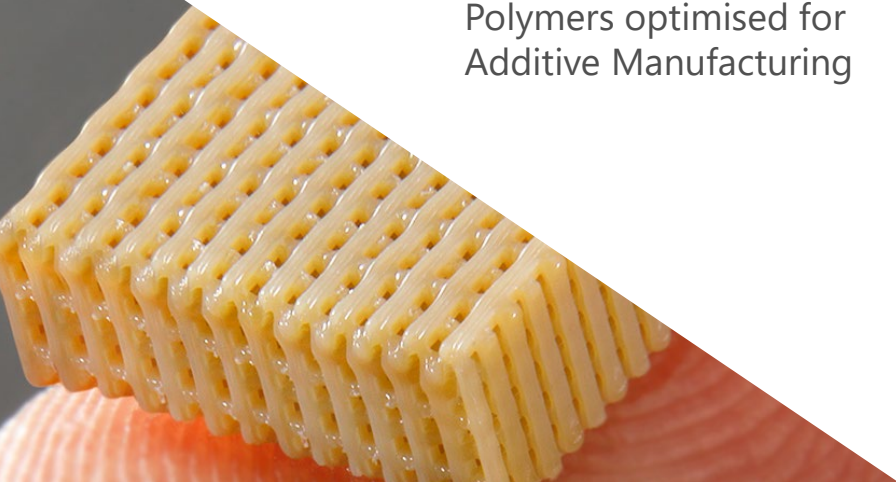


## NEW TECHNOLOGY

Stronger printed PAEK parts for  
functional and production use

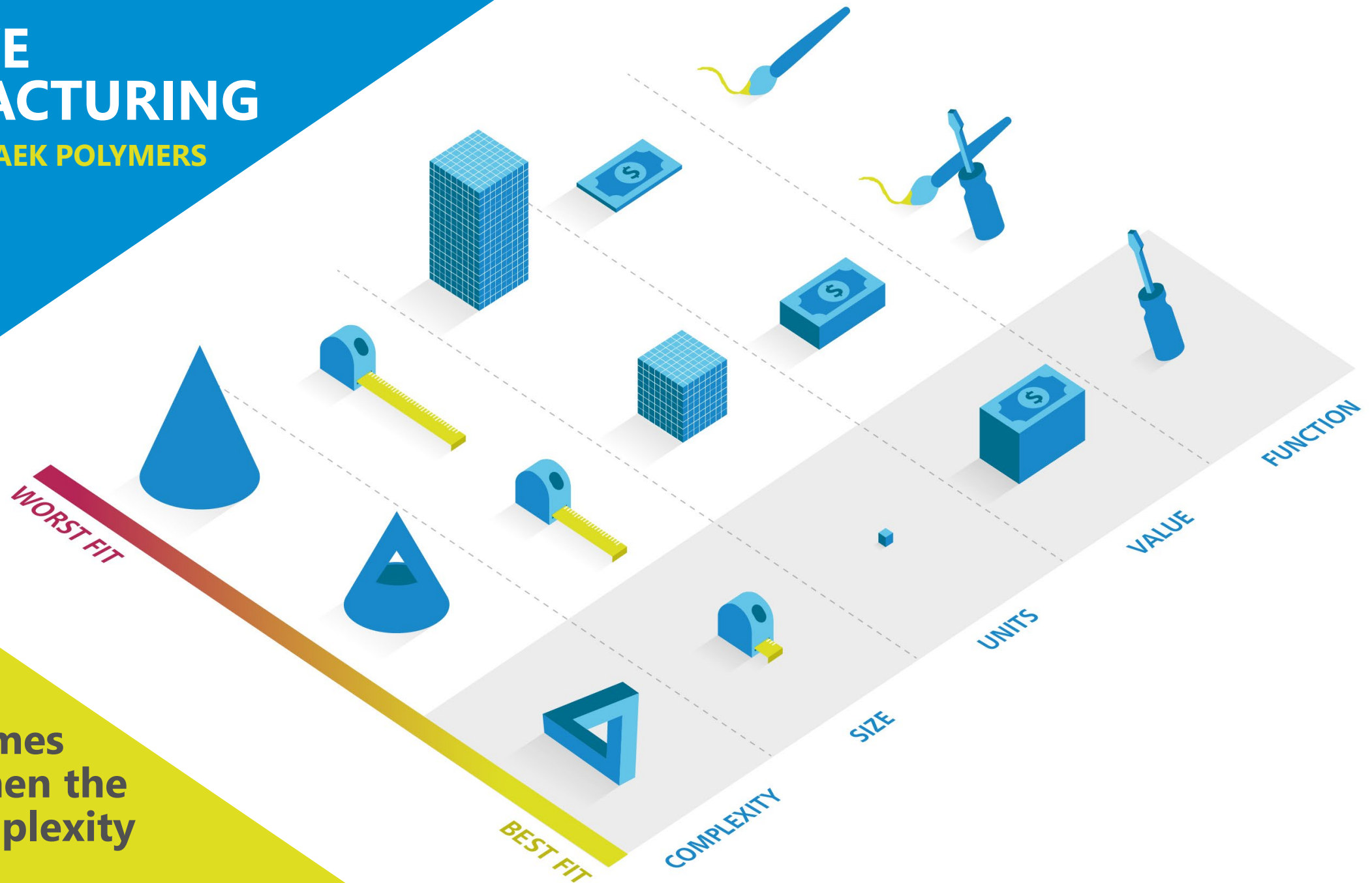
In collaboration with:

- ▶ Innovate UK
- ▶ University of Exeter
- ▶ Bond High Performance  
3D Technology BV



## + VICTREX LMPAEK POLYMERS

**WORST FIT**



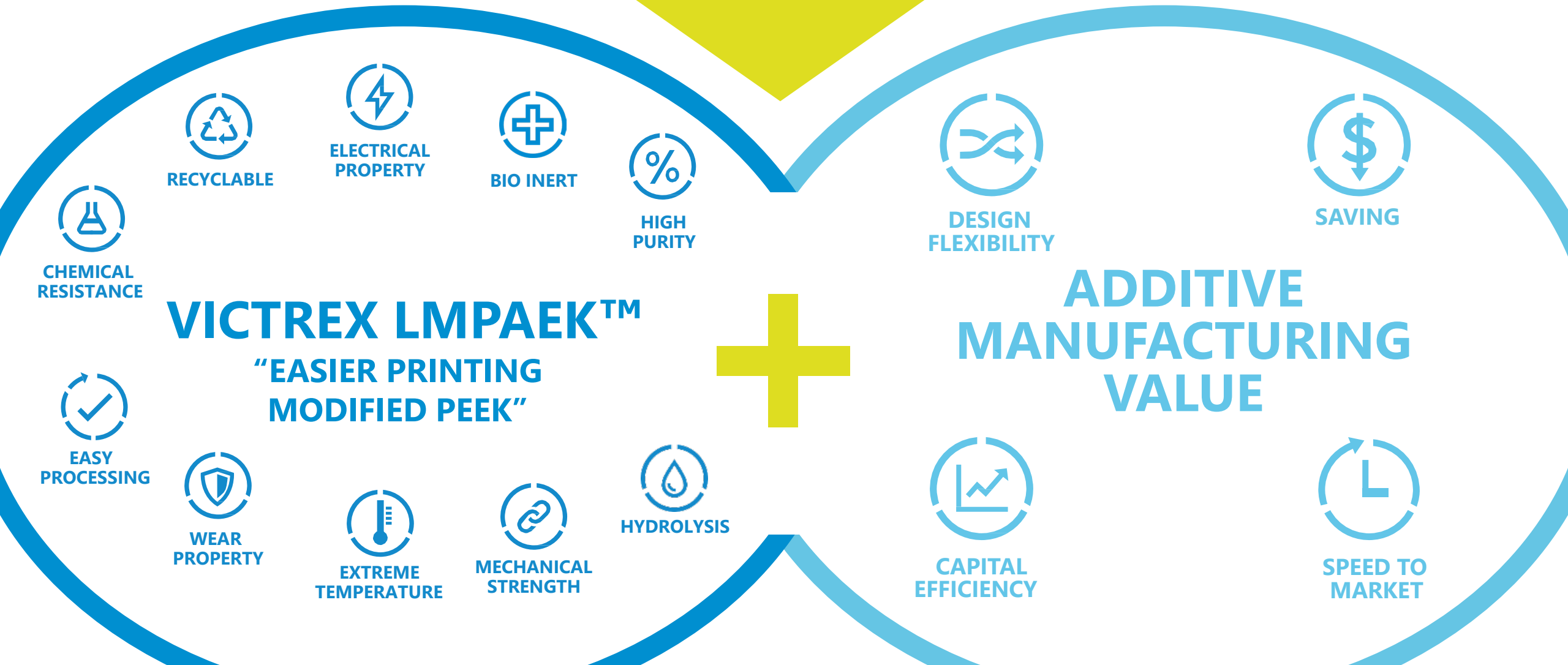


**WHAT  
BECOMES  
POSSIBLE  
WHEN THE  
COST OF  
COMPLEXITY  
IS REDUCED?**

*Design courtesy of 3T RPD Ltd*

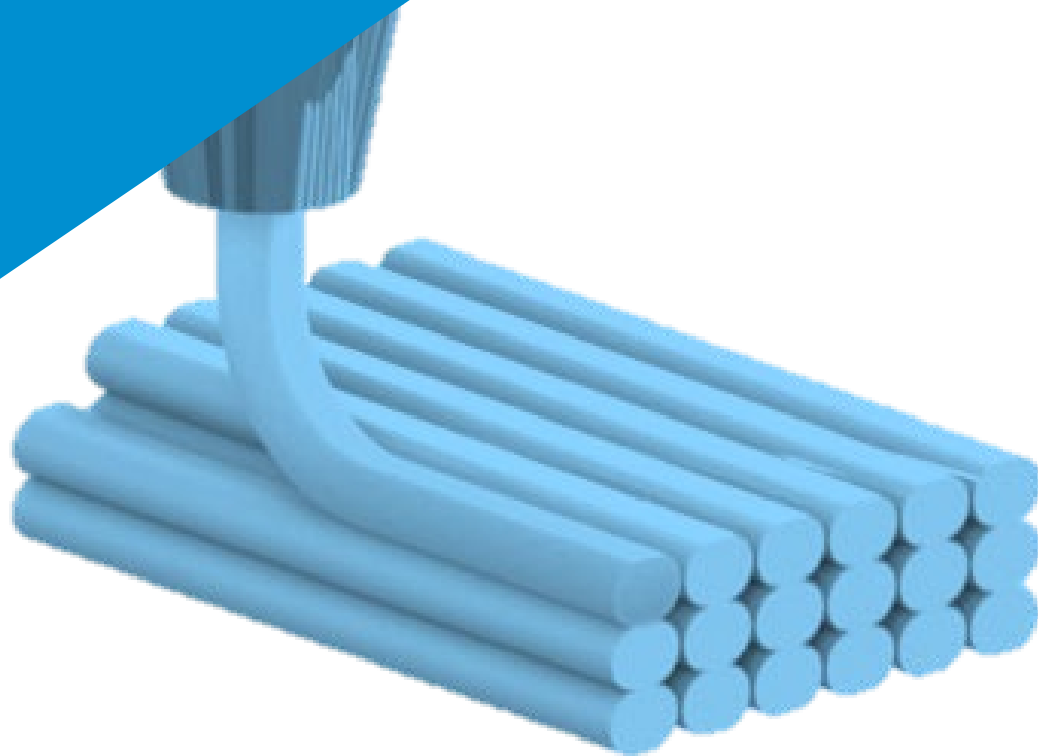
**ADDITIVE  
MANUFACTURING**  
**+ VICTREX LMPAEK POLYMERS**

WHERE DOES THE VALUE OF PAEK  
INTERSECT THE VALUE OF  
ADDITIVE MANUFACTURING?



# ADDITIVE MANUFACTURING

+ VICTREX LMPAEK POLYMERS



## Filament Fusion (FF)

**1.75 or 2.85 mm filament** is fed into a heated print-head that melts and deposits the polymer on the print surface.

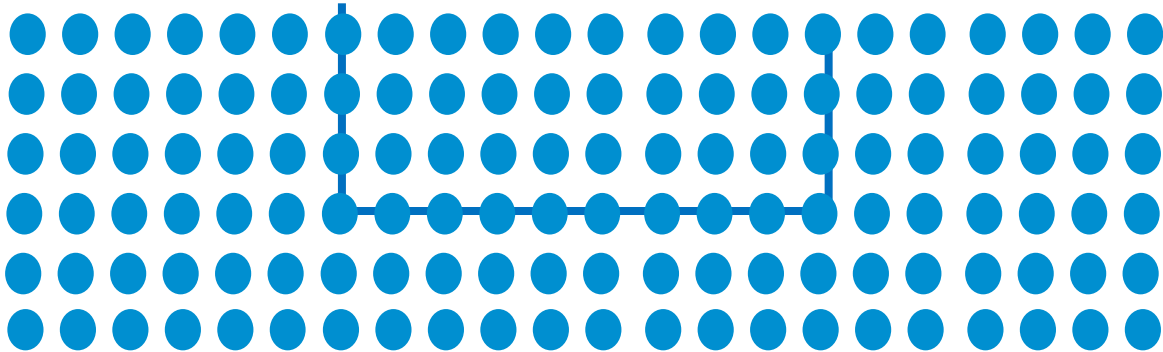
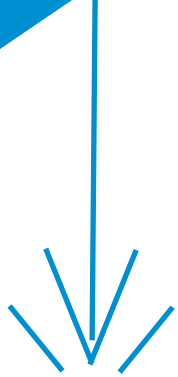
Typical build rates for PAEK are between **5-20 grams/hour<sup>1</sup>** for 1.75mm filament on machines costing €5- € 250k+

**New VICTREX AM™ 200 1.75mm filament based on LMPAEK™ technology for easier printing and better results.**

PEEK is available as VICTREX AM™ 450 filament or as 450G granules.

# ADDITIVE MANUFACTURING

+ VICTREX LMPAEK POLYMERS



## Selective Laser Sintering (SLS)

**Heated fine powders (~50um in diameter)** selectively struck by laser to pass the melt temperature and fuse into the part. EOS P800 in PAEK.

Typical build rates can be **10x FF**, depending on bed utilization, but machines are also approximately 4-10x the cost.

VICTREX **150FP**, 450FP, and HT P22FP have all been used in SLS, but recycling unused powder and brittleness have been challenges. **LMPAEK™ technology for laser sintering is in development.**



# VICTREX ECO-SYSTEM

For PAEK Additive Manufacturing

## NEW POLYMERS



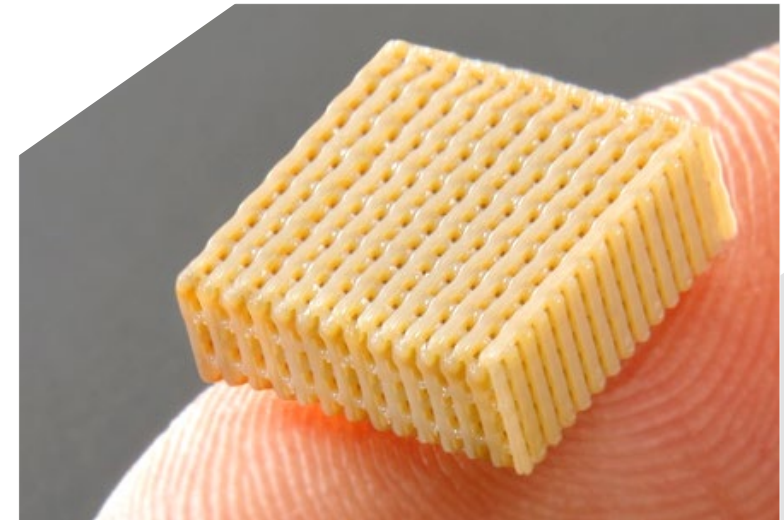
Our R&D has realised significant technology improvements with new PAEK Polymers and Filament, optimised for AM

## NEW RESEARCH



Our strategic partnership with the University of Exeter focuses on next-generation 3DP PAEK polymers, improving the performance of the underlying AM processes.

## NEW TECHNOLOGY



Our multi-million euro investment in 3D Bond. Differentiated 3D hardware & software combination that can produce high strength parts from existing grades of PEEK

# VICTREX AM SOLUTION NETWORK

## TECHNOLOGY

3D printing solutions  
for high-performance  
materials

## MELT EXTRUSION MACHINES

Filament

INTAMSYS



3DGENCE

AON3D



stratasys

## PARTS PRODUCTION & APPLICATION DEVELOPMENT

**BOND**  
HIGH PERFORMANCE 3D

## R&D

UNIVERSITY OF  
**EXETER**

## POLYMER

Engineering the polymer at  
molecular level with 40+ years  
of expertise in PEEK & PAEK-  
based material innovation  
including 3DP optimised  
VICTREX LMPAEK™ polymers  
and VICTREX AM™ 200 filament

## Victrex AM Solution Network

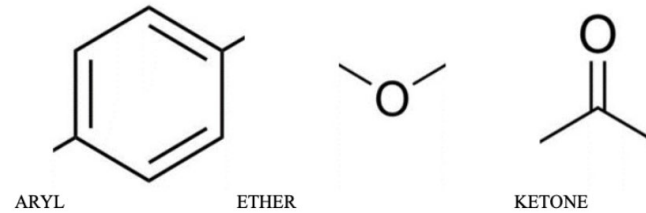


# PAEK, PEEK, PEKK, LMPAEK™

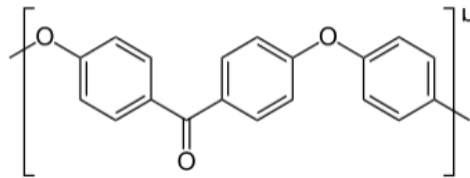
VICTREX AM™ 200 is a LMPAEK™, in the PAEK family, cousin to PEEK and PEKK.

VICTREX LMPAEK™ is a PEEK-based copolymer with more in common with PEEK than alternatives

## PAEK polymer family (polyaryletherketone)

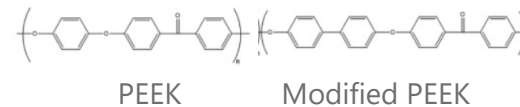


### PEEK (polyetheretherketone)



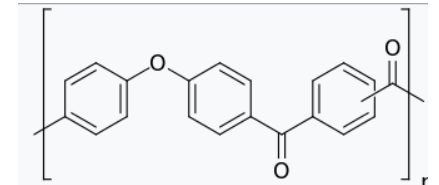
PEEK is hard to print by FF because it was designed for fast injection molding processing.

### LMPAEK (PEEK-based copolymer)



Strives to balance ease of printing with performance. "The ease of printing PEKK with the performance of PEEK."

### PEKK (polyetherketoneketone)









Some PEKK prints easily but lack some performance, and others that have performance yet can be hard to print.

# VICTREX AM™ 200 FILAMENT



**FOR MORE  
INFORMATION**

VICTREX AM™ 200 is a **LMPAEK™**,  
**PEEK-based copolymer** with benefits of

-  **Lower Printing Temperatures**
-  **Easier Flow**
-  **Less Warpage**
-  **Stronger Parts**
-  **Design Flexibility**
-  **Soluble Support Capable**

Please contact one of our reselling partners or at [victrexam@victrex.com](mailto:victrexam@victrex.com)

**INTAMSYS**



**3DGENCE**

**AON3D**

**3ntr**  
INDUSTRIAL GRADE 3D PRINTERS

**stratasys**  
*Coming soon*

# WHERE DO YOU GO IF YOU MUST USE VICTREX PEEK?

Bond 3D combines their unique technology with engineering services to help you overcome the challenges of 3D printing PEEK.

[www.bond3d.com](http://www.bond3d.com)



**ADDITIVE  
MANUFACTURING**  
+ VICTREX LMPAEK POLYMERS



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