ArtiVasc 3D

HIGHLIGHT

Lughborough,

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Design specification of the vascular system

Figure 1: CAD solid model of optimized vascular system design.

A CAD solid model (Figure 1) of a vascular system was generated using an automatic design tool developed by us. The solid CAD model was translated into an STL file for printing. Figure 2 shows an alternative design. This design uses a cubic wall to reduce the mechanical demands on thin walls during 3D manufacturing. The channels inside the cubic wall are the same as in figure 1. Samples from latter design are being used to identify the validity of blood vessel optimization with reduced outside wall accuracy.
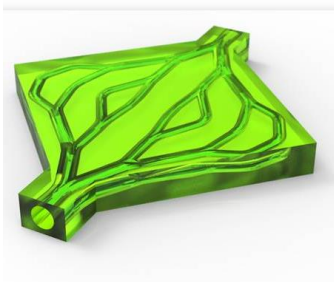

Figure 3: Boolean free curved joint connection

Figure 2: Cube-walled vascular channels.

Additionally, figure 3 illustrates a Boolean free curved joint connection. This is a mathematically defined joint connection geometry that eliminates sharp junctions which may improve fluid flow. CFD simulation will carried out to optimize and validate this design.

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