

Patent pending since December 2006

Application of Fractal Geometry in Rapid Prototyping and Tissue-Engineering

Fractal geometry

Fractal geometry (also called 'organic mathematics') offers more possibilities to describe natural forms and structures (of which a tree with all its branches is a perfect example) than traditional Euclidean mathematics. By iterating complex functions (polynomials, transcendental functions and their inversions) natural forms can be constructed. Superformulas are available to reduce rather complex fractal images to simple standards, as is demonstrated by the inverse of a complex sinus (being a rod) that results in a tube. A fractal is scale-invariant and has hardly any mathematical restriction. Therefore the factual applications of fractal geometry are only restricted by the state of micro- and nanotechnology.

Patent application *

Jules Ruis, managing director of Fractal Consultancy, has a patent pending since end 2006 on a procedure to make use of fractal geometry for the designing of artificial human and/or animal organs, more specifically human blood vessels. The designed structures can be presented in a two dimensional as well as a three dimensional way.

The patent pending also emphasizes the application of fractal geometry for the direction of print- and injectionheads in equipment used for the applying of materials (inkjet printing and methods of direct writing), and equipment that directs laserbeams and electronic beams (electron microscopes).

* Complete title

"Procedure for the manufacturing of artificial human/animal organs as well as for the manufacturing of scaffolds to be used in these manufactures by making use of fractal geometry".

Two examples

1. A production method for rapid prototyping machines, to make scaffolds of biologically degradable polymers for the production of blood vessels. This method distinguishes itself by direct generation of .bmp files so that slicing of huge CAD/CAM files is no longer required. By using fractal geometry changes in the parameters (corrections and redirections) can be easily realised as well in the design as in the actual product.
2. The invented method can also be used for the design and manufacture of a new generation [fab@home](#) machines, relatively simple rp-machines for educational uses and applications in the art sector. The cost of such a machine can be estimated at about €2.000 and can replace more costly (€20.000 to €50.000 apiece) professional rapid prototype equipment.

Partnership

Fractal Consultancy is looking for companies that are interested in taking (exclusive or non-exclusive) license on the invented fractal technology. The preferred construction is the composition of a consortium for exploiting the patent pending. Fractal Consultancy wants to be a part of this consortium by bringing in its patent.

More information

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