

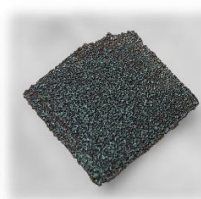
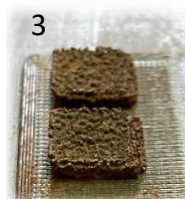
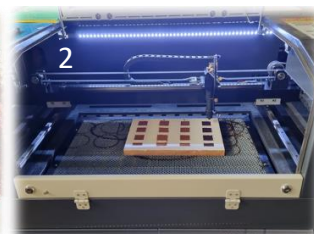
Production of biobased composite powders for additive manufacturing (selective laser sintering, selective laser melting, binder jetting...)

PATENT 22305709.2



BIOPROCESSES - WHITE BIOTECHNOLOGIES - ENVIRONMENT

TEAMS:



1 : Composite biobased powder ; 2 : Printing with a laser (SLS) ; 3. Printed material by SLS

Description of the invention

The invention consists of a process for the production of biobased composite powders from PHA polymer, waxes and vegetal powders (lignocellulosic biomass) intended to additive manufacturing applications. Depending on the formulation, powders can be produced by two processes : emulsification or dissolution/precipitation in deep eutectic solvent.

Currently, due to technical limitations of materials and 3D printing processes, only few biobased materials are suitable for 3D printing and in particular, powder based printing techniques. Furthermore the production processes of the few compatible materials have a significant environmental impact.

The developed processes allow the production of fully composite biobased powders compatible with additive manufacturing from PHA, a polymer produced with a very low environmental impact route. In addition the different formulations patented allow to modulate the properties of the printed materials.

ADVANTAGES

- Obtaining composite materials compatible with 3D printing technologies, and more particularly SLS
- Biobased and biocompatible composite powders with low environmental impact
- Modulation of the end properties of the printed materials by the formulations (ratio of PHA, waxes and lignocellulosic fillers)

KEYWORDS: additive manufacturing, 3D printing, SLS, polyhydroxyalcanoate, wax, lignocellulose, composite powder

APPLICATIONS

The invention described may be of interest to the following industrial sectors and partners:

- Biomedical sector
- Cosmetic industries
- Packaging industries
- Industrial printers to test these new materials
- Plastic industries replacing polymers derived from petroleum products used in 3D printing.
- Producers of PHA and waxes for the formulation of powders



PARTNERSHIP / LICENSING

Research collaboration, license on patent or license option agreement with an R&D validation program

TRL

1	2	3	4	5	6	7	8	9
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STAGE OF DEVELOPMENT: Research teams have successfully validated the proof of concept. They offer now license option agreement to an industrial partner in order to test these powders under industrial conditions specific to a field of activity. This invention is the subject of a patent application 22305709.2.

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