

# Ferrite Filament Fabrication for Filament Deposition Modelling 3D Printing Application

## Technology Overview

This technology relates to the 3D printing of magnetic ferrite products using filament deposition modelling (FDM) 3D printer. It involves binder solution preparation and ferrite filament extrusion process.

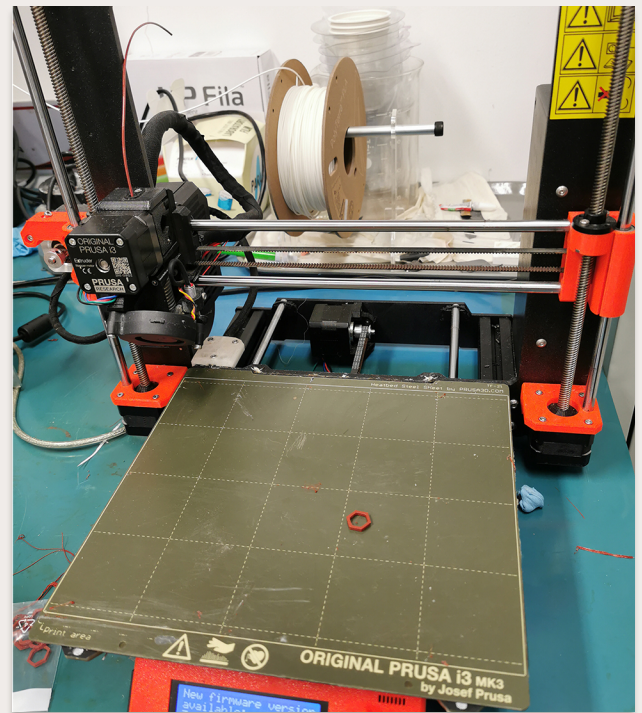
Depending on requirement of the ferrite product to be printed, the granulation process is developed to coat a thin layer of polymer on the ferrite powders to improve the ferrite loading percentage in the filament. During extrusion process, the binder will be burned out and ferrite powder is uniformly distributed in the filament.

Different binder solutions are developed to homogeneously bind ferrite powders to Acrylonitrile Butadiene Styrene (ABS) resin or Polylactic Acid (PLA) or Thermoplastic Elastomers (TPE) resin.

## Features & Specifications

The features of this technology are:

- binder solution development for ferrite powder coated on ABS, PLA and TPE pellets
- ABS, PLA and TPE resin granulation process
- parameters of the ferrite filament extrusion process



## Customer Benefits

The benefits of this technology are:

- cost-effective low volume fabrication of ferrite devices
- fabrication of complex geometries ferrite devices
- rapid production of ferrite device prototypes

## Potential Applications

This technology can be applied in:

- ferrite materials which are widely used in magnetic, electronic and microwave devices
- ferrites that are used in thermal sensing switches, refrigerators, air conditioners, electronic ovens, lithium-ion batteries, photoelectrochemical devices, gas sensors, and catalysis