Title: **3D Printing of carboxymethylcellulose for injectable scaffolds**

Student: Núria Gallardo Lobato

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Supervisor/s: Dra. Elena Xuriguera Martín

Departament de Ciències de Materials i Química Física, Secció de Ciència i Enginyeria de Materials

The Additive Manufacturing Technology (AMT) is based, first, on the computer-aided design (CAD) model of 3D in an STL file format; it is divided into a 2D image, and then, each slice is used to build the layer of 3D object on layer.

Carboxymethylcellulose (CMC) is used as a printing ink because it is biodegradable, biocompatible and has elastic properties that allow its compressible injection. CMC is used as a polymeric matrix by the addition of adipic dihydrazide (AAD) as the former bonds of the amide and carbodiimide N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimide hydrochloride (EDC) as activator of the carboxylic acid.

In this project, the optimization of the printing ink based on carboxymethylcellulose for injectable scaffolds is developed. The production of the printing ink is carried out by varying the pH value thus obtaining different gelation times.

There is a range of printing parameters in which we can obtain a printable sample, for which we optimize the 3D cryogenic Bioplotter printing by varying these parameters.

Because the print speed parameter varies the dimensions of the samples, such as the height and width of the line, they are characterized by the confocal microscope.