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# Preparation of polymeric peptide-based magnetic nanoparticles by microfluidic technology

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Polymeric hierarchical microstructured microparticles (HMMs) are of great interest because of their potential applications as catalyst supports, drug delivery carriers, sensor components, electrode materials of fuel cells and lithium batteries, etc. Although there are various methods such as template, spray drying and self-template methods to prepare these kinds of microparticles, they failed to realize the preparation process in a continuous, simple and rapid manner and the resulting products are hardly monodisperse which adversely decreases the quality of their properties and impedes their development.

In that context the project proposes to focus on the elaboration of monodisperse nanoparticles generated by means of a microfluidic elongational-flow emulsifier ( $\mu$ RMX)<sup>1-2</sup> allowing the production of size-tunable nanoemulsions whose droplets size can be easily tuned in the range of 50 to 500 nm while keeping a narrow size distribution. This methodology will be used to prepare polymeric peptide-based magnetic nanoparticles. These nanoparticles could be then used as nanoinclusions for the elaboration of microparticles with non-uniformly dispersed active components.

[1] Souilem I., Serra C.A., Muller R., Holl Y., Bouquey M., Sutter C., AIChE J. 2015, 61, 23

[2] Souilem I., Muller R., Holl Y., Bouquey M., Serra C.A., Vandamme T., Anton N., Chem. Eng. Technol. 2012, 35, 1692.