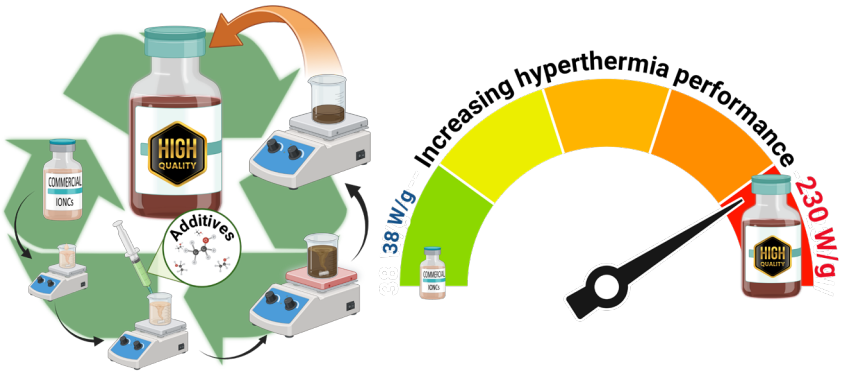
Technology Offer CSIC/AF/026

# Process for increasing the efficiency of magnetic iron oxide nanoparticles in hyperthermia




**New method that enhances the performance of iron oxide nanoparticles (IONPs), facilitating the implementation of magnetic hyperthermia (MH) therapies.**

### Intellectual Property

Priority patent application filed

### Stage of Development

Method validated in laboratory

### Intended Collaboration

Licensing and/or co-development

### Contact

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## Market need

New cancer treatments tend to be more selective and less toxic than current therapies. Among them, magnetic hyperthermia (MH) is a promising alternative. This is due to the higher sensitivity of tumour cells to high temperatures.

Iron-based oxide nanoparticles (IONPs) are promising candidates as heat mediators for MH. However, mass-produced IONPs often exhibit poor magnetic properties, resulting in low heating performance and requiring higher field strengths or larger doses, which may lead to side effects. On the other hand, IONPs exhibiting outstanding magnetic performance are produced through complex synthetic procedures that are difficult to scale up.

There is a need for the mass-production of IONPS with better magnetic performance to increase the application of MH.

## Proposed solution

A new process that increase the magnetic properties of IONPS. It can be applied to any IONPs, no matter the production method used.

As the process preserves size and surface functionality, it doesn't affect biocompatibility, thus reducing the regulation roadmap for the application of the modified IONPS in MH, if they are already approved by FDA or EMA for other applications.

## Competitive advantages

- Compatible with all produced IONPs.
- Simple, efficient, large-scale process.
- Process under mild conditions.
- Delivering IONPs with bulk-like magnetic properties.
- Integrable as a final production step.