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## MAGNETIC NANOPARTICLES STABILIZED WITH CARBOSILANE DENDRITIC SYSTEMS AND THEIR USES

**Patent**  
ES2735282

**Code**

BIO\_UAH\_33

### Application areas

- Biological Sciences
- Agrofood Industry
- Pharmaceutical and Cosmetics

### Type of Collaboration

- Technical cooperation
- Comercial agreement
- License agreement
- Manufacturing agreement

### Main Researchers

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### CONTACT



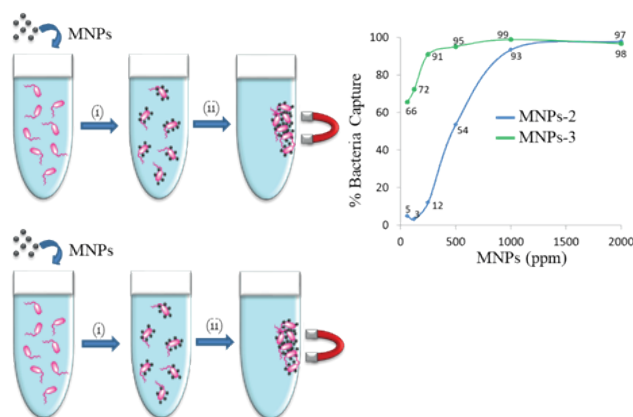
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### ABSTRACT

Procedure for obtaining and using of magnetic nanoparticles stabilized with cationic carbosilane dendritic systems. These nanoparticles interact with microorganism and nucleic acids for their removal or extraction.

The present invention develops magnetic nanoparticles (MNPs) than contain on the surface cationic carbosilane dendritic molecules. These molecules are multifunctional and allow increasing the number of functions on the NPs surface. Moreover, due to their structure, these groups are available for interaction with the environment, since are located apart from the NP surface.

The cationic groups of dendritic MNPs interact with microorganisms as bacteria, which cell wall present negative domains, and with phosphate groups of nucleic acid chains (DNA, RNA, etc.). On the other hand, the magnetic properties of the MNPs favour their use due to the fact that the application of an external magnetic field removes the NPs from any suspension.

The combination of the above characteristics have been exploited to remove bacteria and nucleic acids from aqueous suspensions, by mixing the suspension containing bacteria or nucleic acids with the MNPs and then applying a magnetic field (even with a simple neodymium magnet).

These MNPs covered with dendritic carbosilane molecules are useful for water purification, microorganism or nucleic acid detection or for their removal.

### ADVANTAGES AND INNOVATIONS

- Respond predictably in solution
- Interact with bacteria cell walls
- Interact with nucleic acids
- Dendrimers are multivalent systems that allow the incorporation of multiple functionalities on the nanoparticles surface
- The cationic charge favours the interaction with bacteria membranes and nucleic acids
- The magnetic properties of the nanoparticles allow their extraction from any suspension