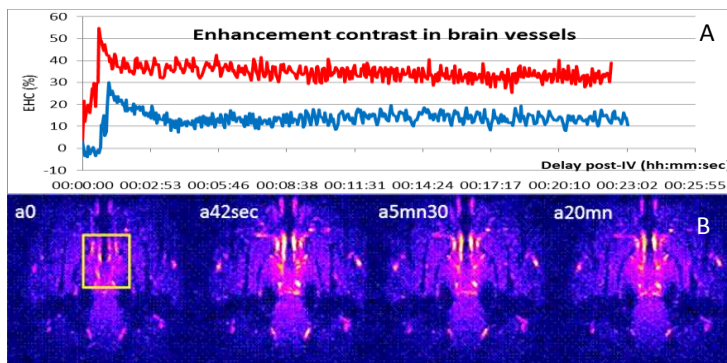


## Contrasting agent for multimodal imaging

Medical imaging has a strong diagnostic potential. Tracers administered *in vivo* may induce toxicity and are, up-to-now, limited to a specific imaging technique. New tracers with improved sensibility and allowing multimodal imaging are awaited.

### DESCRIPTION\*

- Nanoparticles combining polymers and ions classically used in medical imaging settings such as lanthanides or metallic ions (even radioactive)
- Immediate production process, of a one-pot aqueous-based reaction, potentially available as a kit, leading to particles with the following features:
  - Mono-disperse within a controllable size range (10 to 40nm)
  - Stable to freeze-drying, and to a wide range of temperature, ionic strength and physiological pH
  - Extendable to multimodal imaging
- Improvement of standard MRI contrasting features:
  - Increased relaxivity:  $r_1 = 15,4$  vs.  $4,8$  for DOTAREM™ at 7T
  - Improved *in vivo* contrast (in rat) with a 3-fold decreased concentration compared to DOTAREM™
- Good tissue distribution and delayed elimination
- Very good biocompatibility:
  - Neutral apparent charge (zeta potential = 0mV)
  - Excellent tolerance in rat ( $15\mu\text{g}/\text{kg}$ )



Evaluation of the nanoparticle contrasting properties using MRI:

- A) Contrast improvement percentage in the rat brain with the nanoparticle (red) with an equivalent gadolinium concentration of  $15.2\mu\text{mol}/\text{kg}$ , compared to DOTAREM™ (blue) at  $54.3\mu\text{mol}/\text{kg}$ ;
- B) Cerebral angiography in rat displaying the contrast improvement peak (a42sec) after IV injection.

### COMPETITIVE ADVANTAGES

- Simple, one-pot, immediate and robust synthesis, even for a multimodal agent
- Biocompatibility and stability under physiological conditions: decrease of intrinsic toxicity
- Good pharmacokinetic profile and very good MRI performance: decrease of the dose

### APPLICATIONS

- Non-invasive and peroperative imaging
- High field medical imaging
- Multimodal imaging (MRI/optical/TEP)

### INTELLECTUAL PROPERTY

- Patent pending

### DEVELOPMENT STAGE

- Technology validated at lab level



### LABORATORY

- Team « Dynamic Interfaces and stimuable assembly (IDeAS) »



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