PROJECT OFFER

Making nanoparticles more stable for biological environments

We can make magnetic nanoparticles and vesicles for medical and biotechnological applications such as imaging, separation, targeted and triggered drug delivery smaller, preciser and more stable in biological environments.

BACKGROUND

Currently available magnetic nanoparticles for biotechnological and medical applications are polymer-coated nanoparticles or composite particles that are not well-defined in size and do not ensure that only desired specific protein and biological interactions take place. This severely compromises their use as targeted contrast agents or drug delivery vehicles in medicine as well as in biotechnology applications such as automated protein and DNA extraction (molecular fishing).

TECHNOLOGY

We have developed a scalable toolkit to synthesize monodisperse superparamagnetic iron oxide nanoparticles with defined polymer shells and biological functionality. We have demonstrated that we can suppress and control the binding of such particles to proteins in biological fluids as well as their uptake in cells. We can tailor biocompatible particles to be responsive to the environment, such as temperature and magnetic fields to control binding and extraction.

We have also shown how carefully tailored superparamagnetic nanoparticles can be built into lipid and polymer vesicles to magnetically control release of encapsulated compounds with release profiles that can be arbitrarily chosen. The magnetic vesicles formed by self-assembly are an add-on to existing liposome delivery formulations and could be made compatible with such production methods.

OUR OFFER

We seek partners to develop applications in medicine and biotechnology for biocompatible magnetic nanoparticles, including targeted nanoparticles for magnetic imaging, hyperthermia, triggered release and magnetic extraction.

EXPERTS

Univ. Prof. Dr. Erik Reimhult

Dr. Ronald Zirbs

AVAILABLE FOR

Joint Research Project

Contract Research

Funding calls such as FFG, Bridge, CD-labs and EU H2020

DEVELOPMENT STATUS

TRL 3-5 depending on application

Running research projects

IPR (OPTIONAL)

Several patents have been filed:
EP 10747424
EP 14180393
EP 16199508
PCT/EP2015/068253
EP15192570

KEYWORDS

- Magnetic nanoparticles
- Magnetic resonance imaging
- Magnetic separation
- Core-shell nanoparticle synthesis
- Triggered drug release

CONTACT

acib GmbH
Petersgasse 14
8010 Graz
tel: + 43 316 873 9316
e-mail: bd@acib.at
www.acib.at