

Open PhD position: “MR Safety - MR Antenna Design Tailored for Mg Alloy Implants”

The EU-funded innovative training network **MSCA-ITN “MgSafe”** investigates a novel combination of imaging technologies for biodegradable magnesium (Mg) implants in order to promote patient safety. Within this project, **MRI.TOOLS GmbH, Berlin, Germany** is offering a **PhD position** at their site in Berlin, Germany for a highly motivated candidate.

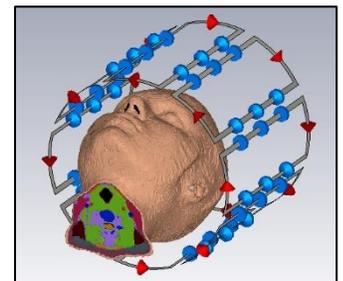
MRI.TOOLS GmbH is seeking an enterprising young scientist interested in the development and optimization of Magnetic Resonance Imaging (MRI) techniques for biodegradable magnesium (Mg) implant applications. A Mg-based conductive implant in the patient’s body interacts with the radiofrequency (RF) field of an MR scanner. This may result in local RF induced heating in tissue, which might constitute a patient safety hazard. *En route* to clinical applications of Mg implants, it is essential to understand and control the interaction of passive, conducting Mg-based implants with RF fields. Here, our research will focus on

- electromagnetic field (EMF) simulations to detail electric fields and local RF power deposition in humans for frequencies accommodating today’s clinical and research MR scanners,
- E-field measurements to benchmark the outcome of the computational modelling with experiments
- thermal numerical simulations and its verification in RF heating experiments
- development of an implant friendly radiofrequency antenna using multi-channel transmission MR
- development of RF shimming algorithms that use the degrees of freedom of multi-channel transmission to generate reduced RF field zones or “null mode” excitations that induce minimal RF current in Mg implants, thereby decreasing the RF heating hazard, while still allowing imaging of the surrounding volume.

The position would be well suited for applicants with an open minded interest in medical imaging, expertise in numerical simulations or with a strong hardware background, with strong initiative and excellent communication skills. Hardware development and/or signal/image processing experience is beneficial.

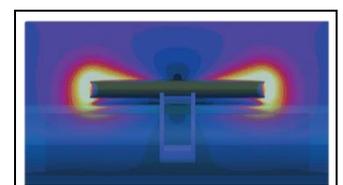
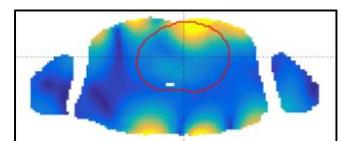
Our offer:

- excellent job opportunity working with state-of-the art R&D technology at the intersection of academic and industrial research
- intense exchange with researchers located in eight European countries
- comprehensive academic support program including subject-specific courses, soft skill training, research stays abroad, individual career coaching
- 3-year employment contract, salaries according to the EU MSCA-ITN regulations



Your general qualifications:

- Research-based master's degree or equivalent (e.g. diploma) in physics, electrical engineering, biomedical engineering, computer science, or a related discipline
- Excellent command of English
- Pro-active attitude, good communication skills and ability to work effectively in an interdisciplinary international team
- Flexible, creative, self-organised and able to work independently on multiple tasks
- Experience in publishing
- Motivation to participate in the projects training program



Mobility requirements of MSCA-ITN European Training Networks:

Applicants need to be **Early-Stage Researchers**. They must, at the date of recruitment, be in the first four years (full-time equivalent research experience) of their research careers (= after acquiring MSc degree or similar) and have not been awarded a doctoral degree yet.

Researchers can be of **any nationality**. They are **required to undertake physical, transnational mobility** (i.e. move from one country to another) when taking up their appointment. **Mobility rule:** researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date.

Starting as soon as possible but latest **June 1st 2019**, the positions will be awarded for three years.

How to apply:

Please send your application in English indicating **job offer code no. 2018/WB 5, P13** by email preferably in one pdf file not exceeding 10 MB to application.mgsafe@hzg.de. Please **DO NOT** send applications via email to individual PIs or organisations. Such emails will not be considered.

Make sure that your application includes:

- a CV which gives an overview of the academic/education history, including a list of courses/exams and grades, the exact award date (day/month/year) of the degree with original transcripts of Bachelor and Master University Degree (or similar) as well as copy of valid identity documents,
- a list of your publications,
- a list of skills you acquired during the courses attended at university,
- a documentation of special skills suitable for the position you apply for,
- a documentation of your excellent English skills (e.g. TOEFL, IELTS, CAE or CPE with minimum scores of: TOEFL: 600 (paper-based test), 92 (Internet-based test), IELTS: 6.5 with no section lower than 5.5, or equivalent),
- a copy or half-page summary of master/diploma thesis and
- a letter of motivation (up to 2 pages) which states your research experience and interests and a concrete project plan, which explains how you envisage your work in the project,
- names and contact information of at least two academic referees who could write a letter of recommendation.

A detailed description of the whole project can be found under www.mgsafe.eu. If you require further information, please direct all enquiries to mgsafe@mrtools.de. MRI.TOOLS GmbH is an equal opportunity employer. For further information please see: www.mdc-berlin.de/BUFF.

Deadline for applications: December 15th 2018