

Multifunctional Nanoparticles for Magnetic Hyperthermia and Indirect Radiation Therapy (RADIOMAG)

<http://cost-radiomag.eu/>



Welcome to the August issue of the RADIOMAG newsletter!

NEW MEMBERS

We have some new members joining our COST action. Welcome all!

- *Rebeca Hernández Velasco*, Institute of Polymer Science and Technology, CSIC (Spain).
- *Marco Coïsson*, Istituto Nazionale di Ricerca Metrologica (Italy).

CHANGES IN THE PROJECT OFFICE

Our new science officer at the COST Association, Mónica Pérez Cabero, arrived during July. Welcome Mónica!

CONFERENCES AND EVENTS

[60th Conference on Magnetism and Magnetic Materials](#) (MMM) 2016, 31st Oct. – 4th November, New Orleans (USA). There will be symposiums on: Biochemical and Biomedical Applications; Magnetic Fluids and Nanoparticles Applications; Nanowires and Nanoparticles; **Hyperthermia**, MRI, and Other Bio-Assays.

[4th International Soft Matter Conference](#) (ISMC2016) 2016, 12-16 September, Grenoble (France). There will be several symposiums on biophysics, biomaterials and related disciplines.

PUBLICATIONS

These are some of the most recent publications related to magnetic hyperthermia in general—a few of them published by members of our action. If you miss any publication here, feel free to submit it through the relevant section in the RADIOMAG website by clicking any of the “Submit publication” button (<http://cost-radiomag.eu/Publications>).

Y. Pineiro et al, [Relevant parameters for magnetic hyperthermia in biological applications: Agglomeration, concentration, and viscosity](#)

Z. Boekelheide et al, [Electronic Measurements in an Alternating Magnetic Field for Studying Magnetic Nanoparticle Hyperthermia: Minimizing Eddy Current Heating](#)

I. Astefanoaei et al, [Thermofluid Analysis in Magnetic Hyperthermia Using Low Curie Temperature Particles](#)

L. M. Bauer et al, [High-performance iron oxide nanoparticles for magnetic particle imaging-guided hyperthermia \(hMPI\)](#)

A. Hervault et al, [Doxorubicin loaded dual pH- and thermo-responsive magnetic nanocarrier for combined magnetic hyperthermia and targeted controlled drug delivery applications](#)

J. Wu et al, [Optimization of a coil design for magnetic hyperthermia treatment based on the finite element method](#)

D. Rodrigues et al, [Effect of magnetic hyperthermia on the structure of biofilm and cellular viability of a food spoilage bacterium](#)

B. Nasser et al, [Antenna-type radiofrequency generator in nanoparticle-mediated hyperthermia](#)

X. Wang et al, [Enhanced Intracellular Hyperthermia Efficiency by Magnetic Nanoparticles Modified with Nucleus and Mitochondria Targeting Peptides](#)

A. Skumiel et al, [Uses and limitation of different thermometers for measuring heating efficiency of magnetic fluids](#)

SHORT TERM SCIENTIFIC MISSIONS (STSMS)

[Short term scientific missions](#) offer the possibility of short exchange research placements, allowing to visit a laboratory in another COST country. During the last Grant Period (10/2015-04/2016) 14 STSMS were carried out (check these [here](#)). The received applications for the last call are being evaluated and the outcomes are expected to be released during September. More info on STSMS [here](#).

JOBS AND SCHOLARSHIPS

The [School of Chemistry at the University College Dublin](#) is looking urgently for good recent B.Sc. graduates in chemistry, materials engineering, chemical physics to fill some available scholarships for their MSc on Nanomaterials Chemistry. These are part of the [Intel Masters Student Scholarship Programme](#).

The program can be found [here](#).

The deadline is the 30th of August.

RADIOMAG tips

Collaborative interlaboratory Specific Absorption Rate measurements

Specific absorption rate (SAR) is a key parameter in magnetic hyperthermia, especially when it comes to evaluate candidate nanoparticle systems that may be suitable for this application. In essence, this parameter is a measure of the amount of energy absorbed by a body when exposed to an electromagnetic field. Unfortunately, comparing results from different laboratories is just not possible nowadays due to the broad range of home-made setups used by researchers in the field and the lack of a validated protocol for specifically measuring SAR in magnetic nano-colloids.

Aware of this situation, one of RADIOMAG's priorities is to reach the broadest consensus possible throughout the research community in this regard, thus allowing to shape better agents for magnetic hyperthermia. More specifically, WG2 (*Physical aspects of hyperthermia: standardisation and testing*) is conducting a pan-European interlaboratory experiment, which is the first of its class in our research area. It is intended to be the first step towards achieving one of the most ambitious objectives of RADIOMAG, which is establishing a set of suitable standard ferrofluids for calibration and along with the corresponding calibration protocol. By no means this is already a final, conclusive study or an official interlaboratory proficiency testing similar to those run by certified organizations. Hopefully we will be getting closer to that situation during the course of this action!

WILLING TO JOIN US?

If you are an expert in radiation physics, radiology or instrumentation for magnetic hyperthermia, you can still join us. Please email: [simo at meteo.be](mailto:simo@meteo.be), or [daniel.ortega at imdea.org](mailto:daniel.ortega@imdea.org)