Post doctoral in biomaterials science position at ICCF

A new post-doctoral position in biomaterials science is opened at ICCCF, UMR CNRS 6296 for 12 months starting as soon as possible.

During the last 10 years, the Materials for Health team at ICCF has developped original approaches for the synthesis of complexe nanometric heterostructures consisting of a magnetic core based upon SPIONs and a bioactive glass shell (1-3).
The coupling of the bioactivity of the glass shell with the magnetic properties of the cores allow for the design of multifunctional core-shell nanostructures.
The precise control of the morphology and texture of these materials offered by soft chemistry approach allow to tailor the properties of the resulting biomaterials.

The magnetic core opens the possibility to use these materials for the hyperthermia treatment of bone cancers while also providing a good contrast agent for medical imaging via MRI.
The bioactive glass shell stimulates the tissue regeneration due to its bioactive properties.
Furthermore, the chemical doping of the glass shell with ions of biological interest can bring complementary properties such as antibacterial, anti-inflammatory or pro angiogenic.

During this one year post-doc, optically active ions doping will be studied to reach complete theranostic platform for the complete treatment of bone cancers.
Simple rare earth ions such as Eu^{3+} will be used in a first step allowing both a diagnostic by confocal fluorescence imaging and to be used as a structural probe of the material upon interactions in biological conditions.
In a second step, ions such as Er^{3+} or Yb^{3+} sensitized Er^{3+} ions will be use to permit excitation in the tissue spectral transparency window.

We look for a materials chemist with some experience in soft chemistry and sol-gel synthesis or eager to learn about it.
A sensibility to the applicative field, biomaterials is requested. Some of the characterization techniques should be mastered (TEM, DLS, vibrational spectroscopy, optical spectroscopy, magnetic characterization, XRD, ICP-AES,…)

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1 F. Vergnaud et al., Advanced Engineering Materials (2026), 28(4), 2501277
2 F. Vergnaud et al., Biomaterials Science (2022), 10(14), 3993-4007
3 X. Kesse et al. ACS Applied Materials and Interfaces (2020) 12, 47820-47830