



## Silica based nanostructured biomaterials for hiperthermia and as MRI contrast agents

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### Abstract:

Recently, in the field of materials science with medical applications the major challenge is the synthesis of new materials that can be used for both diagnosis and therapy, especially in the treatment of cancer disease. Magnetic Resonance Imaging (MRI) is a non-invasive powerful tool used in medicine to diagnose tumours, nerve and meniscus lesions or blood vessels condition. In certain situations, the use of contrast agents is required for diagnostic accuracy. Contrast agents that besides contrast properties in magnetic resonance can also be used for targeted treatments of the diseases could be called "theranostic" MRI Contrast agents. The silica based particles have being obtained by sol-gel, freeze drying and spay drying (1-3) methods. Structural and morphological characterization of the obtained samples were realized by means of Differential Thermal Analysis and Thermogravimetric Analysis (DTA/TGA), Transmission and Scanning Electron Microscopy (TEM and SEM), Fourier-Transform Infrared (FTIR) spectroscopy, X-ray Photoelectron Spectroscopy (XPS), Magic Angle Spinning-Nuclear Magnetic Resonance (MAS-NMR) and Electron Paramagnetic Resonance (EPR) spectroscopies. Their properties as MRI contrast agents were tested, in vitro and in vivo, by using a preclinical 7 T Bruker scanner.

### Biography:

Simion Simon is Emeritus Profesor at Babes Bolyai University. He is the director of Interdisciplinary Research



Institute on Bio- Nano- Sciences. As researcher he published more than 250 papers in internationally scientific journals, receiving more than 2000 citations (excluded the citations of all authors). The Journal of Molecular Structure dedicated to him o special issue entitled.

### Publication of speakers:

1. Simion Simon is Emeritus Profesor at Babes Bolyai University. He is the director of Interdisciplinary Research Institute on Bio- Nano- Sciences. As researcher he published more than 250 papers in internationally scientific journals, receiving more than 2000 citations (excluded the citations of all authors). The Journal of Molecular Structure dedicated to him o special issue entitled.
2. L. Chiriac, M. Todea, A. Vulpoi, M. Muresan-Pop, R.V.F. Turcu, S. Simon, Freeze drying assisted sol-gel derived silica based particles embedding iron: synthesis and characterisation, *J. Sol-Gel Sci. Technol.* 2018, 87 (1) 195-203.
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