

5<sup>th</sup> Edition of International Conference on  
**Clinical Oncology and Molecular Diagnostics**  
&  
5<sup>th</sup> World Congress on **Medical Imaging & Clinical Research**  
June 17-18, 2019 Rome, Italy



## *Enza Torino*

*University of Naples Federico II, Italy*

### **Hydrodentcity to enhance relaxivity of MRI contrast agents**

Recently, rational design of a new class of contrast agents (CAs), based on biopolymers, have received considerable attention in Magnetic Resonance Imaging (MRI) at diagnostic field. Several strategies have been adopted to improve relaxivity without chemical modification of the commercial CAs, however, understanding the MRI enhancement mechanism remains a challenge. A multidisciplinary approach is used to highlight the basic principles ruling biopolymer-CA interactions in the perspective of their influence on the relaxometric properties of the CA. The study of polymer-CA solutions reveals that thermodynamic interactions between biopolymers and CAs could be used to improve MRI Gd-based CA efficiency. Several techniques can be used to obtain nanoparticles. The effect of the hydration of the hydrogel structure on the relaxometric properties, called hydrodentcity and its application to the nanomedicine field, is exploited. The explanation of this concept takes place through several key aspects underlying biopolymer-CAs interactions mediated by the water. In addition, hydrodentcity is applied to develop gadolinium-based polymer nanovectors with size around 200 nm with improved MRI relaxation time (10-times). The experimental results indicate that the entrapment of metal chelates in hydrogel nanostructures offers a versatile platform for developing different high performing CAs for disease diagnosis.

### **Biography**

Enza Torino has worked as a Postdoctoral Researcher at Italian Institute of Technology- Center for Advanced Biomaterials for Health Care coordinated by Prof. Paolo Antonio Netti- at Theranostic Engineered Nanoshuttle (TeNs) Platform, where she designs new processes to obtain novel polymer-based engineered nanoshuttles for *in vivo* application in diagnostic and therapy. Her interest has always been in obtaining the nanostructures and the exploitation of their fascinating properties. After some experiences in foreign countries, from 2010 to 2016, she is currently working as a Researcher at the University of Naples "Federico II" in the Department of Chemical, Materials and Production Engineering on the design of multimodal imaging nanoparticles for theranostics. She is also leading three spin-off projects in life sciences based on patented technologies.

[enza.torino@unina.it](mailto:enza.torino@unina.it)

### **Notes:**