

Synthesis of a novel and Gd- Containing contrast agent

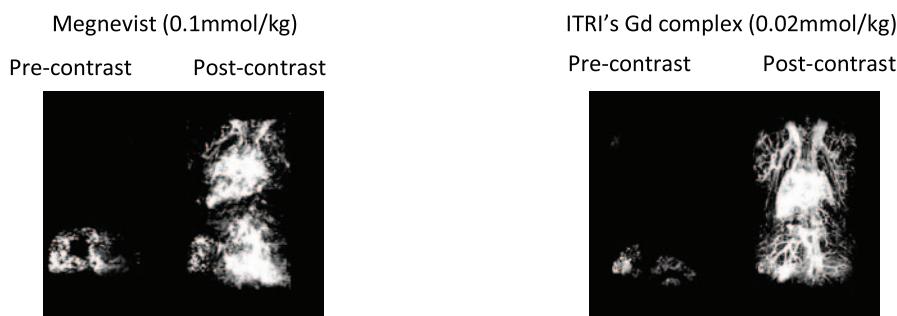
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Magnetic Resonance Imaging (MRI) is one of the most important noninvasive diagnostic techniques used to visualize soft tissue anatomy and disease, such as tumors, which in part can be attributed to the rapid development of MRI contrast agents. The low molecular weight T1-weighted MRI contrast agents suffer from their nonspecificity, rapid renal excretion and relatively low relaxivity. Hence, the need for the macromolecular gadolinium ions carriers becomes increasingly important. In this study, a new type contrast agent of cyclosiloxane core with five arms has been synthesized starting from pentamethylcyclopentasiloxane, 1,5-Pentadiol and conjugated with diethylenetriaminepentaacetic acid (DTPA) followed by chelating with Gd³⁺ ions. The ionic relaxivity values are (in mM⁻¹S⁻¹) $r_1 = 31.2$, $r_2 = 33.6$ (No. of Gd by ICP-AES = 4.59). MR imaging was performed on a 4.7-T Biospec 47/40 MR scanner with an active shielding gradient. T1-weighted images (T1WI) were obtained before and after an injection of Gd-dendrimer at a dose of 0.02 mmol/kg on male bulb-c mice. The figure below shows blood vessel of mice with the sharp signals after the injection of the novel contrast agent and demonstrates the newly synthesized Gd complex has higher sensitivity to compared with commercially product, MagnevistTM.



Biography

Ming-Chun Lin has completed his Ph.D in 2007 from National Tsing Hwa University of Taiwan. He is working in Industrial Technology Research Institute in Taiwan as a research scientist. His current research interest is biocompatible polymers for biomedical applications.

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The influence of sea sand on the service life of reinforced concrete structures

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Corrosion reinforcement steel in concrete is a major problem in assessing the durability of structures. The aim of our work is to generate qualitative information at the influence of sea sand to the north of Morocco on the initiation and propagation of corrosion and to determinate the relationship between the concentration of chlorides and the service life of structures. The evolution of corrosion is monitored by the electrochemical method on reinforced mortar specimens. The impressed current method is used to accelerate corrosion. The corrosion initiation is determined by the electrode potential drop measured by the method of Half-Cell. These results allow to predict the service life of reinforced concrete structures.

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