



MRI-visible polymer based on poly(methyl methacrylate) for imaging applications

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Résumé en anglais	<p>Macromolecular contrast agents are very attractive to afford efficient magnetic resonance imaging (MRI) visualization of implantable medical devices. In this work, we report on the grafting of a Gd-based DTPA contrast agent onto a poly(methyl methacrylate) derivative backbone by combining free radical polymerization and copper-catalyzed azide-alkyne cycloaddition (CuAAC). Using free radical polymerization, poly(methyl methacrylate-co-propargyl methacrylate) copolymers were prepared with a control of the ratio in propargyl methacrylate monomer units. The synthesis of a new azido monofunctionalized DTPA ligand was also reported and characterized by ^1H NMR and mass spectroscopy. After complexation with gadolinium, this ligand has been grafted on the polymer backbone by click chemistry reaction. The obtained macromolecular contrast agent was then coated on a polypropylene mesh using the airbrushing technique and the mesh was assessed for MRI visualization at 7 teslas. The polymeric contrast agent was also tested for cytocompatibility and stability to assess its suitability for biomedical applications.</p>
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