

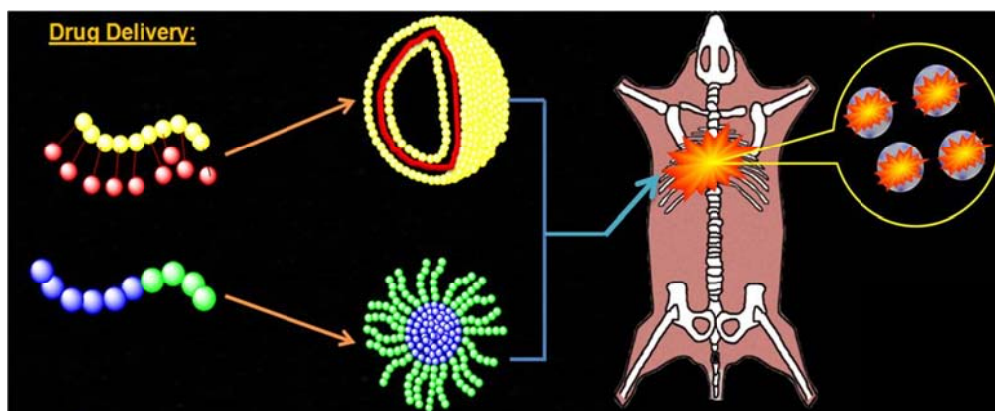
# Polynorbornene Derived Multi-Functional Nano-vehicles for the Potential Application in Cancer Therapy

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**Abstract:** Polymer based antitumor pro-drugs that have potential application in the field of drug delivery are being developed. Controlled/living polymerization techniques such as ROMP are used to synthesize random and block copolymers where the composition of the copolymer length that contain drugs can be controlled. The advantage of ongoing work in designing pro-drugs is that one block is linked to the nano-particle/contrast agent so that the drug-carrier's path can be influenced/monitored by external force, for example, magnetic force, thus drug delivery can be targeted. Preliminary stimuli responsive cleavage of drug from the polymer is studied using spectroscopic and chromatographic techniques. To prove the MRI capabilities of copolymer nano-aggregates, NMR experiment is performed at room temperature. Cell viability studies suggest the biocompatibility nature of the copolymer. NMR as well as epi-fluorescence microscope experiments clearly demonstrate the dual-imaging ability of the newly designed copolymer. The much higher relaxivity ratio ( $r_2/r_1$ ) of the present method clearly establishes the superiority of our system as one of the best contrast agent known to the practitioners of magnetic resonance imaging.



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