Multifunctional magneto-polymeric nanohybrids for targeted detection and synergistic therapeutic effects on breast cancer

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Novel multifunctional magneto-polymeric nanohybrids (MMPNs) were synthesized using ultra sensitive MnFe2O4 nanocrystals as MR contrast agents, chemotherapeutic agents, and encapsulating amphiphilic block copolymer for targeted detection via MRI and synergistic therapeutic effects on breast cancer. The MMPNs demonstrated ultrasensitive targeted detection in MR images of in vitro and in vivo models. Furthermore, the HER-modified MMPNs showed excellent synergistic effects for inducing breast cancer cell death.