Electronic Supplementary Information (ESI)

Thermoresponsive Magnetic Colloidal Gels via Surface-Initiated Polymerisation from Functional Microparticles.

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Figures

Table

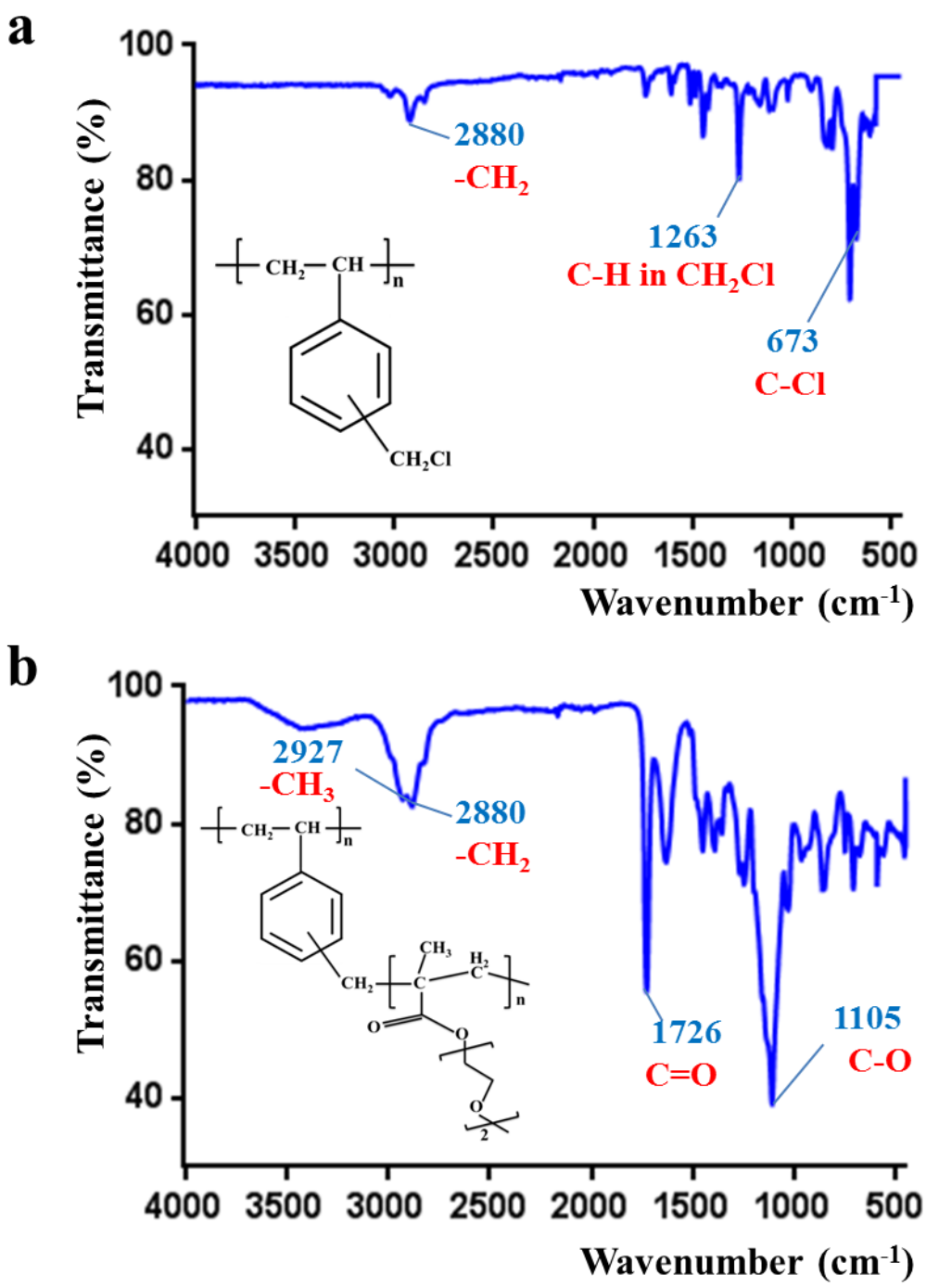

Figure S1 ATR-FTIR spectra of (a) PCMS and (b) PCMS- PDEGMA microspheres.

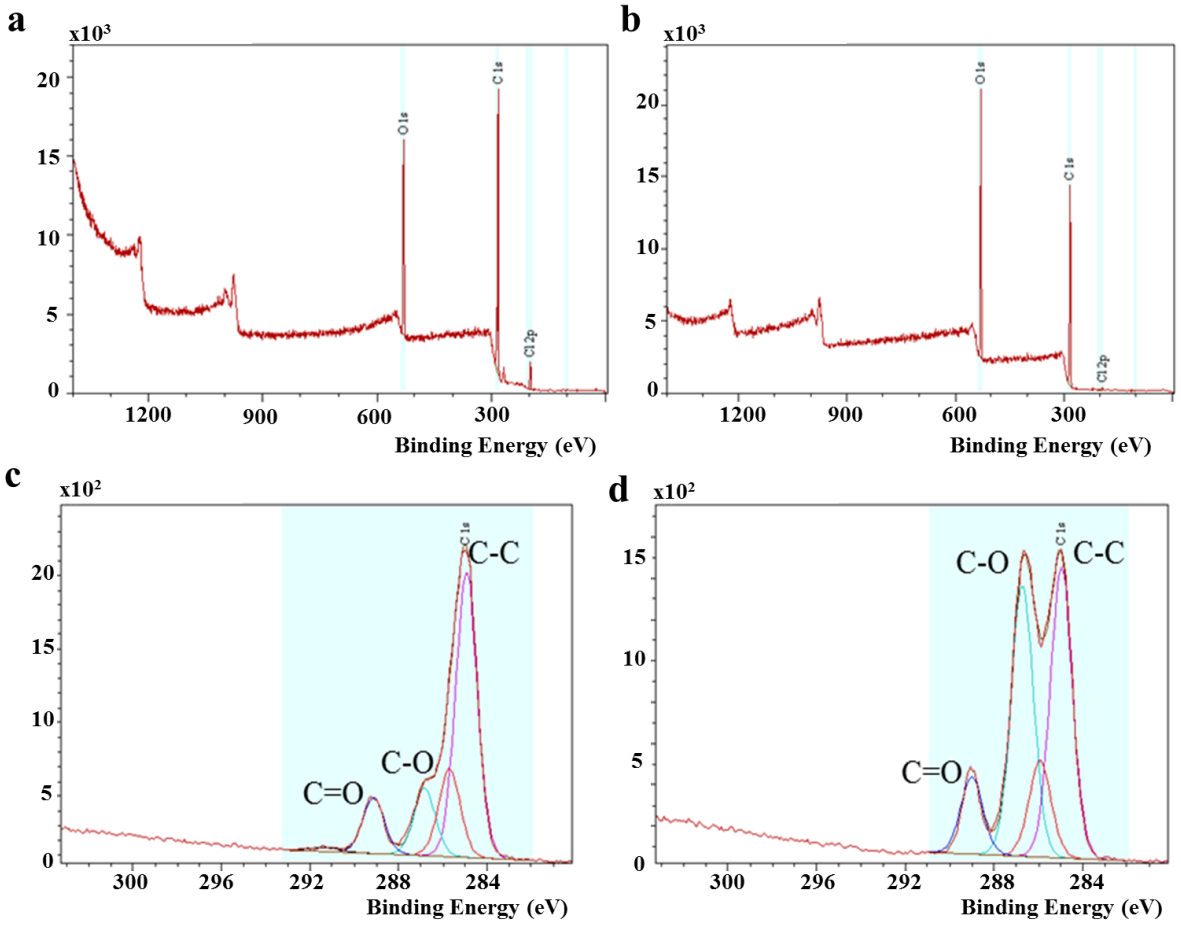

Figure S2 XPS survey spectra of (a) PCMS and (b) PCMS- PDEGMA. (c) and (d) are high resolution carbon spectra of PCMS and PCMS- PDEGMA, respectively. show a sharp increase in the proportion of methoxy group corresponding to PDEGMA after grafting. Data analyses and curve fitting were carried out using CASAXPS software (version 2.3.16) (Casa software ltd, Teignmouth, United Kingdom). For high resolution carbon spectra all scans were charge corrected to C 1s at 284 ev.

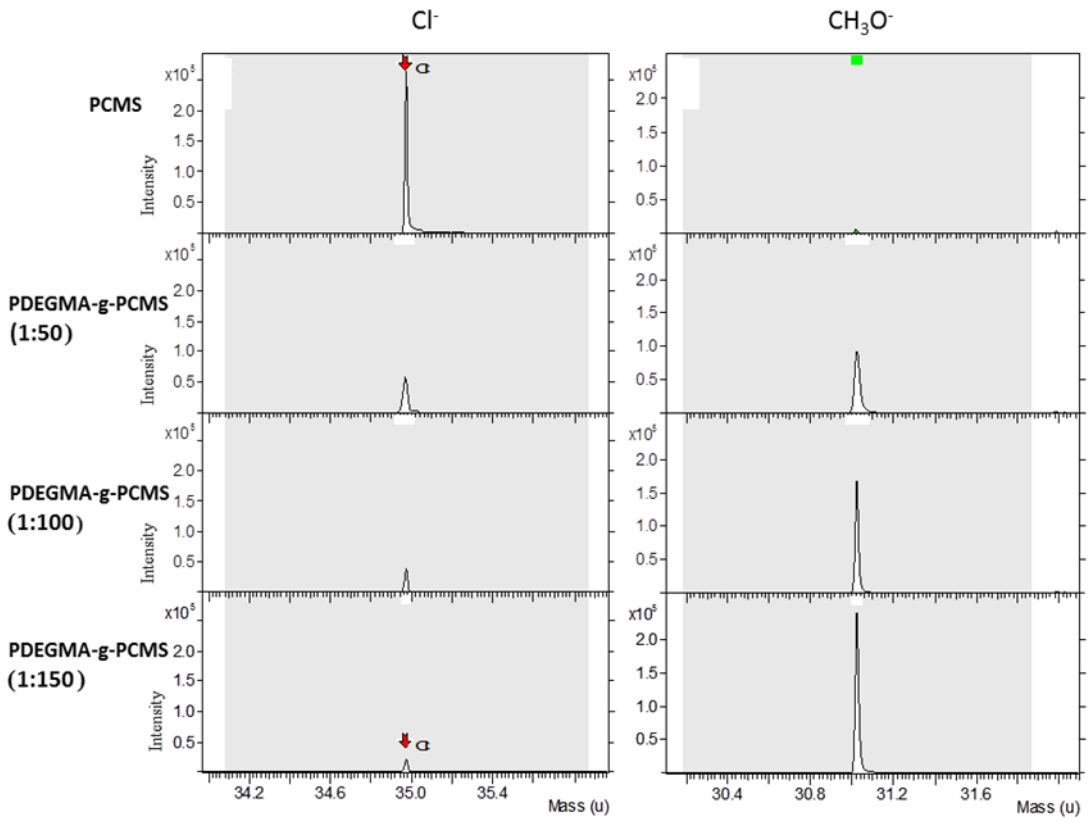

Figure S3 ToF-SIMS mass spectra of Cl^- and $CH3O^-$ present on the surface of PCMS and PCMS- PDEGMA (with different initiator: monomer ratio use during grafting reaction). The spectra were obtained in the negative ion mode.

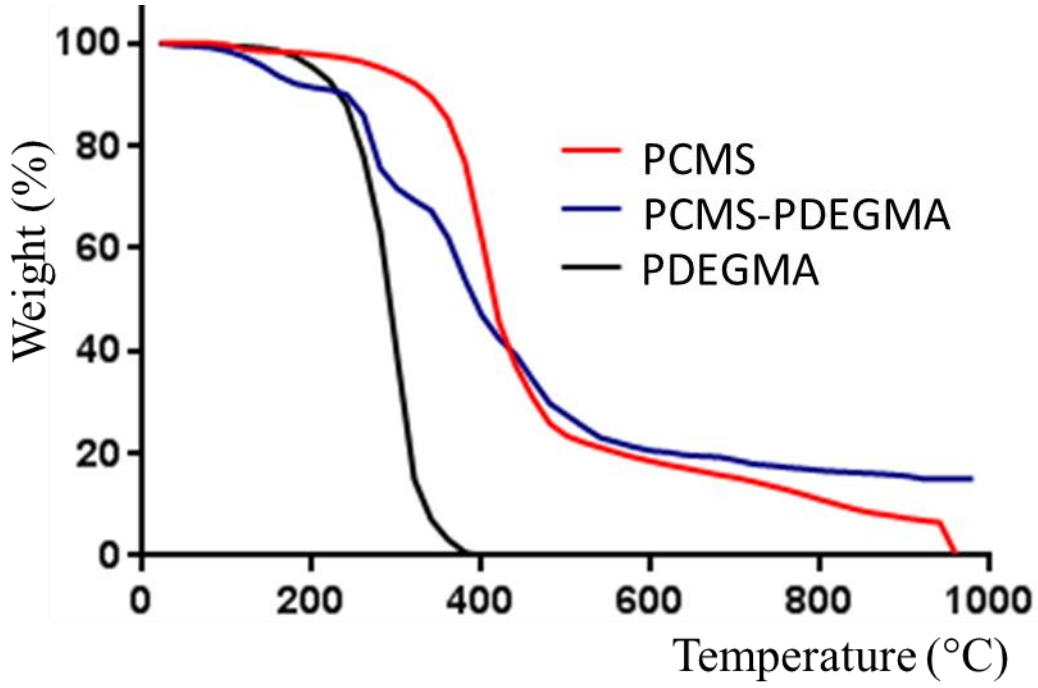

Figure S4 TGA thermogram shows the decomposition of PCMS microparticles, magnetic PCMS-PDEGMA microspheres (15% magnetite was loaded), and linear PDEGMA with temperature.

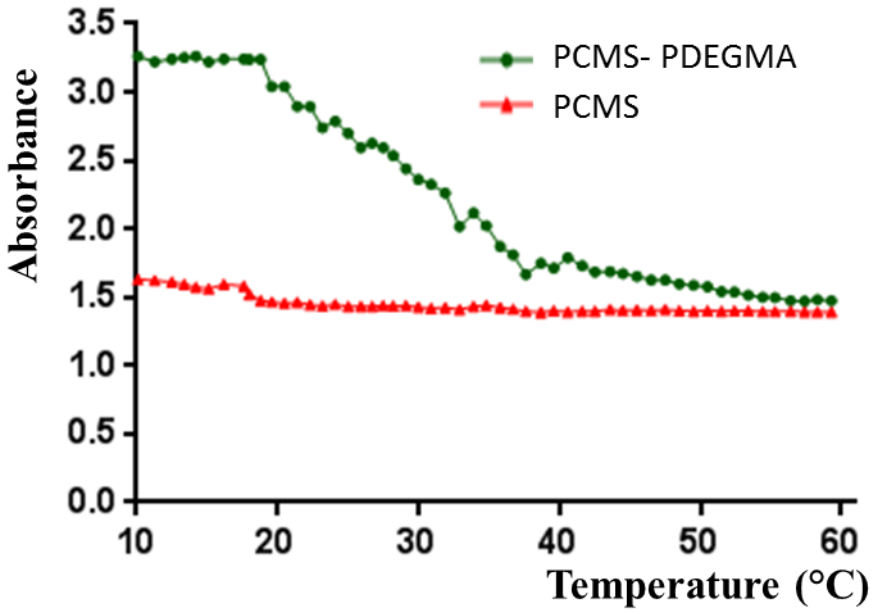

Figure S5 Temperature dependent turbidity measurement, shows the variation of absorbance as temperature increase of dilute suspensions of PCMS- PDEGMA and PCMS microspheres. Absorbances of the samples were measured at a wavelength of 550 nm

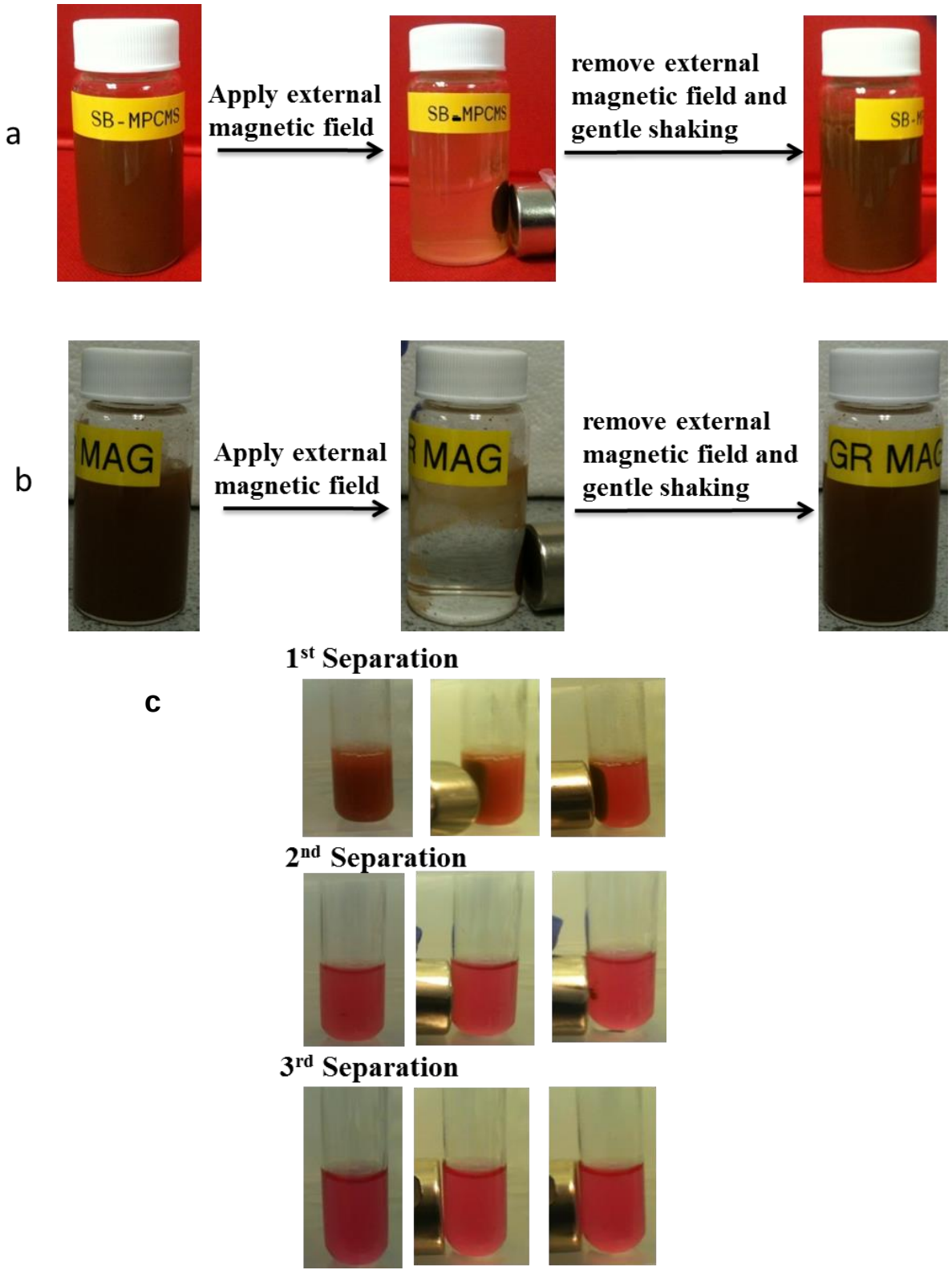

Figure S6 (a) and (b) photographic images of aqueous suspension of magnetic PCMS and magnetothermally responsive microspheres (magnetic PDEGMA-g-PCMS). It is observed that the particles are strongly attracted by external magnetic field and easily re-dispersed by removing this magnetic field and gentle shaking. In (c) images show magnetic separations over three separation cycles.

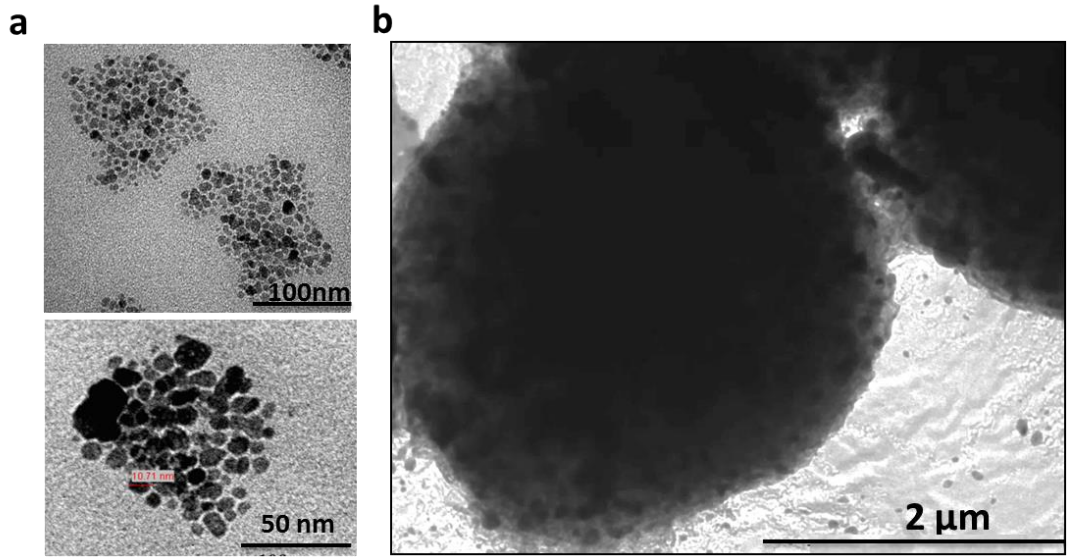

Figure S7: TEM images of (a) magnetite nanoparticles prepared by a co-precipitation method, showing individual particles with average diameters of ~10 nm. (b) Magnetic loaded microsphere shows the distribution of magnetite nanoparticles within the microsphere.

Table S1 The reversible gelation (+) and flow (-) of aqueous suspensions of PCMS-PDEGMA, PCMS and Magnetic PCMS- PDEGMA particles, at 37°C, as determined by the tube inversion assay.

Particle concentration / Particle type	10%	15%	20%	25%	30%	35%	40%
PCMS-PDEGMA in medium (DMEM)	-	-	+	+	+	+	paste
PCMS-PDEGMA in DW	-	-	+	+	+	+	paste
Magnetic PCMS-PDEGMA in medium (DMEM)	-	-	-	+	+	+	paste
PCMS in medium (DMEM)	-	-	-	-	-	-	-

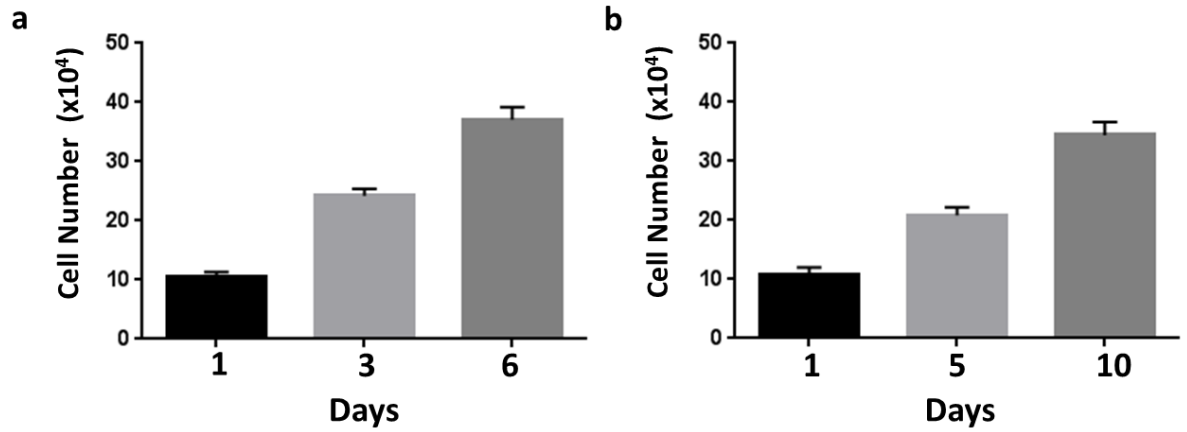

Figure S8 Proliferation of (a) 3T3 cells and (b) MSCs in tissue culture flasks, respectively. Cell numbers were measured by the PrestoBlue assay on day 3 and 6 for 3T3 cells and on day 5 and 10 for MSC.

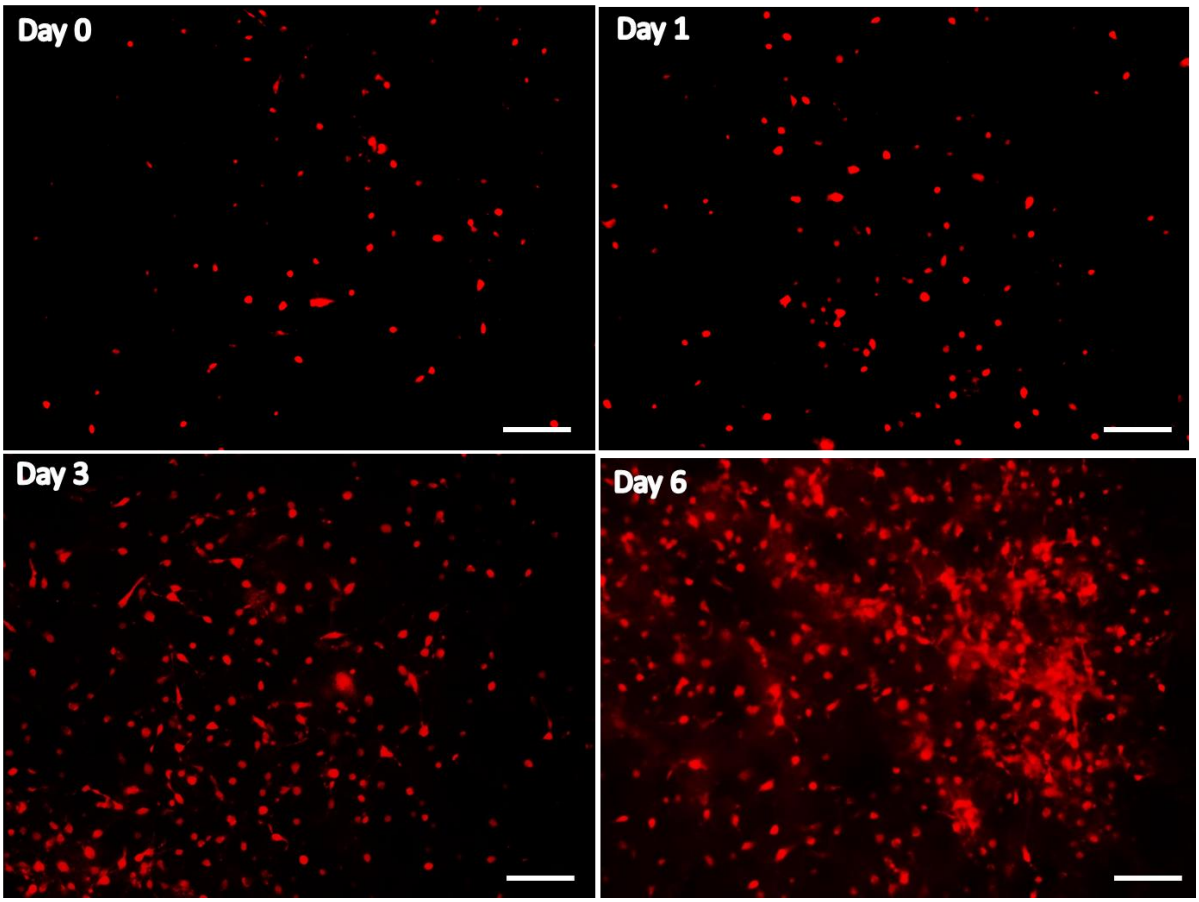

Figure S9 Fluorescence Microscopy Images of RFP-3T3 cells in 3D scaffold on day 0, 1, 3, and 6 post-seeding. Scale bars - 100 µm.

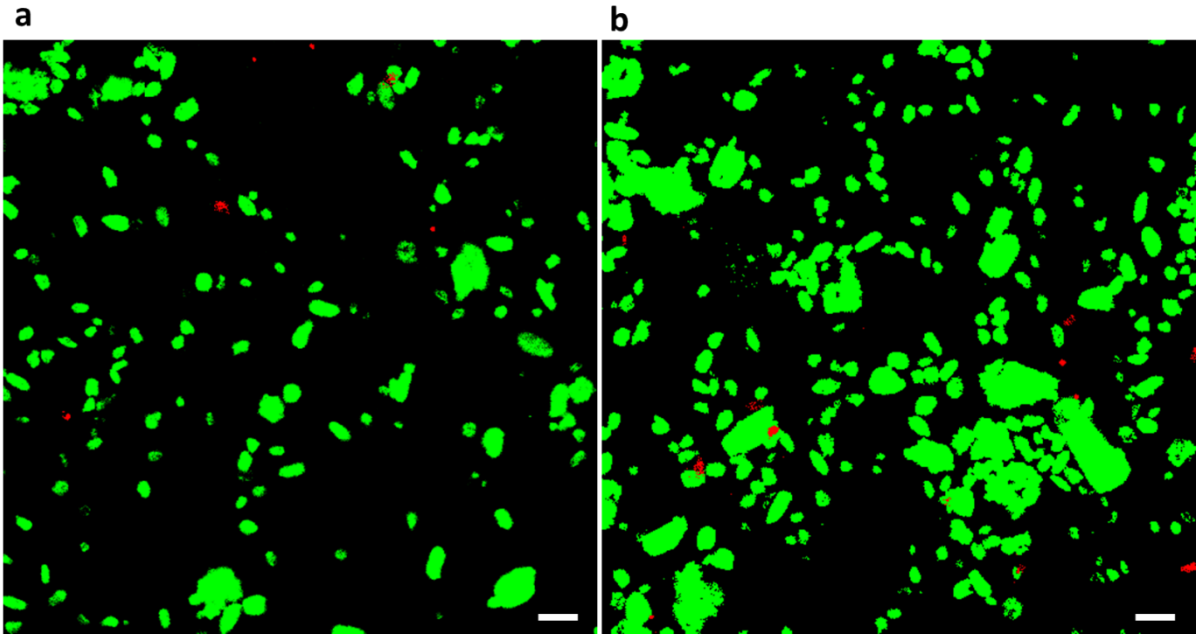

Figure S10 Confocal microscopic images represent Live/Dead assay of MSC grown within the colloidal gel scaffold at (a) 5 day and (b) 10 day. Green denotes cells staining positive for calcein AM (live) and red shows staining with ethidium homodimer (dead). Scale bars - 100 µm.