Text S1: Chemical synthesis of IONPs

In order to compare the biocompatibility of bio-IONPs with chemically synthesized IONPs, the magnetite nanoparticles were prepared via chemical co-precipitation method. $FeCl_3 \cdot 6H_2O$ (2 mmol) and $FeCl_2 \cdot 4H_2O$ (1mmol) were dissolved in Milli-Q water (150 mL) and heated to 85º. Then 20 mL of 25% ammonium hydroxide was added quickly in to the solution under vigorous stirring (800 rpm). Oleic acid (OA, 3 mL) was added after 30 minutes and the mixture was heated to 80°C for another hour. The resulting nanoparticles were collected from the solution by magnetic separation and washed several times with ethanol, then dried under vacuum conditions at 60°C for 4 hours.

The surface of the chemically synthesized iron oxide nanoparticles (C-IONPs) was modified by the dropwise addition of PEG-6000 (15 µL of 1% w/v: 10 mg/mL) to the freshly prepared nanoparticle solution.

Text S2: Cell culture

HeLa cells were maintained in Dulbecco's modified Eagle's medium (DMEM) supplemented with 10% heat inactivated fetal calf serum (GIBCO), penicillin (100 U/mL) and streptomycin (100 µg/mL) at the 37 ºC in a humidified atmosphere containing 5% CO_2. Hela cells at a concentration of 1.5×10^5 cells/mL were grown in a 25 cm^2 flask in culture medium.

Text S3: SRB assay

Cells were inoculated in 96-well plate (10^5cells/well) for 48 hours before treatment with the compound(s). SPIONs were diluted with DMEM containing 10% FBS. Cells were

exposed to different dilutions (0-150 µg/mL) of the SPIONs by replacing the medium with fresh medium and incubated for 48 hours.

Cells were fixed (after incubation at 37ºC and in atmosphere of 5% CO_2) by gentle addition of 50% pre chilled trichloroacetic Acid (TCA) and incubated again at 4°C for 1hour. The assays plates were rinsed and dried with deionized water. After 48 hours cells were fixed, washed, and stained for 30 minutes with 0.4% (w/v) SRB dissolved in 1% acetic acid. Unbound dye was removed by four washes with 1% acetic acid, and attached stain was recovered with *tris*–EDTA (10 mM, pH 8.0) buffer. Colour intensity was measured in an ELISA reader at wavelength 540 nm.

Text S4: Temperature measurements of SPIONs undergoing irradiation

Different concentrations of SPIONs were added (1, 5 and 10 mg/mL) to water supplemented with 10% FBS, respectively. No HeLa cells were added. They were exposed to light for 10 minutes with temperature probe, and the rise in temperature was recorded with Eutech temperature probe at intervals of 1 minute at ambient environment. The control was also exposed to light without any nanoparticles.

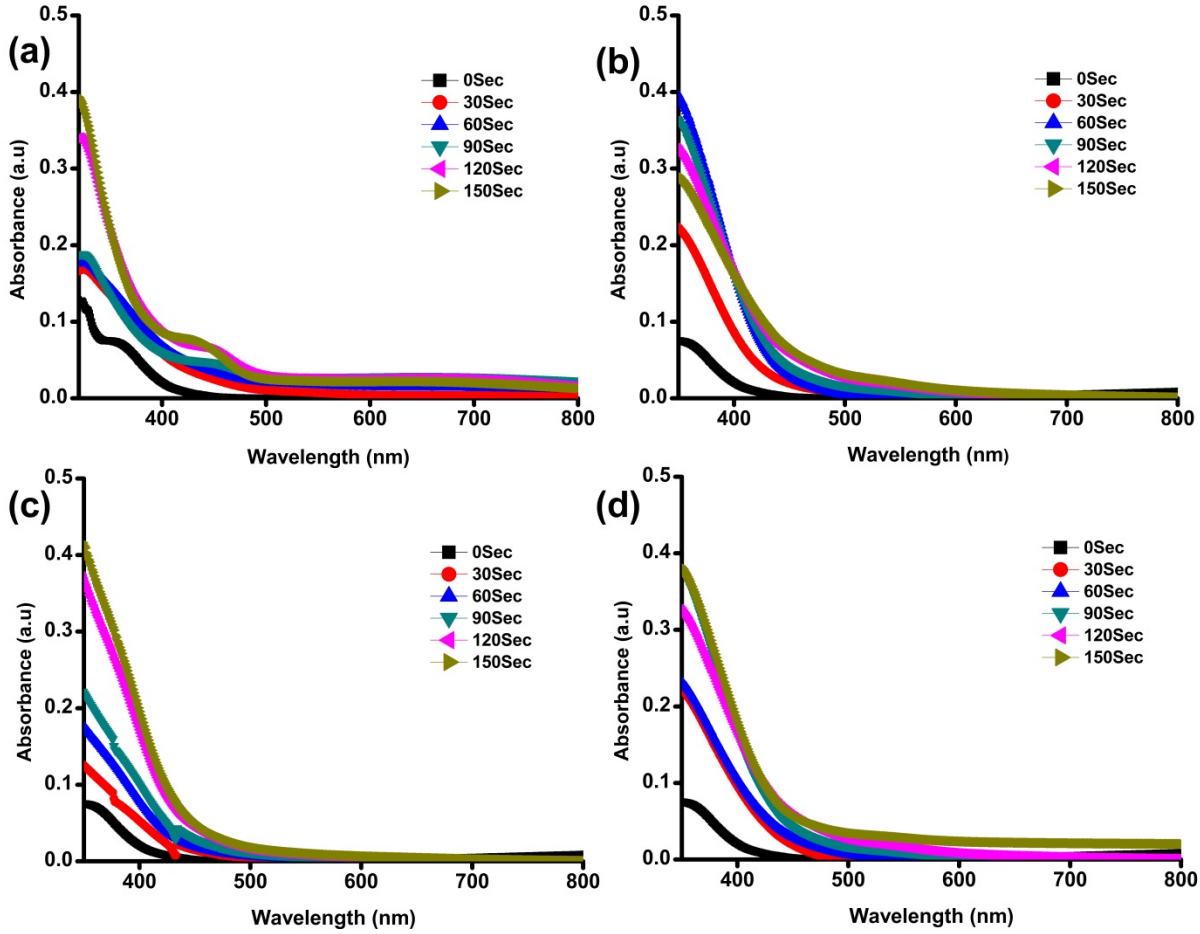


Figure S1 UV-Visible spectra showing microwave assisted green synthesis of bio-SPIONs. Spectra were collected after every 30sec of MW irradiation for a total reaction time of 150sec. (a) PP-SPIONs (b) LP-SPIONs (c) OP-SPIONs and (d) AP-SPIONs.

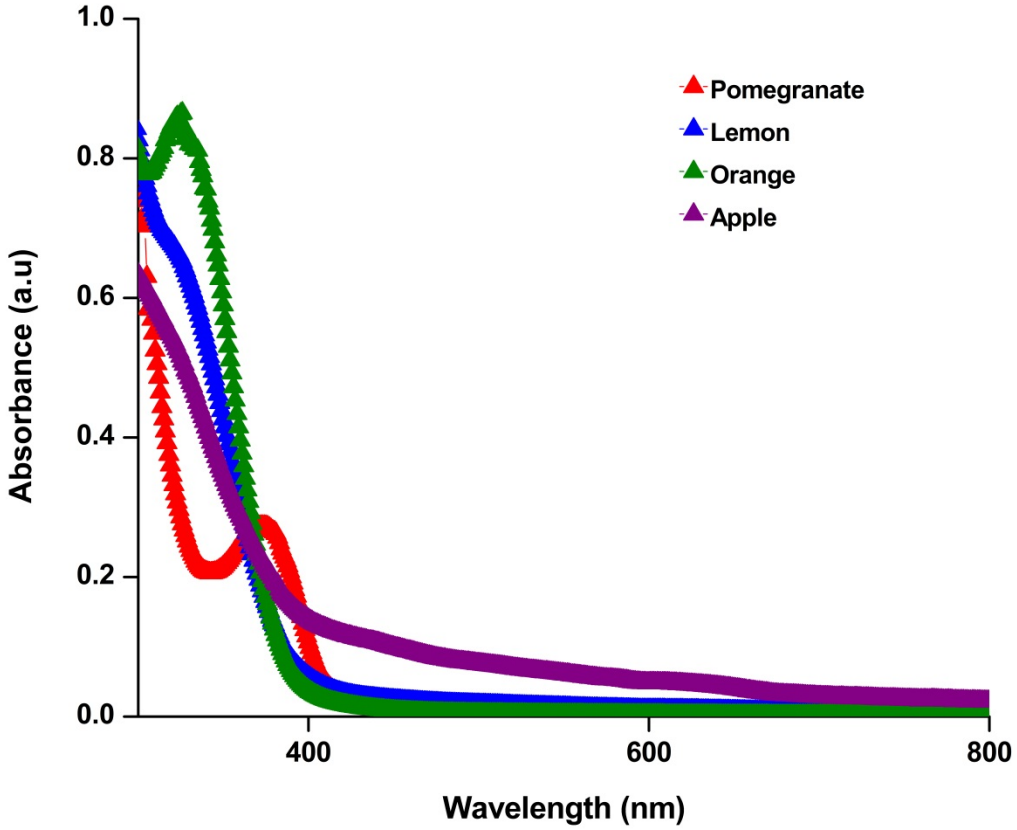


Figure S2 UV-Vis spectrum of fruit extracts showing the maximum absorbance at 280nm (apple), 280nm (lemon), and 282 nm (orange), 373nm (pomegranate).

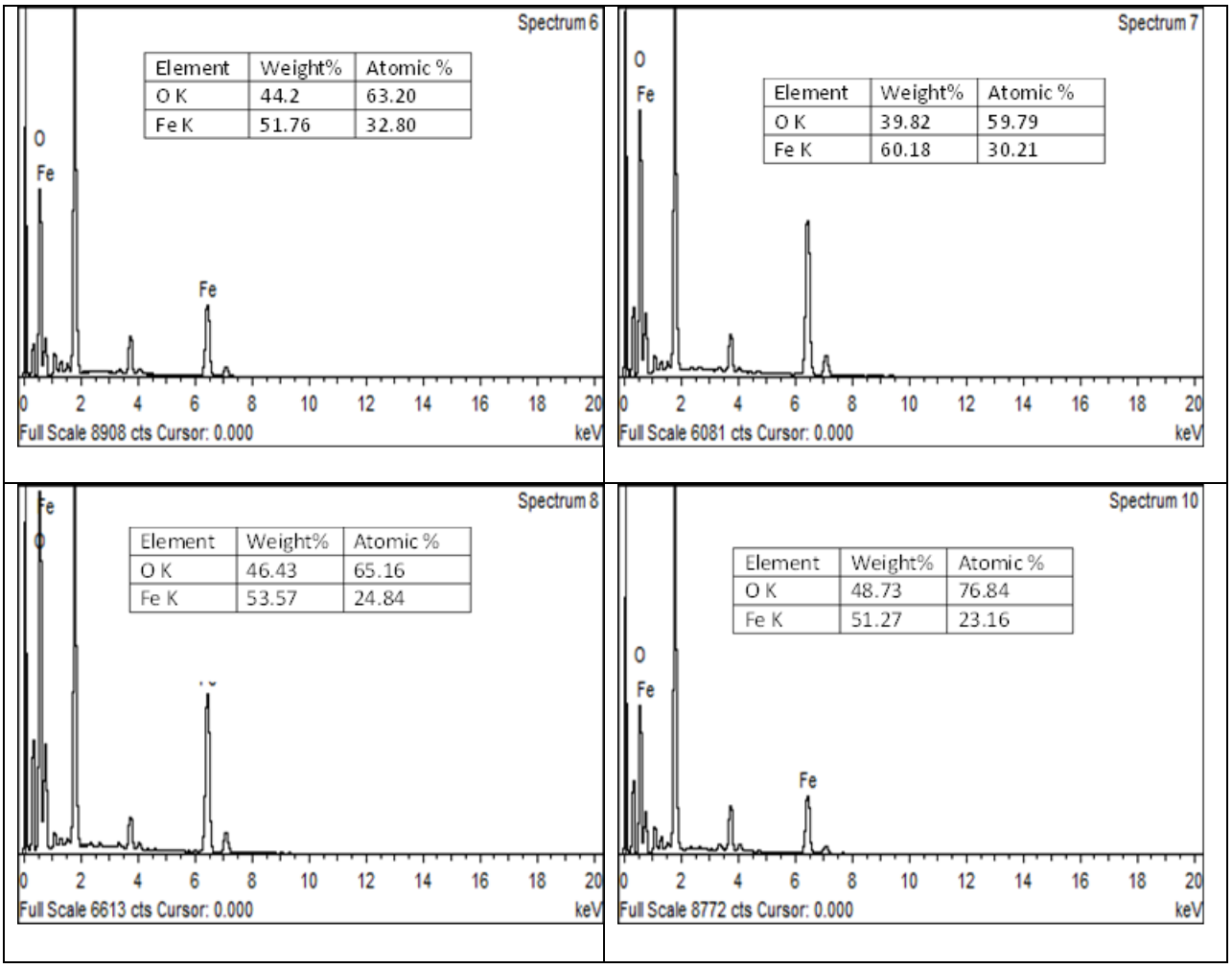


Figure S3 The surface composition of naked SPIONs was designated by energy-dispersive X-ray spectroscopy. The presence of iron and oxygen can be seen in all of the samples, with iron abundance more than oxygen.

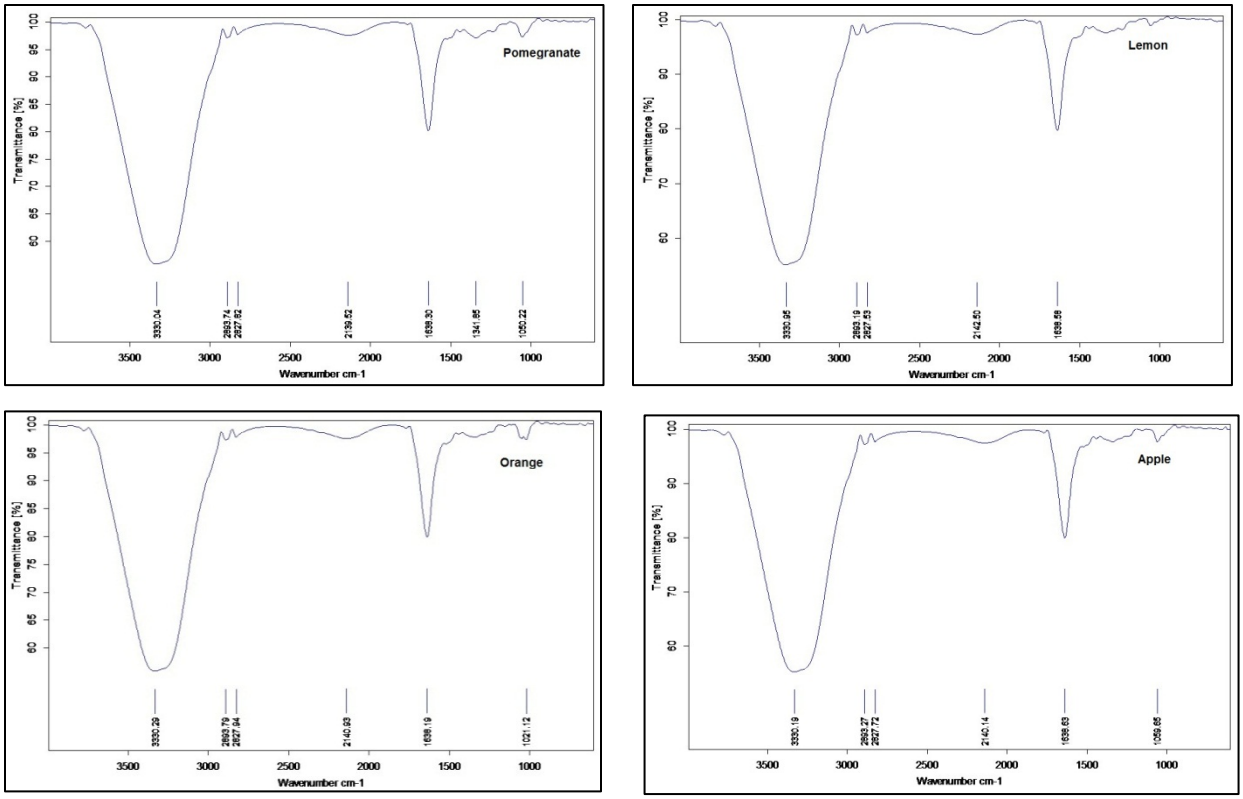


Figure S4 FTIR spectra of peel extracts of pomegranate, lemon, orange, lemon and apple.

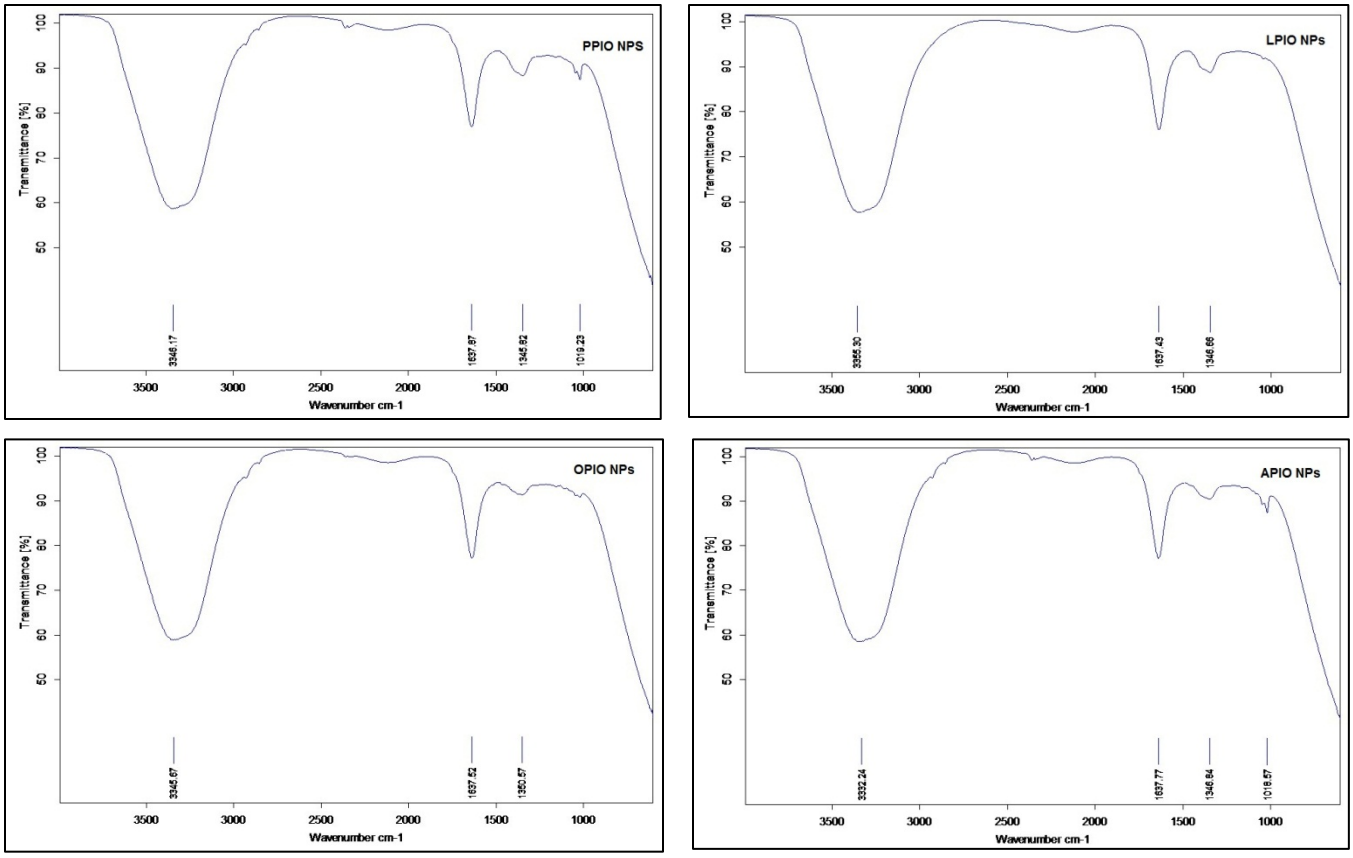


Figure S5 (a) FTIR spectra of PP-SPIONs, LP- SPIONs, OP- SPIONs and AP- SPIONs

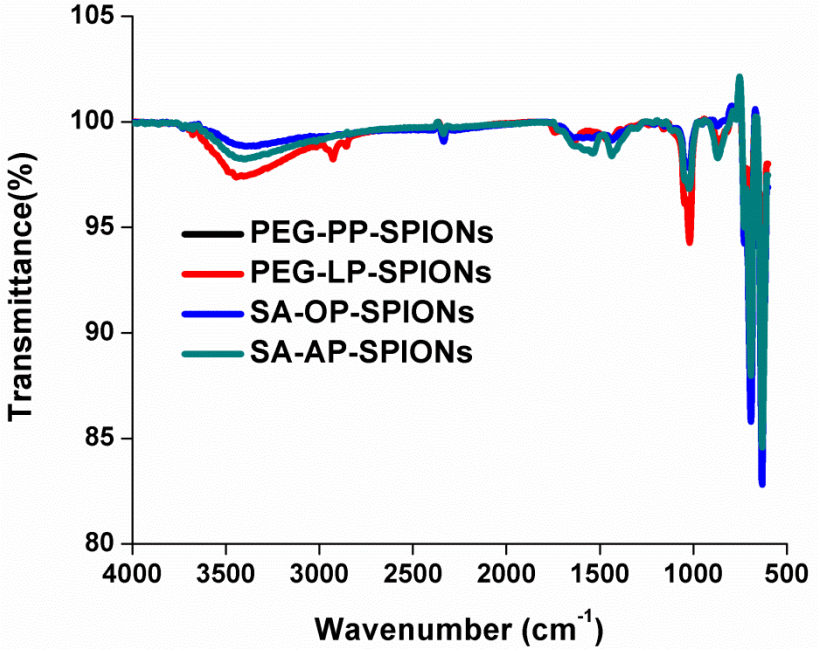


Figure S5 (b) FTIR spectra of (c) PEG- SPIONs and (d) SA-SPIONs functionalized through carbodiimide chemistry.

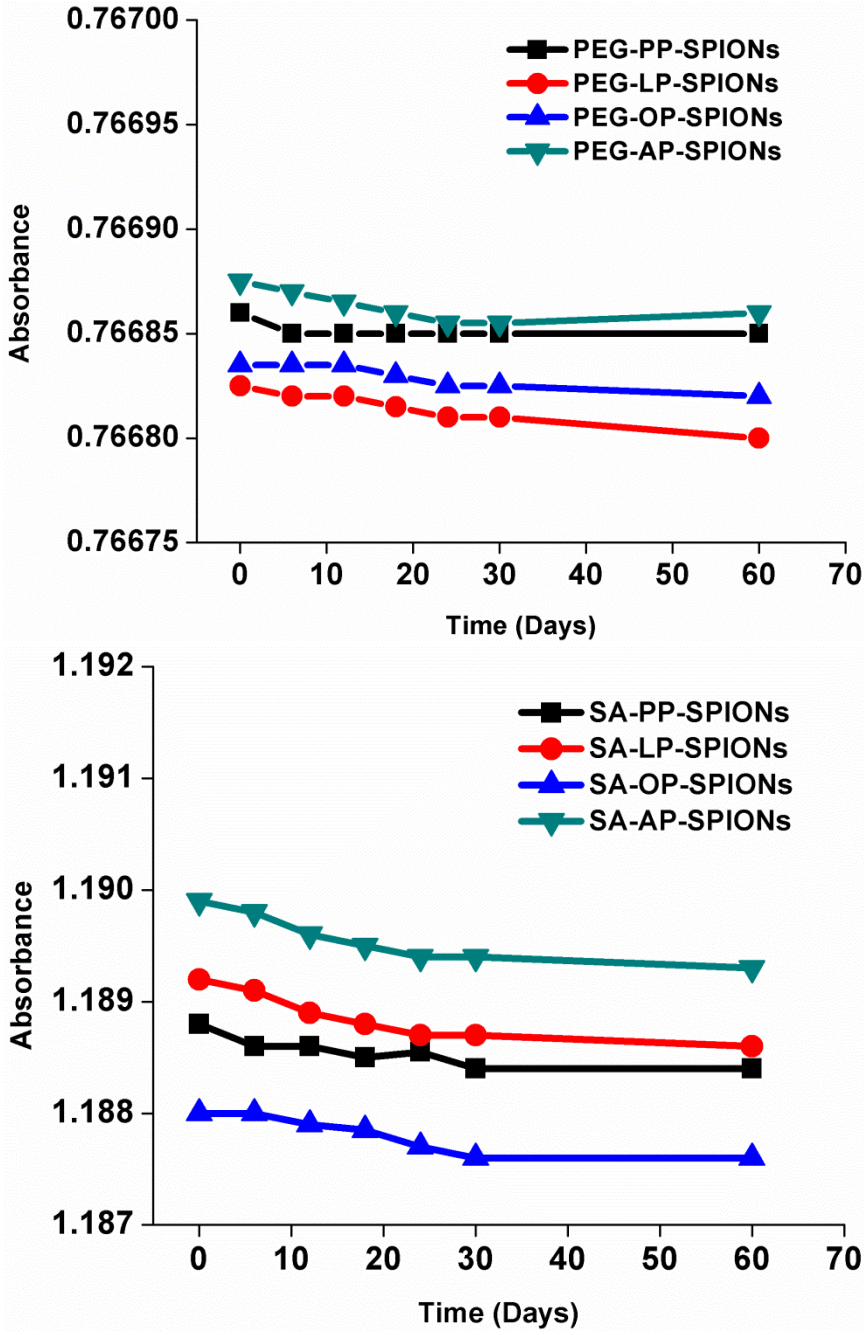
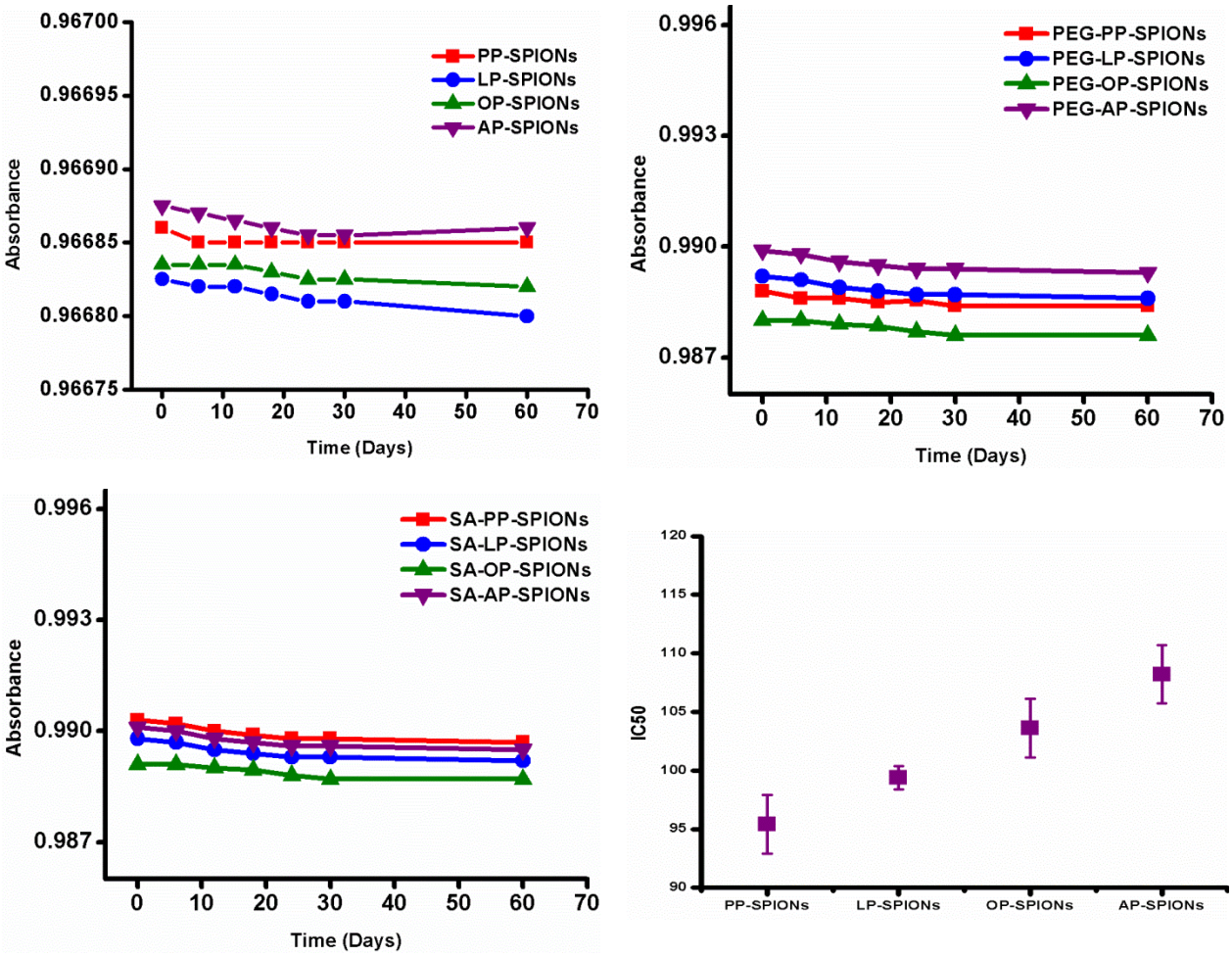


Figure S6 Stability studies of (a) PEG-SPIONs and (b) SA-SPIONs functionalized through carbodiimide chemistry.



FigureS7 Stability studies of as prepared (a) PEG-SPIONs and (b) SA-SPIONs functionalized through MW incubation (c). IC_{50} values derived from half maximal inhibitory concentration (IC_{50}) SPIONs against HeLa cells when exposed to light after 24 hours.

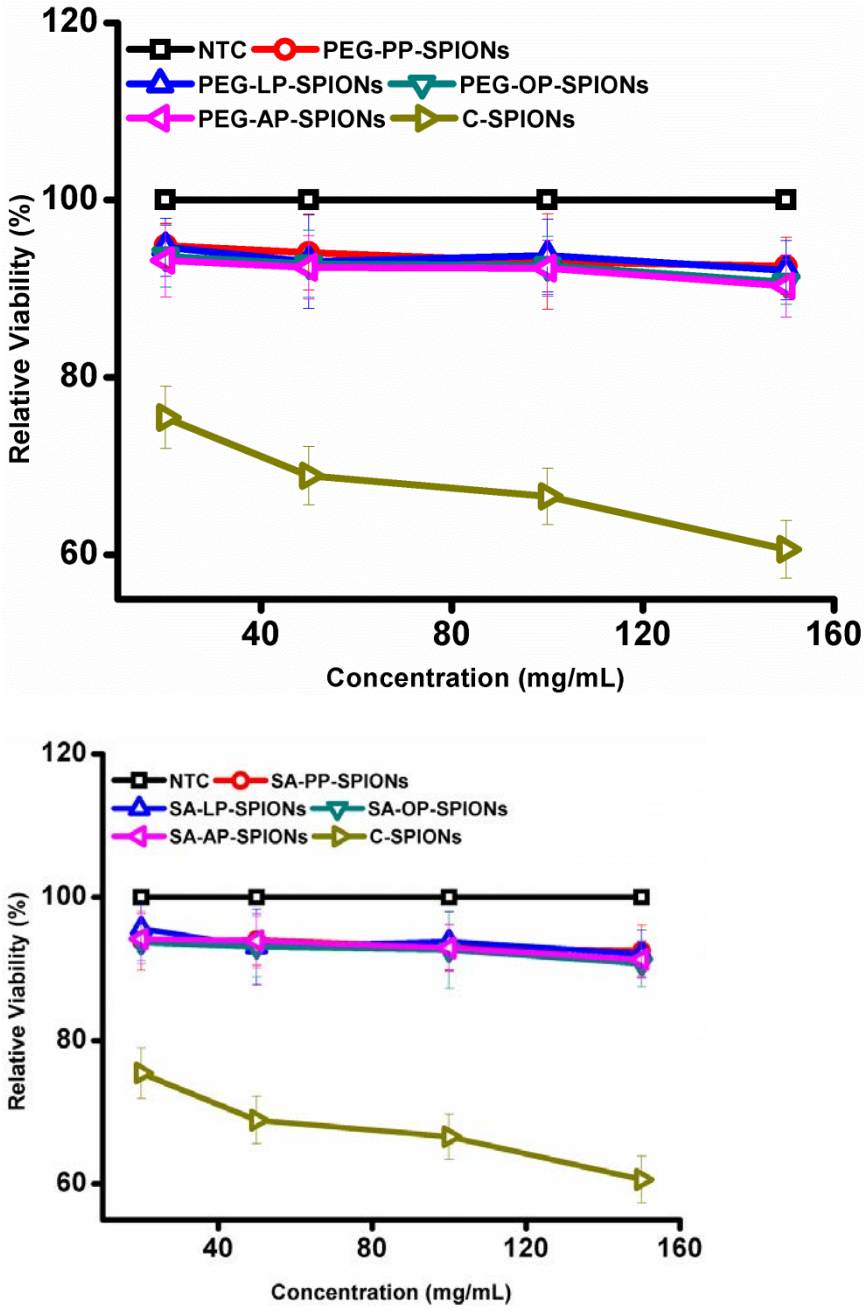


Figure S8 Relative cell viability curve of PEG-SPIONs and SA-SPIONs functionalized through carbodiimide chemistry. Percent viabilities (mean ± SD) were calculated ($P < 0.05$; two tailed t-test).

Table S1: Putative Compounds in Peel Extracts found from GC/MS Analysis.[1-7]

Pomegranate	Lemon	Orange	Apple
2-Hydroxycyclopent-2-en-1-one	p-menth-1-en-4-ol (4-Terpineol)	n-octanal	4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-5-methyl-
Glycerin	α-Terpineol	1-octanol	4H-Pyran-4-one, 3,5-dihhydroxy-2-methyl-
Cymene	3,7-dimethyl-6-octen-1-ol (cis-geraniol)	3,7-dimethyl-1,6-octadien-3-ol (β-linalool)	5-hydroxymethyl-2-furaldehyde
2 -Hydroxy-3-methyl-4-pyrone	guariol (lemonol)	1-nonanol	Hexadecanoic acid
2 -Hydroxyacetylfuran	2,6-dimethyl-7-octene-2,6-diol	(R)-(-)-carvone	Oleamide
2,3-Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one	thiabendazole	perilla aldehyde	n-eicosane
(+-)-p-Menth-1-en-4-ol		2-(4-methylenecyclohexyl)-2-	
Hydroxymethylfurfurole		perilla alcohol	
n-Nitrosoazacyclononane		2,6-dimethyl-2,6-octadiene-1,8-dial	
1 -Methylhexyl acetate		2-ethyl-3-hydroxyhexyl-2-methylpropanoate	
Cis-Dimethyl morpholine		4-isopropenyl-1-methyl-1,2-cyclohexanedial	
Pyrogallol		eugenol	
Guanosine		8-hydroxylinalool	
D-Allose		(1-hydroxycyclohexyl)-phenylmethanone	
L-Glucose		4-((1E)-3-hydroxy-1-propenyl)-2-methoxyphenol	

Palmitic acid		tris(1-chloro-2-propyl) phosphate	
Ethyl palmitate			
Oxandrolone			
Cis-Oleic Acid			
Ethyl Oleate			
(2E,6E)-9-(3,3-Dimethyl-2-oxiranyl)-3,7-dimethyl-2,6-nonadienyl phenyl sulfide			
N orolean-12-ene			
M ethyl commate A			
alpha.-Tocopherol-beta -Dmannoside			
gamma.-Sitosterol			
Cycloartenol acetate			

Table S2: RBS analysis of SPIONs indicating the relative quantities of Fe and O in the prepared samples.

Fe_3O_4	**O**	**Fe**
PP- SPIONs	0.5936 ±0.0033	0.4027 ±0.0008
LP- SPIONs	0.6007 ±0.0068	0.4000 ±0.0001
OP- SPIONs	0.5958 ±0.0024	0.4017 ±0.0008
AP- SPIONs	0.6007 ±0.0009	0.4026 ±0.0053

Table S3 DLS results of PEG-SPIONS and SA-SPIONS functionalized through MW incubation.

Formulation	**Hydrodynamic size (nm)**
PEG-PP-SPIONs	82 ± 5.04
PEG-LP- SPIONs	70 ± 3.21
PEG-OP- SPIONs	65 ± 2.0
PEG-AP- SPIONs	56 ± 8.09
SA-PP-SPIONs	78 ± 2.33
SA-LP- SPIONs	64 ± 3.21
SA-OP- SPIONs	53 ± 3.32
SA-AP- SPIONs	45 ± 2.43

Table S4: Rise in temperature after 10 minutes exposure on aqueous solutions of SPIONs.

Temperature in Water			
SPIONs	**1mg/mL (ºC)**	**5mg/mL (ºC)**	**10mg/mL (ºC)**
PP-SPIONs	0.3 ± 0.003	1.3 ± 0.006	2.9 ± 0.005
LP- SPIONs	0.4 ± 0.006	1.8 ± 0.003	3.0 ± 0.006
OP- SPIONs	0.3 ± 0.002	1.5 ±0.003	2.8 ± 0.001
AP- SPIONs	0.4 ± 0.004	1.4 ± 0.001	3.1 ± 0.003

References

1. Bennet D, Kang SC, Gang J, Kim S. Photoprotective effects of apple peel nanoparticles. *Int J Nanomedicine.* 2014;9: 93-108.

2. Sparr Eskilsson C, BjÃ¶rklund E. Analytical-scale microwave-assisted extraction. *J Chromatogr A.* 2000; 902(1):227-250.

3. Kahrilas GA, Wally LM, Fredrick SJ, Hiskey M, Prieto AL, Owens JE. Microwave-Assisted Green Synthesis of Silver Nanoparticles Using Orange Peel Extract. *ACS Sustainable Chem.Eng.* 2014;2(3):367-376.

4. Fawole OA, Makunga NP, Opara UL. Antibacterial, antioxidant and tyrosinase-inhibition activities of pomegranate fruit peel methanolic extract. *BMC Complement Altern Med.* 2012;12:200-200.

5. Prasad D, Kunnaiah R. Punica granatum: A review on its potential role in treating periodontal disease. *J Indian Soc Periodontol.* 2014;18(4):428-432.

6. Fateixa S, Nogueira HIS, Trindade T. Hybrid nanostructures for SERS: materials development and chemical detection. *Phys Chem Chem Phys.* 2015;17(33):21046-21071.

7. Saravanan P, Chandramohan G, Mariajancyrani J, Shanmugasundaram P. GC-MS analysis of phytochemical constituents in ethanolic bark extract of ficus religiosa linn. *Int J Pharm Pharm Sci.* 2011;6(1):457-460.