Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

OBP-functionalized/hybrid superparamagnetic nanoparticles for *Candida albicans* treatment

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Table of Contents

1. Analysis of solvent residues by SPME-GC-MS analysis 3

2. Figures...4

Figure S1. XRPD spectrum of bare SPIONs...5

Figure S2. XPS spectrum of bare SPIONs 6

Figure S3. ATR/FT-IR spectrum of bare SPIONs 7

Figure S4. EDX spectrum of the carboxyalkylphosphonic-functionalized SPIONs 8

Figure S5. ATR/FT-IR spectrum of 3-phosphonopropionic (left) or 11-phosphonoundecanoic-(right) functionalized SPIONs...9

1. Analysis of solvent residues by SPME-GC-MS analysis

The presence of solvent residues by SPME-GC-MS was performed using a HP 6890 Series Plus gas chromatograph (Agilent Technologies, Palo Alto, CA, USA) equipped with a MSD 5973 mass spectrometer (Agilent Technologies).

The following operating conditions were applied: carrier gas (helium) at a flow rate of 1.0 mL/min; GC injector: splitless mode at 250 °C, desorption time: 2 min; chromatographic separation on a Rxi-17Sil MS capillary column (30 m × 0.25 mm i.d., 0.25 µm film thickness; Restek, Bellafonte, USA); temperature programme: 40 °C hold 2 min, 10 °C/min to 120 °C, 15 °C/min to 180 °C, 20 °C/min to 250 °C; transfer line and ion source at 280 °C and 150 °C, respectively.

Full scan electron ionization (EI) mass spectra were acquired to select diagnostic ions (*m/z* ratios) used for time-scheduled selected ion monitoring (SIM), operating under the following conditions: ionization energy: 70 eV; mass range: 45–250 amu; scan time: 3 scan/s; electron multiplier voltage: 2750 V, solvent delay 1.00 min. Solvent residues were detected by operating in SIM mode using a dwell time 30 ms, monitoring the following ions: *m/z* 57 and 86 for hexane; *m/z* 45 and 59 for isopropanol; *m/z* 79 and 108 for benzyl alcohol. Signal acquisition and data handling were performed using the HP Chemstation (Agilent Technologies) software.

2. *Figures*

- Figure S1. XRPD spectrum of bare SPIONs
- Figure S2. XPS spectrum of bare SPIONs
- Figure S3. ATR/FT-IR spectrum of bare SPIONs
- Figure S4. EDX spectrum
- Figure S5. ATR/FT-IR spectrum of 3-phosphonopropionic (left) or 11-phosphonoundecanoic-(right) functionalized SPIONs

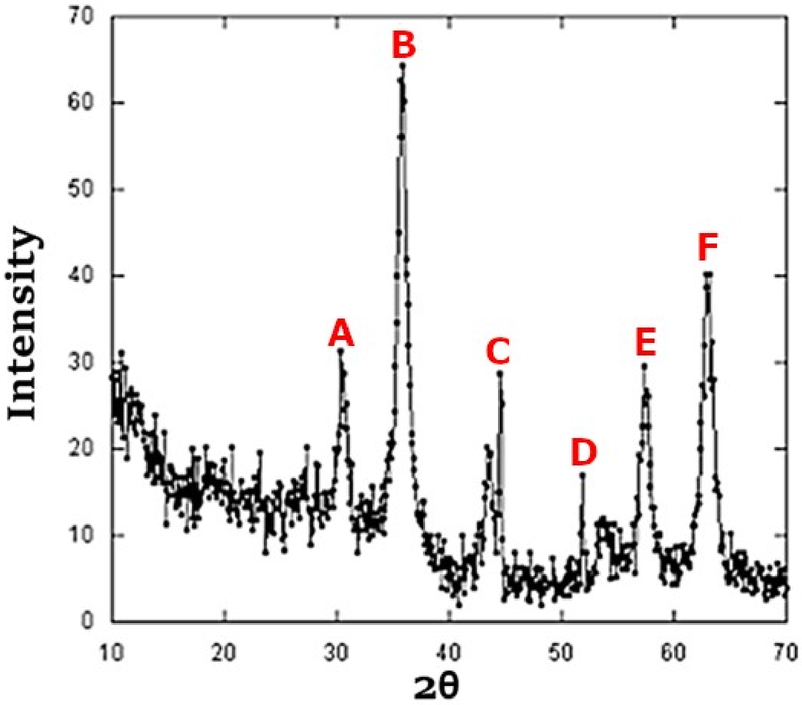

Figure S1. XRPD spectrum of bare SPIONs. The peaks related to the reflections of Fe_3O_4 *(JCPDS 82-1533) are highlighted: A (2 2 0), B (3 1 1), C (4 0 0), D (4 2 2), E (5 1 1) and F (4 4 0)*

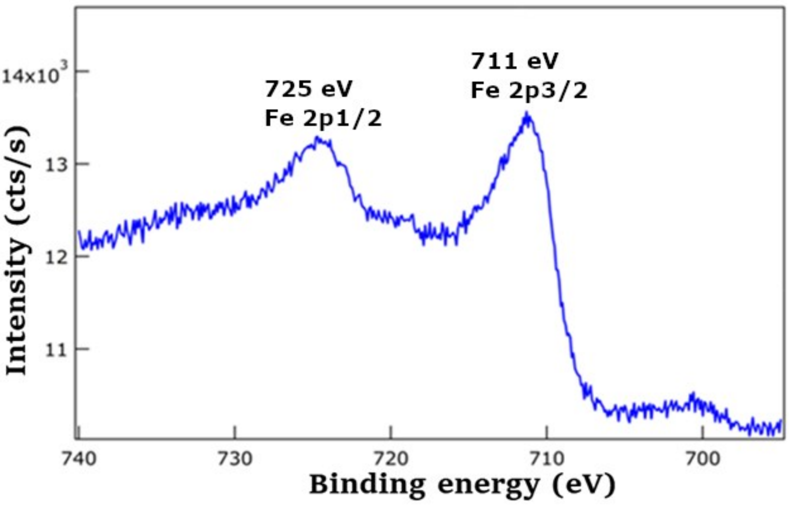

Figure S2. XPS spectrum of bare SPIONs. Peaks related to magnetite are highlighted

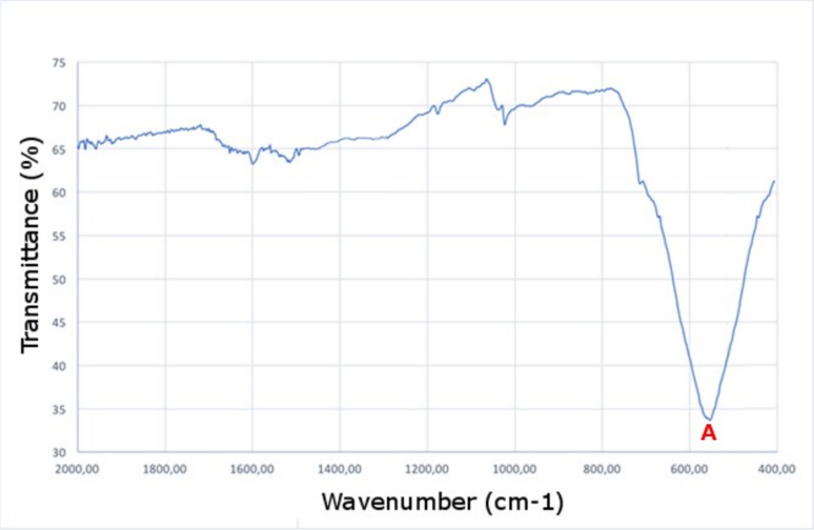

Figure S3. ATR/FT-IR spectrum of bare SPIONs. Peak ***A*** *ν=555 cm^{-1} (stretching Fe–O)*

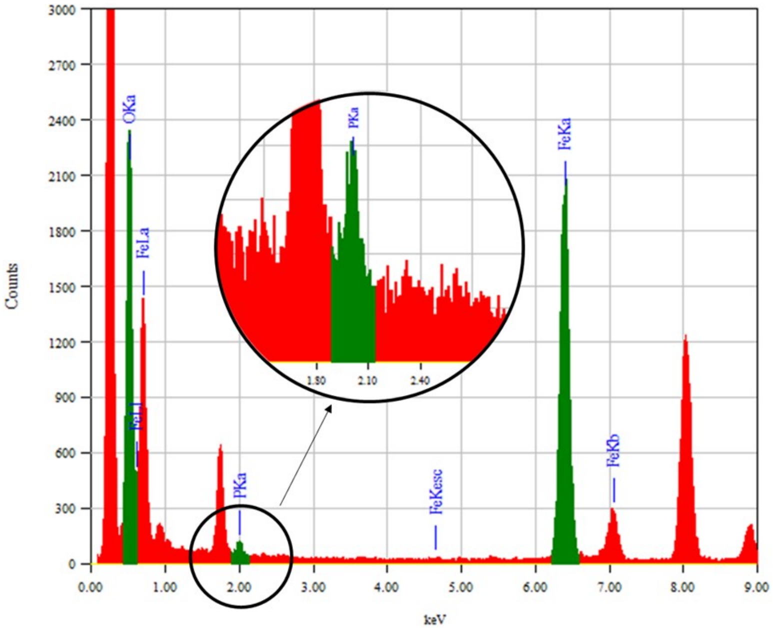

Figure S4. EDX spectrum of the carboxyalkylphosphonic-functionalized SPIONs. The insert depicts a zoom of the EDX spectrum highlighting the P peak at 2 keV

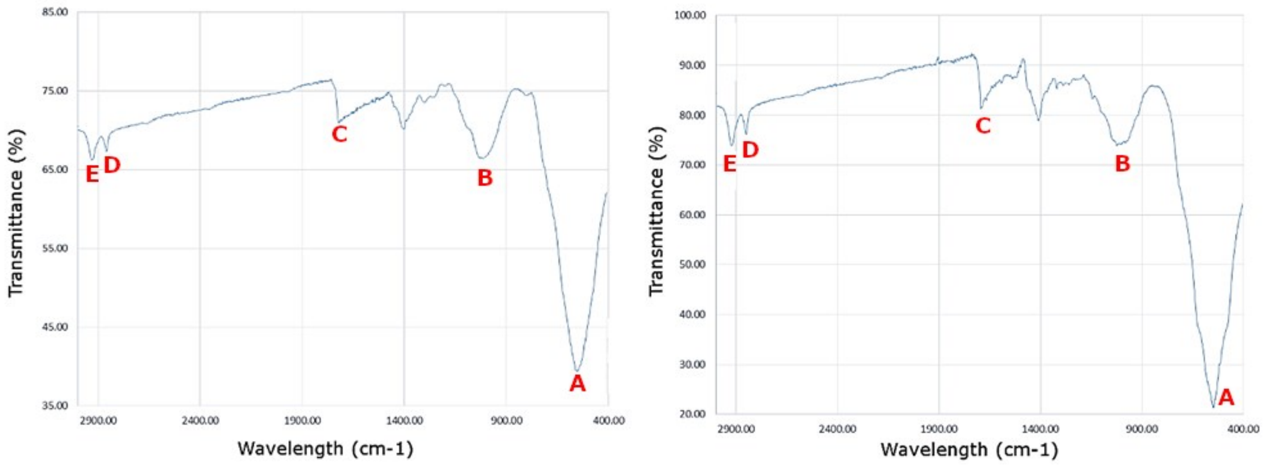

Figure S5. ATR/FT-IR spectrum of 3-phosphonopropionic (left) or 11-phosphonoundecanoic-(right) functionalized SPIONs. Peak ***A*** *ν=555 cm^{-1} (Fe–O stretching),* ***B*** *ν=1035 cm^{-1} (Fe···P=O and Fe···P-O),* ***C*** *ν=1710 cm^{-1} (C=O stretching),* ***D*** *ν=2855 cm^{-1} (CH_2 symmetric stretching) and* ***E*** *ν=2920 cm^{-1} (CH_2 asymmetric stretching)*