

## Supplementary Information

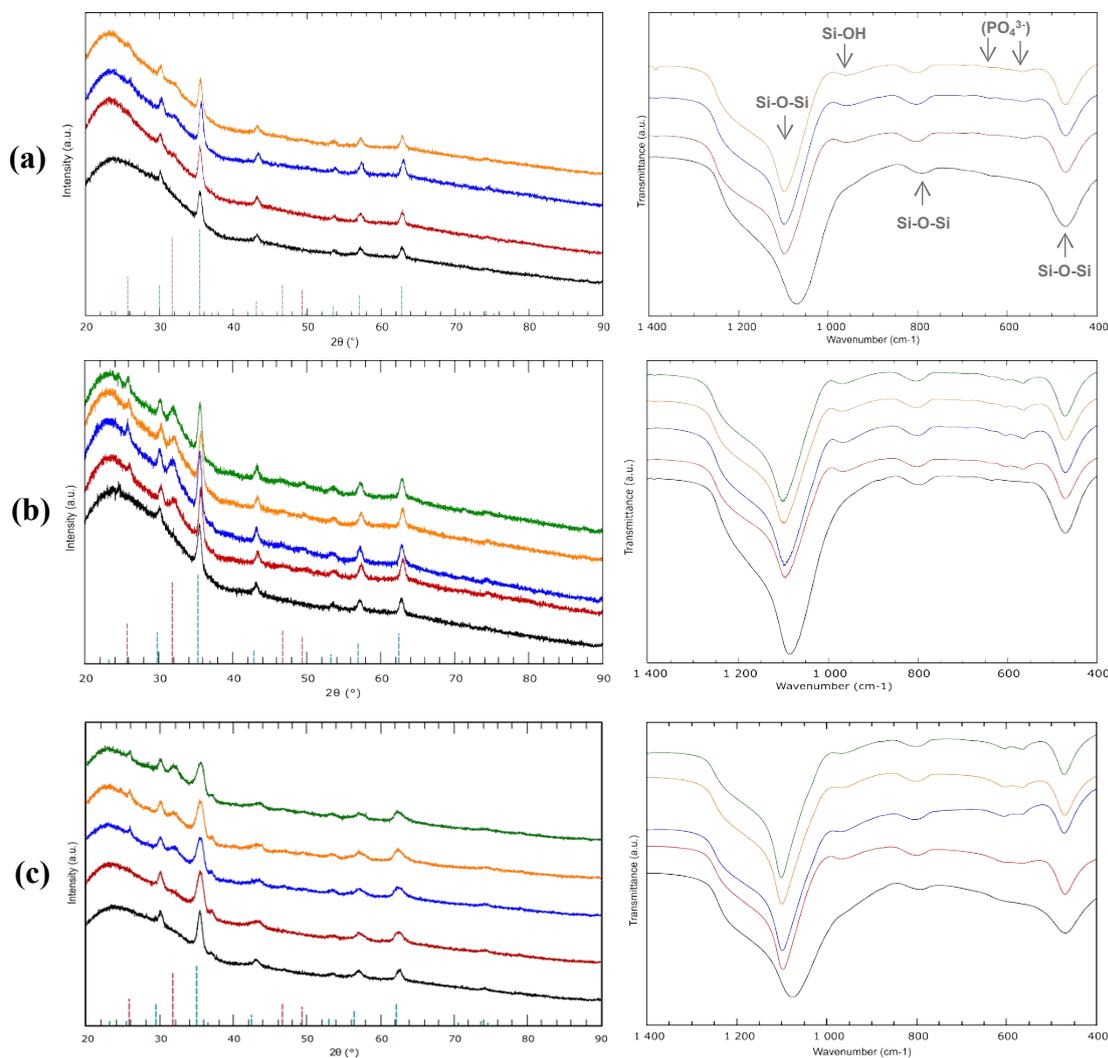


Figure S-1: XRD pattern and corresponding FTIR spectra of (a) MCSNs, at 0h, 3h, 7h, and 17h; MCSNs-Cu-0.01 (b) and MCSNs-Cu-0.1 (c) at 0, 24, 48, 96 and 168 hours of immersion in SBF (from bottom to top). Blue dotted line represents  $\gamma\text{-Fe}_2\text{O}_3$  (JCPDS 39-1346) and pink dotted line represents HAp (JCPDS 09-0432) Bragg peaks.

Sample	$[\text{Fe}_2\text{O}_3]$ (g/L)
MNPs	1.40
MCSNs	2.01
MCSNs-Cu-0.01	1.52
MCSNs-Cu-0.1	2.28

Table S-1: Iron oxide concentration obtained by UV-visible spectroscopy method, for magnetometry measurement

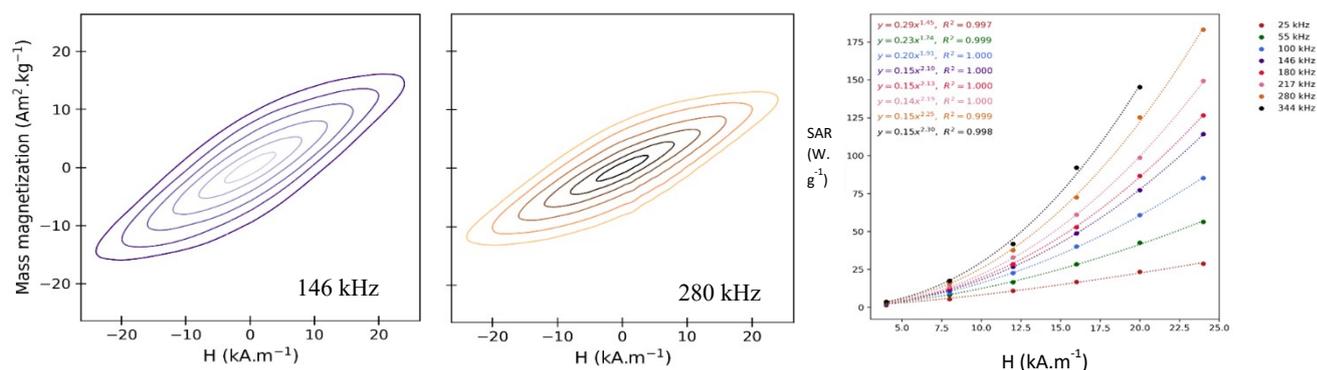


Figure S-2: Hysteresis curves of MNs at 146 kHz and 280 kHz at different amplitude (4 - 24 kA/m) and corresponding SAR ( $\text{W/g Fe}$ ) at different frequencies (25 - 344 kHz).

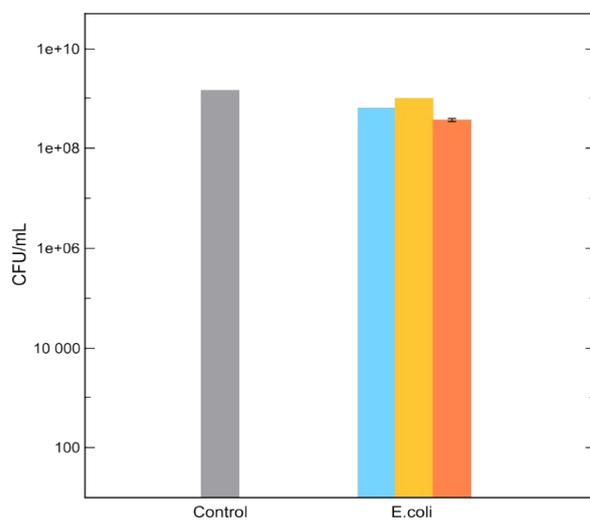


Figure S-3 : Bacterial count in colony-forming units per ml of *E.coli* and positive control, after 24h incubation with MCSNs (blue), MCSNs-Cu-0.01 (yellow) and MCSNs-Cu-0.1 (orange)