Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Data

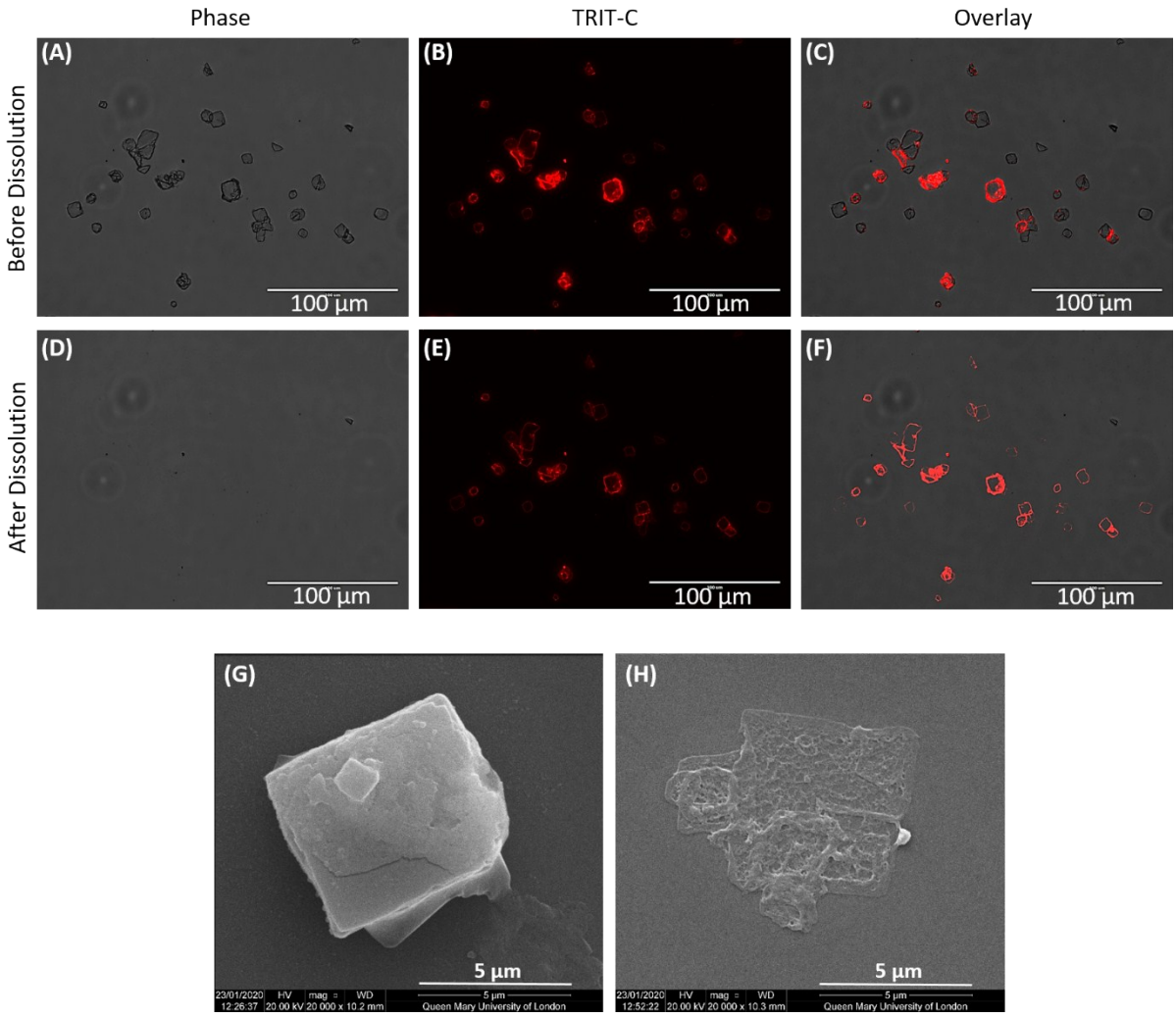

Figure S1. Confirmation of stable polymer layers around dexamethasone crystals. *Dexamethasone crystals were encapsulated with the layer structure Dex/PAH/PSS/PAH/PSS/PAH/PSS/PAH-TRIT-C/PSS. PAH-TRIT-C represents a labelled PAH layer for visualisation by fluorescence microscopy. (A) Layered dexamethasone crystals are shown under phase contrast to show solid structures. (B) LbL encapsulation is confirmed in the RFP channel by visualisation of the PAH-TRIT-C layer. (C) Images are overlaid in the rightmost panel. The top panel (A, B, C) shows LbL-Dex before dissolution and the bottom panel (D, E, F) following dissolution with acetonitrile. Whilst crystals are no longer seen, the polyelectrolyte layers remain intact. Scanning electron microscopy of an LbL encapsulated dexamethasone crystal before (G) and after (H) crystal dissolution with acetonitrile . Polymer layers can be seen to retain the shape of the dissolved crystal.*

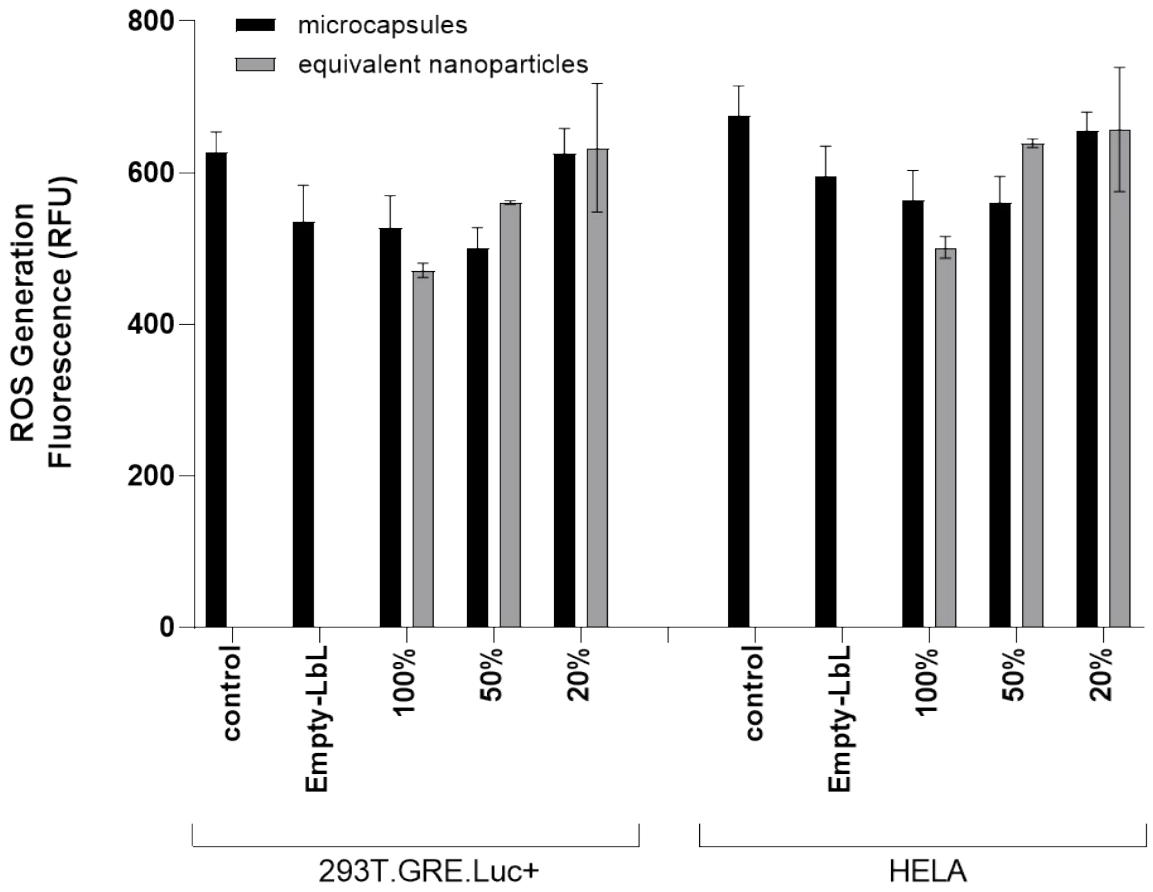

Figure S2: Production of ROS following treatment of cells with magnetic microcapsules and equivalent numbers of nanoparticles for 2 hours. *293T.GRE.Luc+ or HeLa cells were treated with Empty-LbL-Mag microcapsules made with dilutions of SPION suspension for 2 hours before ROS assay. As a control, Empty-LbL microcapsules with no SPIONs were added at 1:1 ratio of microcapsules: cells. Values are the mean of triplicate readings and vertical lines represent standard error of the mean.*

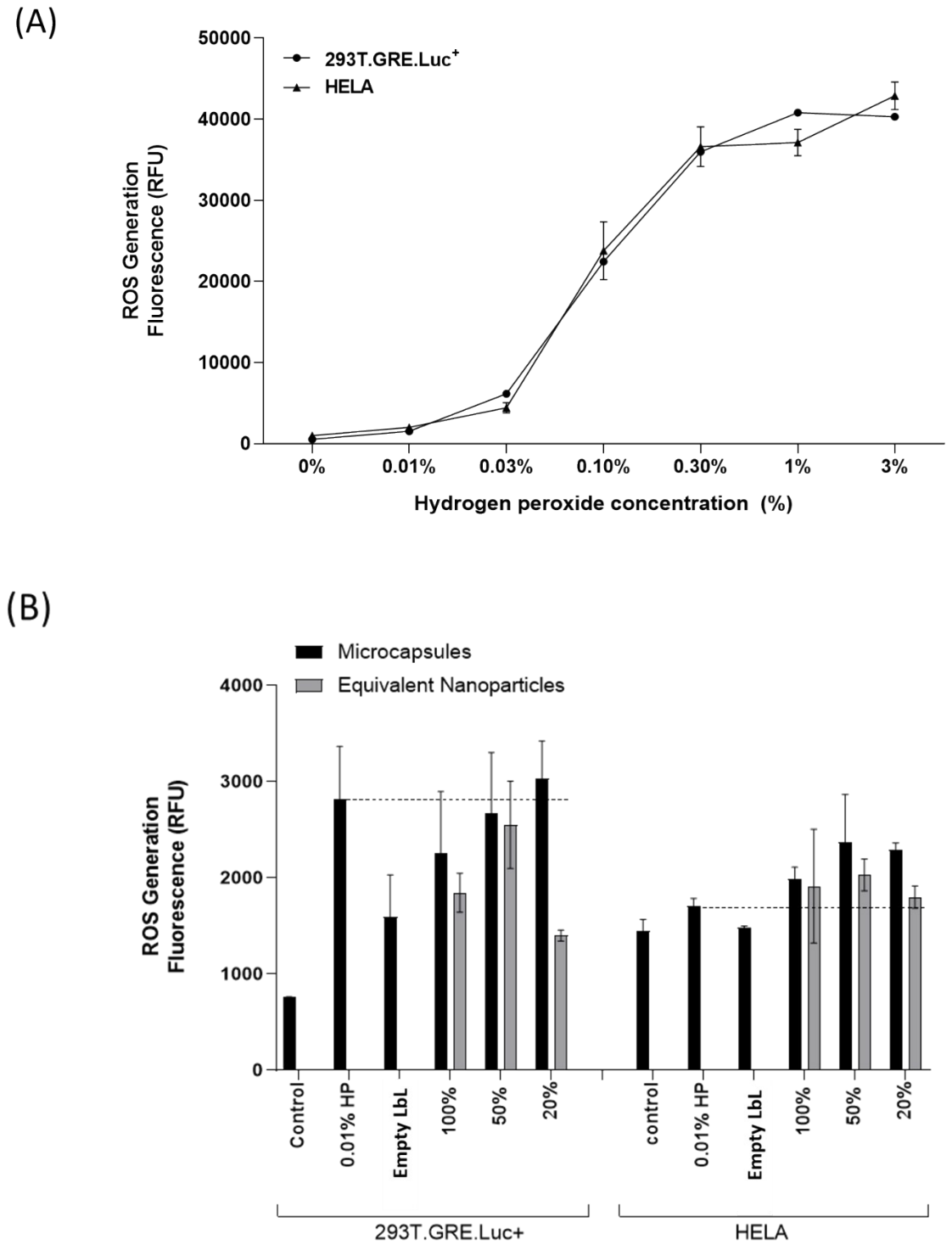

Figure S3: ROS production in response to hydrogen peroxide in the absence of presence of microcapsules or nanoparticles. *(A) Production of ROS in 293T.GRE.Luc+ cells and HeLa cells treated with increasing concentrations of Hydrogen Peroxide for 1 hour. (B) Production of ROS in 293T.GRE.Luc+ cells or HeLa cells*

treated with a 1:1 ratio of Empty-LbL-Mag microcapsules: cells, or the equivalent number of free SPIONS for 24 hours, followed by stimulation with 0.01% Hydrogen Peroxide for 1 hour. As a control Empty-LbL microcapsules with no SPIONs were added at 1:1 ratio of microcapsules: cells. Values are the mean from two experimental repeats and the standard error of the mean are shown by the vertical lines. Dotted horizontal line shows comparison to 0.01% hydrogen peroxide alone.

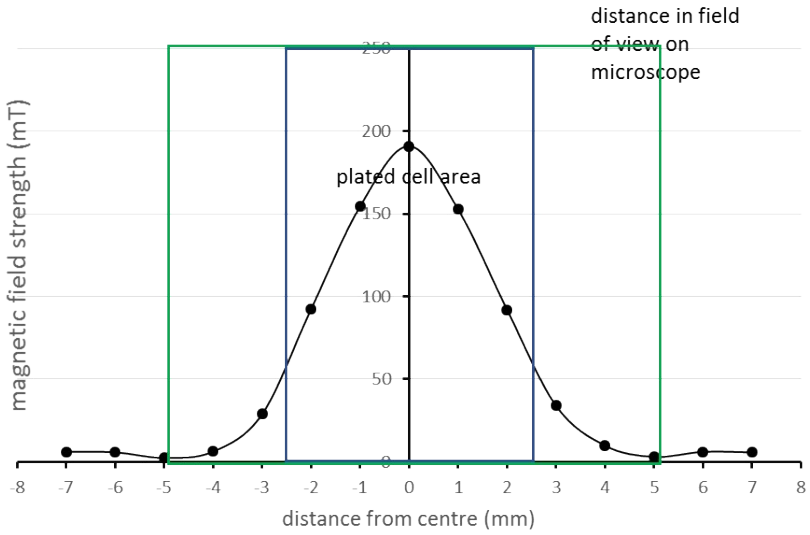

Figure S4. Profile of the magnetic field in the cell migration assay*. Magnetic field strength (mT), measured with the Gaussmeter fitted with a Hall probe, around the 5 mm neodymium magnet used in the cell migration assay. The image shows how the field strength changes across the 5 mm magnet and how this relates to the width of the plated cells (also 5 mm, blue box) and the microscope field of view (green box).*