

Supplementary Figures for

A composite of hyaluronic acid modified graphene oxide and iron oxide nanoparticles for targeted drug delivery and magneto-thermal therapy

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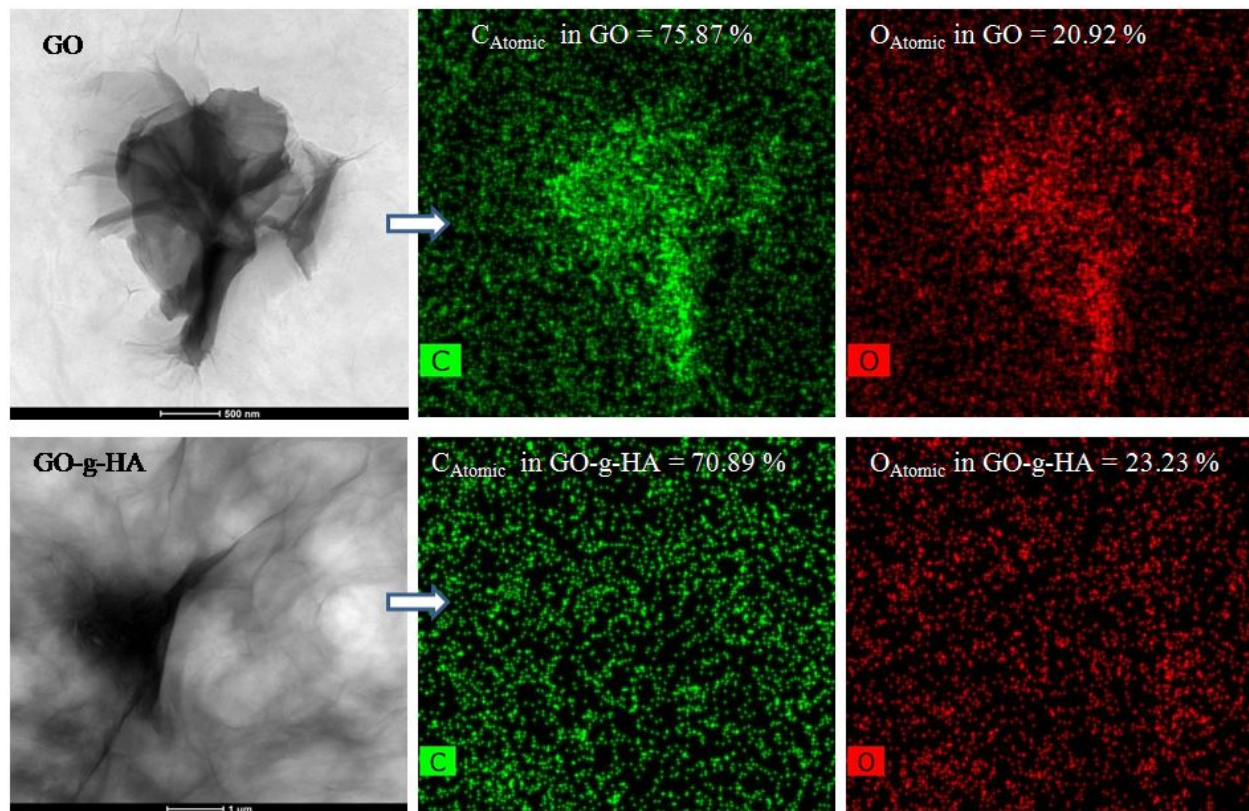
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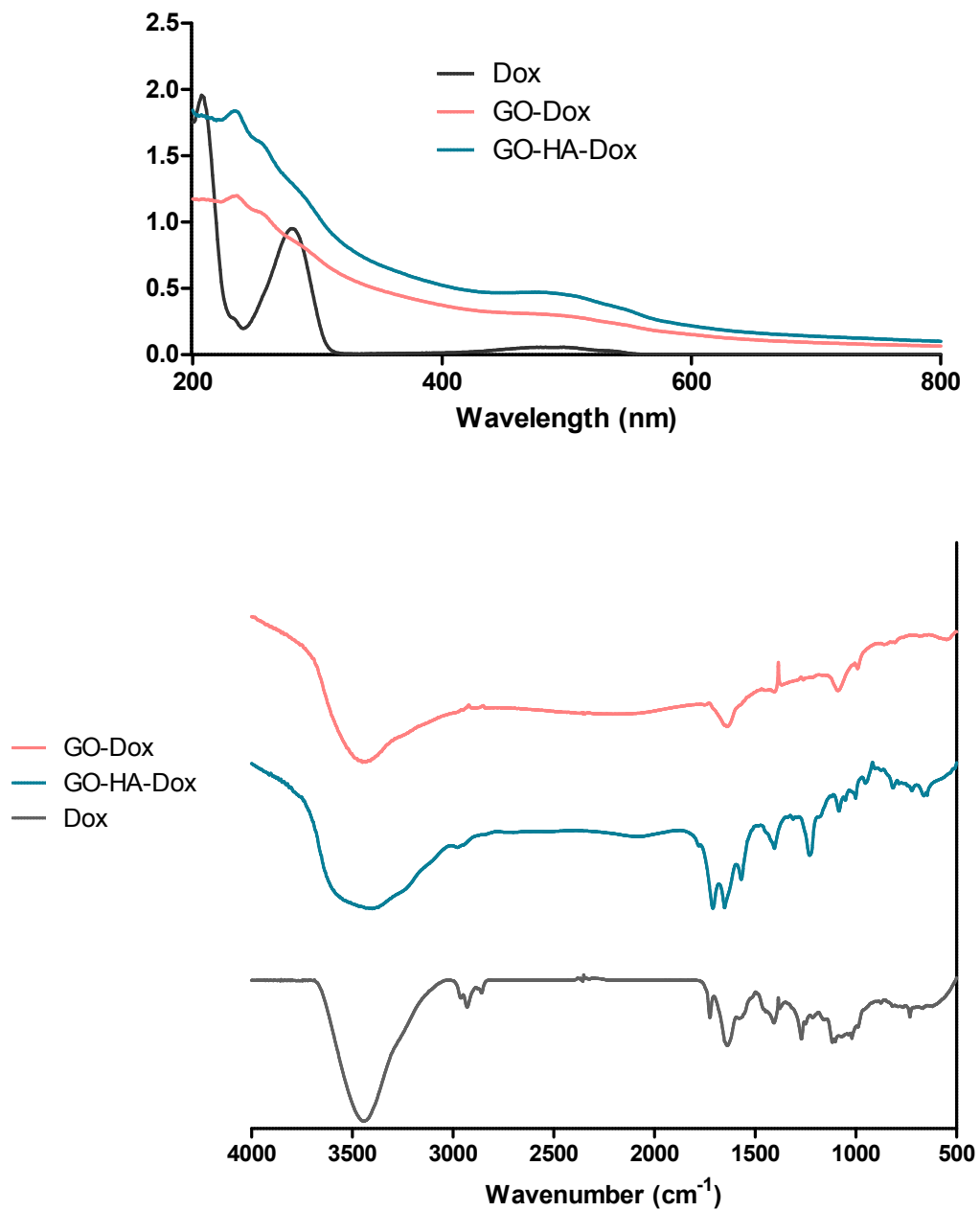
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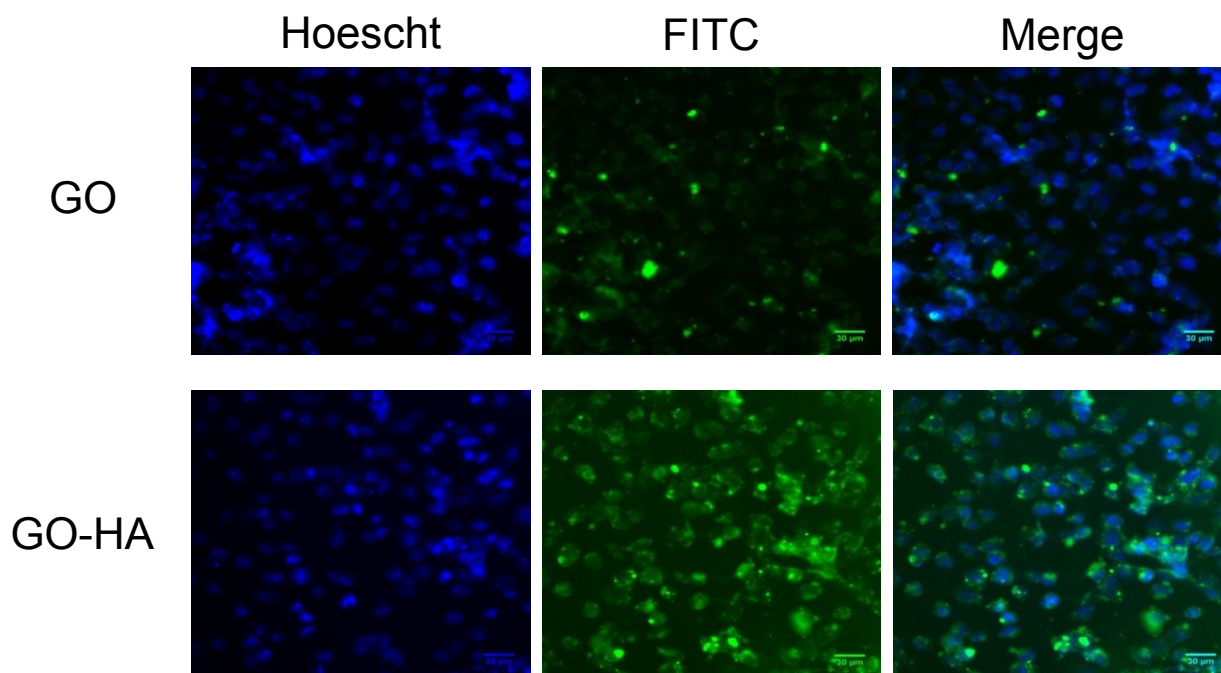
Supplementary Figure 1: Transmission electron micrographs along with carbon and oxygen elemental mapping of GO and GO-HA. Larger particulates were imaged prior to sonication specifically to showcase that they contain many areas of high transparency suggesting low thickness of the majority of the prepared particulates.



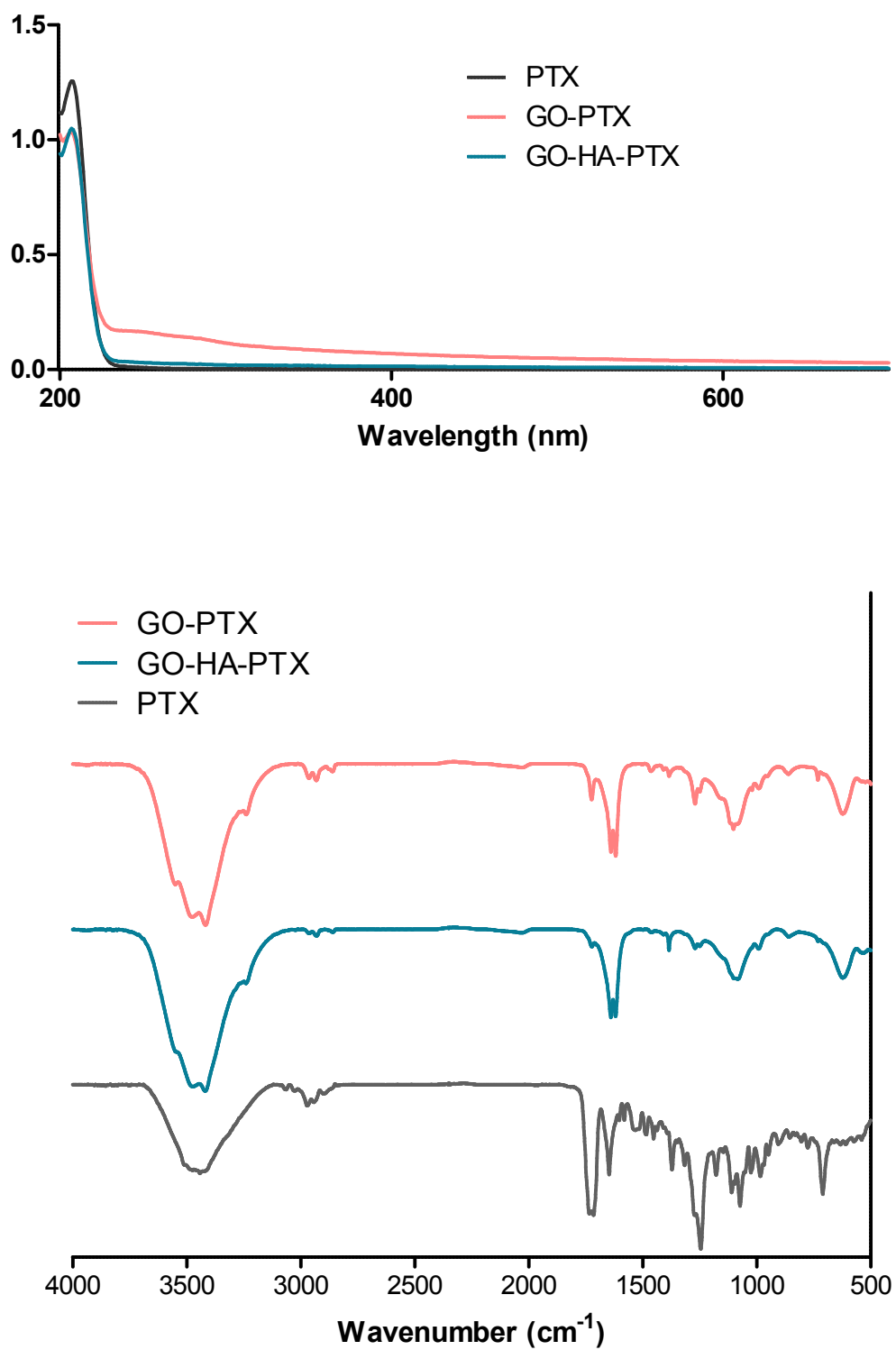
Supplementary Figure 2: UV-visible spectroscopy (**Top**) and FTIR spectroscopy (**Bottom**) of doxorubicin (Dox) loaded nano-particulates.



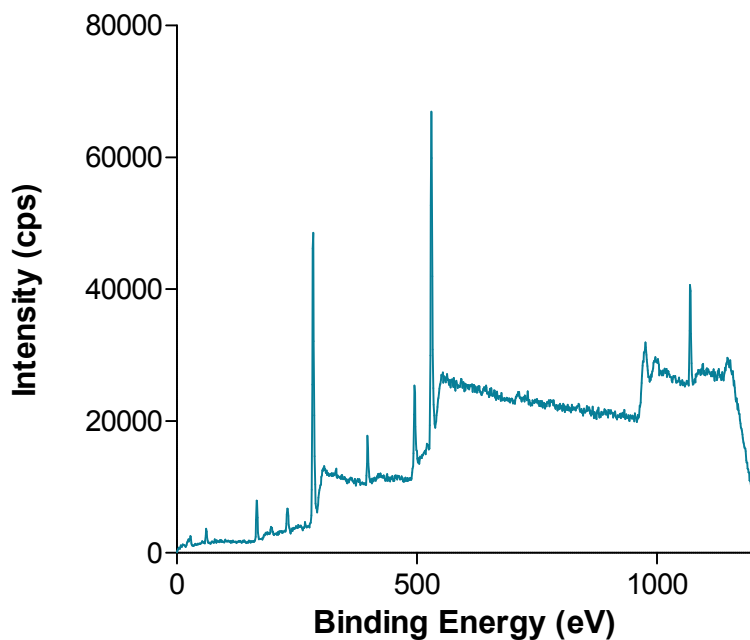
Supplementary Figure 3: Fluorescence microscopy to determine uptake of GO and GO-HA by MDA-MB-231 cells. Fluorescein isothiocyanate (FITC) was grafted on to GO or GO-HA, incubated with MDA-MB-231 cells for 24 hours, and then cells were imaged. While some basal level of uptake is observed for GO (FITC grafted), the uptake of GO-HA was much more, which we suggest is due to the HA receptor (CD44) on MDA-MB-231 cells. This uptake data correlated with the killing efficacy of GO-HA-Dox when compared to GO-Dox (data shown in figure 6). Representative images are shown here.



Supplementary Figure 4: UV-visible spectroscopy (**Top**) and FTIR spectroscopy (**Bottom**) of paclitaxel (Ptx) loaded nano-particulates.

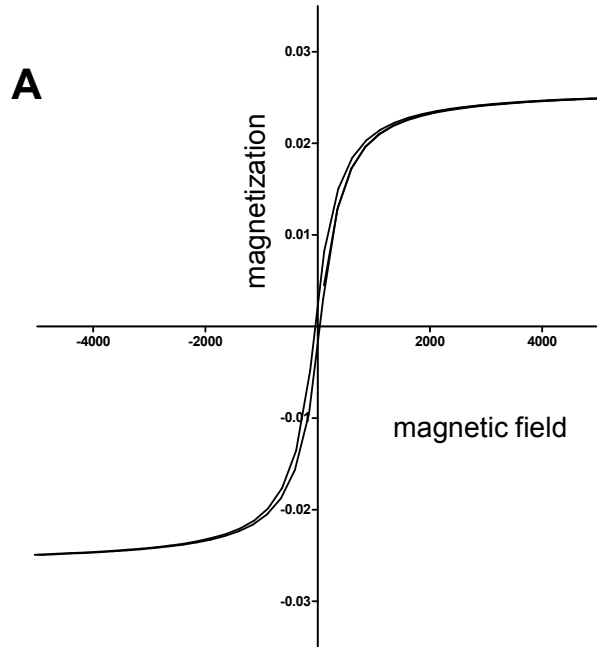


Supplementary Figure 5: X-ray photoelectron spectroscopy of the composite along with elemental analysis, confirming iron oxide nanoparticle embedding on GO-HA



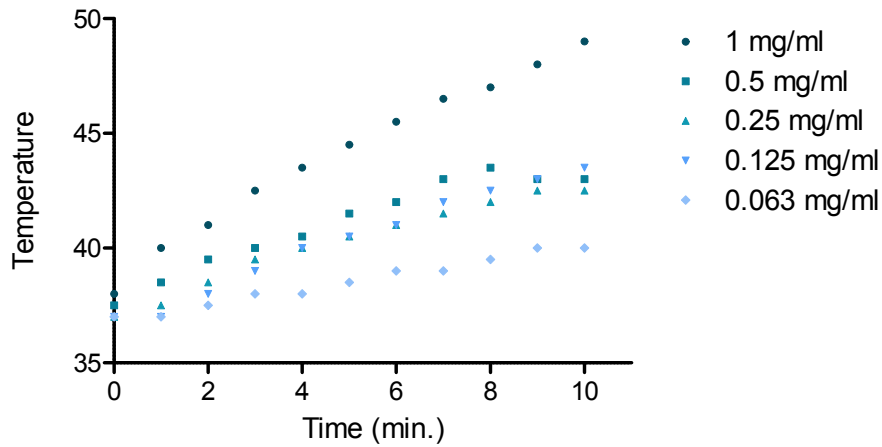
Peak	Position	Atomic Conc. %	Mass Conc. %
C1s	283	72.81	63.89
O1s	530	21.42	25.03
N1s	397	4.08	4.18
Fe2p	699	1.69	6.90

Supplementary Figure 6: A – VSM magnetic hysteresis analysis showing magnetic property of the composite system. **B** – Magnetic hyperthermia measurements showing that subjecting the composite system (at various concentrations) to magnetic fields results in an increase in temperature over time.



B

Kinetics of Temperature Change



Supplementary Figure 7: Raman spectroscopy to assess degradation of nano-particulates when cultured with RAW macrophage cells. **A** – analysis of GO before (a) and after (b – zoomed in) cell treatment. **B** – analysis of GO-HA before and after cell treatment

