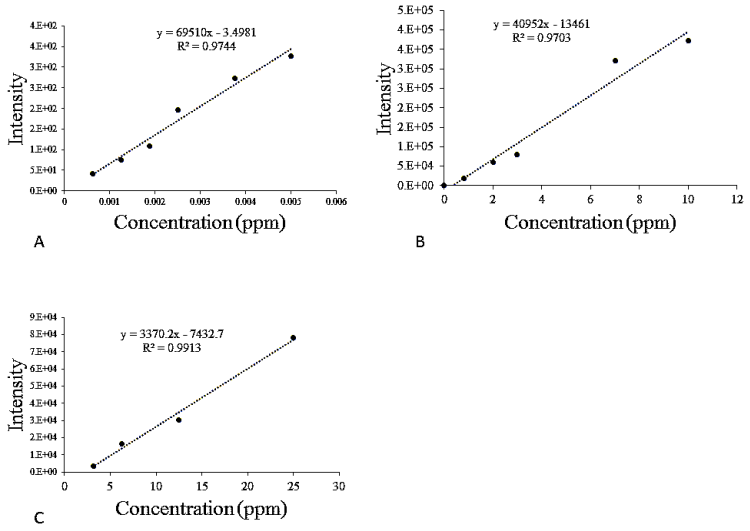
## Supplementary Materials:

Supplementary information 1. The file contains supplementary movie which indicates the Brownian motion of liposomes captured using Nanosight Nano tracking analysis. The file is associated with Figure 3 .




*Supplementarry Information 2. Standard curves to estimate DXR and Gd encapsulation efficiencies. A) A linear standard curve used to predict $Gd_3N$@C80-OH encapsulation efficiency in liposomes. Emission Intensity of different concentrations of Gd standards dissolved in 3% $HNO_3$ solvent matrix were measured using ICP and $Gd_3N$@C80 was predicted from the correlation equation (for the detail quantification process, see section 2.7). B) A linear standard curve equation used to predict gadolinium concentration in $Gd_3N$@C80-OH solution. C) Linear standard curve used to predict DXR encapsulation efficiency of targeted theranostic liposomes. DXR excitation and absorption were set to 470 & 570 nm wavelengths respectively.*

Supplementary information 3. Formulation of non-functionalized $Gd_3N$@C80 encapsulated liposomes: $Gd_3N$@C80 free as well as $Gd_3N$@C80 encapsulated liposomes were formulated by disolving, EGGPC + Chol (8.1:1.75), EGGPC + Chol + Gd3N@C80 (8.1:1.75:0.5), EGGPC + Chol + PEG2PE + $Gd_3N$@C80 (7.1:1.75:1:0.5) and EGGPC + Chol + AmineDSPE + $Gd_3N$@C80 (7.1:1.75:1:0.5) mg ratios in 5ml chloroform. After removing the chloroform, the dried-lipid layer was hydrated using 300mM $(NH4)_2HPO4$ solution at 7.4 PH, vortexed and sonicated to, completely, dissolve the lipid layer in the hydrating medium. Resulting multi-laminar vesicles (MLV) were extruded seven passes through 400-100 nm filters respectively. Free molecules, those not part of the formulated liposomes, were removed using a 2Kd molecular weight cut off dialysis cassette immersed in HEPES saline solution (140mM NaCl 10mM HEPES buffer). DXR was loaded (0.25 mg/ml) remotely by incubating the liposomes & DXR in a $7^oc$ saline HEPES buffer.