Experimental

We have graphite, hydrogen tetrachloroaurate, $KMnO_4$, $NaBH_4$, sodium citrate, cystamine dihydrochloride, from Sigma-Aldrich. The human malignant melanoma cell and growth media, phosphate buffered saline, trypsin, and fetal bovine serum were purchased from the American Type Culture Collection (ATCC, Rockville, MD)

SERS Measurement

For the SERS experiment, we have used portable SERS probe, as we have reported recently [10]**.** In brief, we have used a continuous wavelength 670 nm DPSS laser, as an excitation light source. For excitation and Raman data collection, we have used InPhotonics 670 nm Raman fiber optic probe. To collect SERS data, we have used miniaturized QE65000 Scientific-grade Spectrometer from Ocean Optics. The scattering signal was collected with 10 sec acquisition time and 10 scan averaging using Ocean Optics data acquisition Spectra Suite spectroscopy software. For all the SERS measurements we have kept the laser power at 2 mW.

Cell culture and incubation with hybrid graphene oxide: Malignant melanoma UACC903 cells were grown in a 5% CO_2 incubator at 37°C using RPMI-1640 medium (ATCC, Rockville, MD) supplemented with 10% premium fetal bovine serum (FBS) (Lonza, Walkersville, MD) and antibiotics (10 IU/mL penicillin G and streptomycin) in 75-cm^2 tissue culture flasks. An enzyme-linked immunosorbent assay kit was used to quantify GD2 in tested cells. At first, different numbers of malignant melanoma UACC903 cells were immersed into the magnetic-plasmonic hybrid graphene oxide at room temperature before performing the magnetic separation experiment. After magnetic separation, we performed TEM, SEM and fluorescence analyses.

Fluorescence analysis: After cell separation by the magnet, we used an Olympus IX71 inverted confocal fluorescence microscope fitted with a SPOT Insight digital camera for fluorescence imaging.
