

Data associated with “Exploring High Aspect Ratio Gold Nanotubes as Cytosolic Agents: Structural Engineering and Uptake into Mesothelioma Cells” :

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UV-vis spectra, cell tracking data and heating curves of gold nanotubes.

Ye, Sunjie and Azad, Arsalan D and Chambers Joseph E and Beckett, Alison J. and Roach, Lucien and Moorcroft, Samuel C. T. and Aslam, Zabeada and Prior, Ian A and Markham, Alexander F. and Coletta, P. Louise and Marciniak, Stefan J. and Evans, Stephen D.

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Dataset description:

The generation of effective and safe nanoagents for biological applications requires their physicochemical characteristics to be tunable, and their cellular interactions to be well characterized. Here, the controlled synthesis is developed for preparing high - aspect ratio gold nanotubes (AuNTs) with tailorable wall thickness, microstructure, composition, and optical characteristics. The modulation of optical properties generates AuNTs with strong near infrared absorption. Surface modification enhances dispersibility of AuNTs in aqueous media and results in low cytotoxicity. The uptake and trafficking of these AuNTs by primary mesothelioma cells demonstrate their accumulation in a perinuclear distribution where they are confined initially in membrane - bound vesicles from which they ultimately escape to the cytosol. This represents the first study of the cellular interactions of high - aspect ratio 1D metal nanomaterials and will facilitate the rational design of plasmonic nanoconstructs as cytosolic nanoagents for potential diagnosis and therapeutic applications.

Files:

Figure 4b-Uv-vis spectra.xlsx

Figure 5 Tracking Data.xlsx

Figure 8-photothermal effect.xlsx