NANOPARTz™
The gold nanoparticle for nanotechnology

INSTRUCTIONS

Gold Nanorods and SGNPs for In Vivo and Preclinical Applications

Part Numbers:

D11, D12, D16, D17

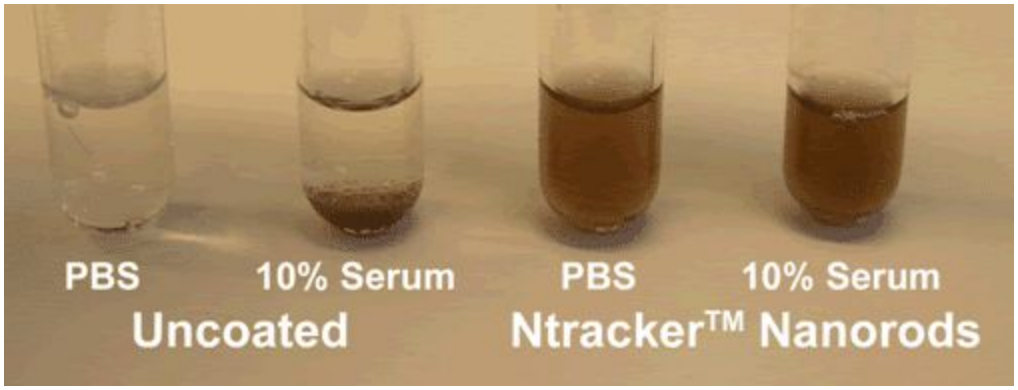
Product Information:

Nanopartz™ has developed and optimized Ntracker™ Nanorods specifically for use in biological, preclinical, and *in vivo* RESEARCH applications. Ntracker™ Nanorods are coated in a dense layer of hydrophilic polymers that shield the gold surface and give the particles ultra long-circulation times *in vivo*. As opposed to other commercially available PEG- nanoparticles with short circulation times, such as quantum dots (1), Ntracker™ Gold Nanorods have been rigorously tested *in vivo* to yield superior circulation times a variety of mammalian species.

Ntracker™ Gold Nanorods are available with transverse plasmon resonance peaks in the visible and near-infrared.

Product	Concentration	Volume	Storage
Ntracker™ Gold Nanorods	100nM (50 OD at transverse resonance peak)	1 ml (in phosphate-buffered saline pH 7.2)	Store at 4ºC (Use within ~2 months)

1. Schipper, M. L., Cheng, Z., Lee, S. W., Bentolila, L. A., Iyer, G., Rao, J., Chen, X., Wu, A. M., Weiss, S. & Gambhir, S. S. (2007) J Nucl Med 48, 1511-8.



Important Information:

- Ntracker™ Gold Nanorods are supplied in physiologic phosphate-buffered saline pH 7.2, and are ready for immediate use in biological experiments.
- Store Ntracker™ Gold Nanorods at 4ºC

General Protocol for Ntracker™ Gold Nanorod Injection and Circulation Time Analysis:

- Materials Needed:
  - Syringes (>27 guage needle)
  - For evaluating circulation:
    - Heparinized capillary tubes
    - Phosphate buffered saline, 10mM EDTA pH 7.2

- For injection into an ~20g mouse, remove ~100-200ul of Ntracker™ Gold Nanorod solution and load into syringe for injection
  - *If tracking NP circulation*, remove 20ul of blood using heparinized microcapillary tubes prior to injection for baseline reading
  - Eject volume of blood into tube and add exactly 20ul into 230ul of PBS + 10mM EDTA pH 7.2 solution.
  - Vortex solution for ~10 seconds
  - Centrifuge at 2000 g's for ~10 seconds
  - Remove plasma supernatant and read absorbance spectrum from 400-1000 nm.

- For injection into an ~20g mouse, remove ~150ul of Ntracker™ Gold Nanorod solution and load into syringe for injection

- Inject solution into mouse
  - *If tracking NP circulation*, 5 minutes after injection, remove another 20ul of blood using heparinized microcappillary tubes and process/read absorbance spectra as described above.
  - At the transverse plasmon resonance peak, record the difference in the peak height versus the pre-injection reading.

- *If tracking NP circulation*, continue to remove blood at regular intervals (of ~4-12 hrs) to track the particle circulation time via the decrease in plasmon peak intensity.

- For vascular imaging studies, mice can be utilized immediately after injection. Alternatively, for applications of imaging or therapy after systemic clearance,

particle presence in blood can be monitored to ensure clearance from systemic circulation before proceeding.

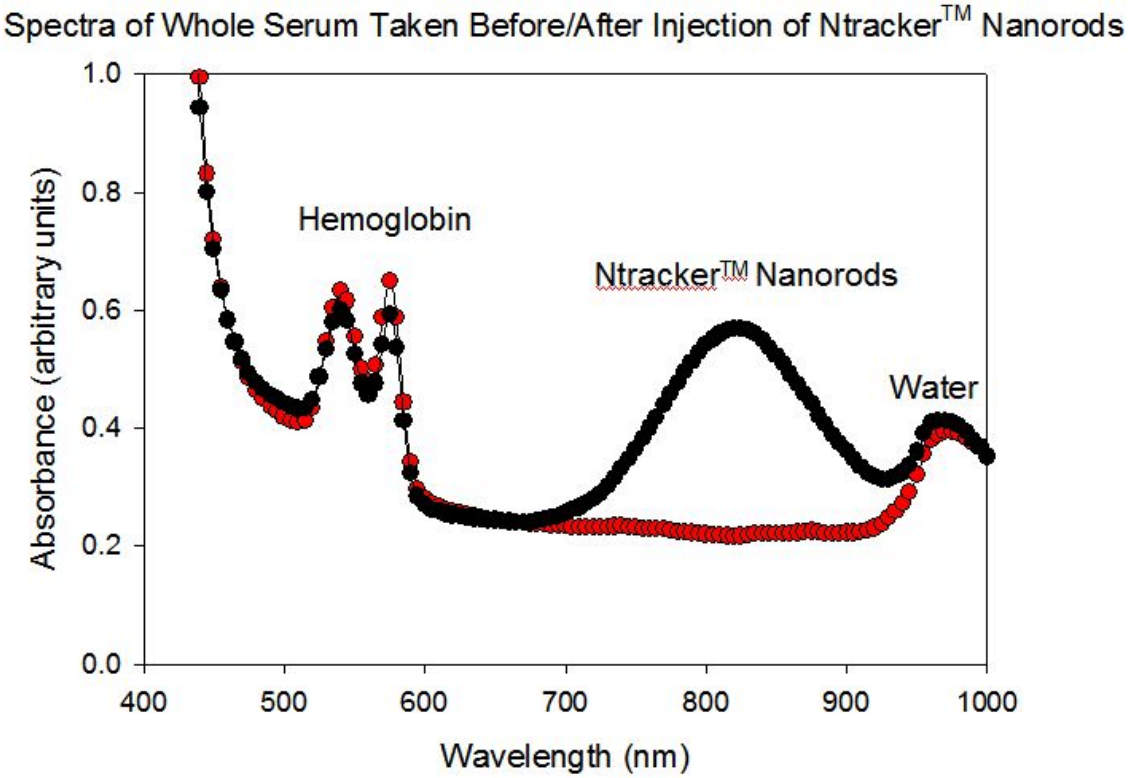


Figure 1: Absorption spectra of serum/buffer mixtures taken before and immediately following intravenous administration of Ntracker™ Gold Nanorods.

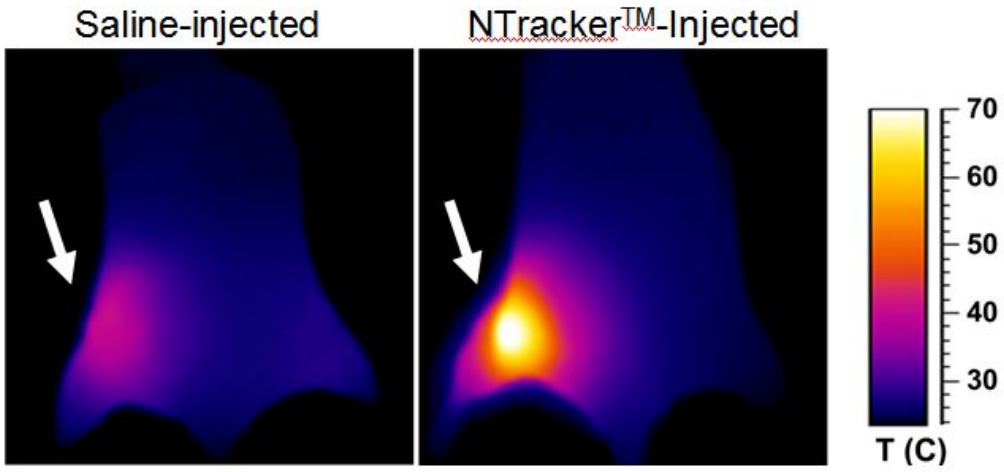


Figure 2: Infrared thermographic image of photothermal Ntracker™ Gold Nanorod heating *in vivo*.