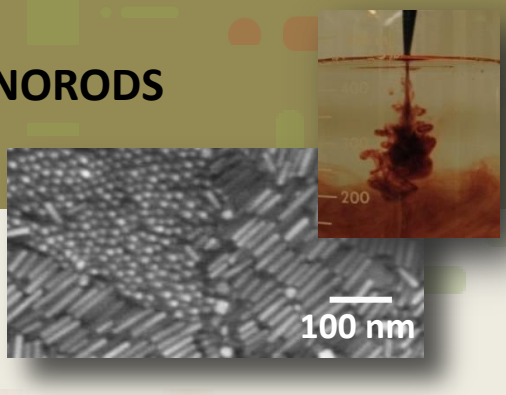
NANORODS

# POLYETHYLENE GLYCOL-COATED GOLD NANORODS




## Superior Characteristics Not Currently Available in the Market:

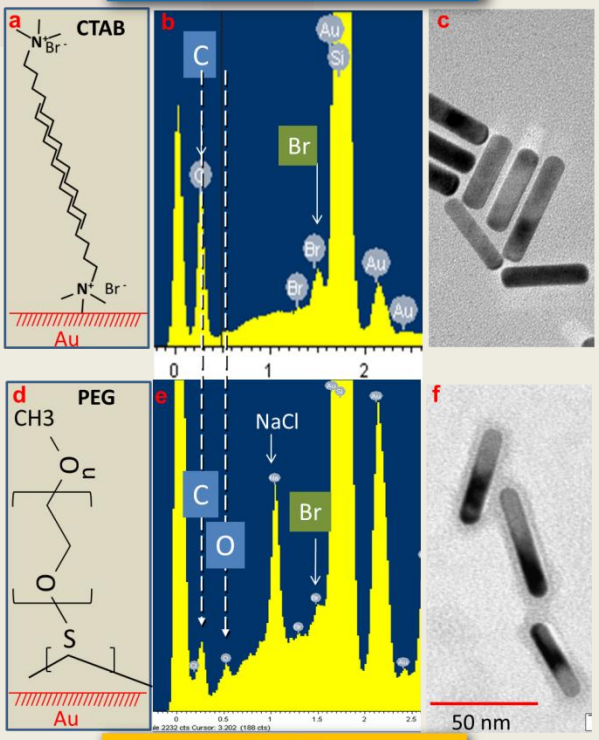
- **Elimination of CTAB cytotoxicity**
- **Long circulation time for in-vivo applications**
- **Resilient to extreme dilution and consecutive filtration**

In intravenous injections for therapeutic or imaging studies, gold nanorods are typically administered in high concentrations, but they experience extreme dilution. In other applications, e.g., surface functionalization of nanorods with other molecules such as antibodies they may undergo consecutive centrifugation or filtration.

Therefore, it is critical to have robust coatings that can maintain the integrity of the nanorods. The available coatings in the market cannot survive these abrupt changes. As seen from the right-hand side graph, our coating process results in a thin soft layer that is covalently bound to the gold surface (panel f).

Semi-quantitative surface analysis of the new coating on nanorods show loss of CTAB signature peaks (panel b) and rise of new peaks due to new ligands such as polyethylene glycol (panel e). The new coating can be visualized in TEM imaging (panel f).

**CTAB-coated gold nanorods**




**PEG-coated gold nanorods:**

a. EDS analysis of CTAB-coated gold nanorods: strong peaks for C and Br.* b) EDS analysis of Long Life PEG-coated gold nanorods: two peaks appear for C and O that agree with the C-O bonds of PEG. Br peak becomes negligible in intensity*. c) PEG-coated gold nanorods stained for visualization of the PEG coating. *samples are deposited on silicon.

*NanoRods' mission is to overcome the existing technical barriers and speed up the development of gold nanorod-based technologies. Our technical team has played a central role in understanding the structural and optical properties and synthesis of gold nanorods in the past decade. This has enabled us to reliably assist our customers with their technical needs.*