

Nanoscale Layered Metal-dielectric Probes (nanoLAMPS) for Highly Sensitive Multiplexed Detection of Pre-metastatic Cancer Cells

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Objective

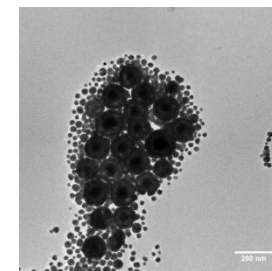
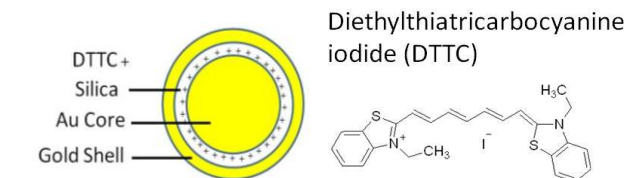
To fabricate and demonstrate the application of nanoscale Layered metal-dielectric probes (nanoLAMPS) as sensors for Raman imaging of picomolar molecular concentrations in pre-metastatic cancer cells. The work will make possible highly sensitive, specific and simultaneous sensing of multiple chemical species.

Research Highlights

- We have been successful in synthesis of one member of the nanoLAMPS. The nanoLAMPS are embedded with a Raman reporter molecule inside
- We have successfully measured Raman signal for these nanoLAMPS. We are currently quantifying the amount of SERS enhancement.
- We are evaluating a series of cancer cells lines to determine optimal functional moiety for nanoLAMPS

Future Research

- Complete fabrication of complete series nanoLAMPS.
- Quantify Raman enhancement in each nanoLAMP structure.
- Pick target cancer cell line and functionalize nanoLAMPS with appropriate moiety



TEM images of gold silica gold nanoLAMPS with embedded Raman reporter molecule. Scale Bar: 200nm