OAK RIDGE NATIONAL LABORATORY
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Quantum Enhanced Plasmonic Ultra-Trace Sensor

Disclosure Number

201303036

Technology Summary

The invention relates to sensing devices and methods and more specifically to sensing of biological or chemical antigens. This invention utilizes nanodesigned plasmonic heterostructures and squeezed light to demonstrate dramatic improvements in the sensitivity of plasmonic sensors beyond the current state of the art. Such a quantum plasmonic sensing platform can be used for the ultra-trace sensing of any antigen that can be sensed with traditional plasmonic platforms. By applying squeezed light to plasmonic nanostructures designed to demonstrate highly transmissive, high quality factor resonances spectrally resonant with the squeezed light, we can demonstrate as much as three orders of magnitude improvement in the SPR detection limit.

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