



# Gold Nanoparticle Based Sensor to Measure Mercury in Aqueous or Solid Samples

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Picoyune is developing a nanoparticle-based plasmonic mercury sensor for on-site measurements of solids and sediments. They will adapt this novel technique to measure samples from contaminated sites.

Gold nanoparticle-based plasmonic mercury sensing is inexpensive, ultra-sensitive, selective, and ideal for portable applications. Picoyune is designing and building a lightweight (<20lbs) and low power sensor that can replace time consuming and costly laboratory methods. A prototype sensor is currently being tested on field and lab samples. We are actively seeking sites and partners for initial field demonstrations. Gold nanoparticle-based mercury sensors will benefit those parties concerned with monitoring and remediation of contaminated sites as well as those who studies mercury's complicated biogeochemical cycle. Mercury in the environment can cause sever health effects. Picoyune is also working on the development of mercury sensors for industrial applications, particularly in natural gas processing. Plasmonic sensors have applications beyond mercury analysis detecting other chemical and biological species.



Gold nanoparticle films selectively adsorbs mercury from the samples, causing a change the film's optical properties. This change correlates with mercury concentration.

### Successes

- UC Berkeley Launch Competition-1<sup>st</sup> Place Energy and Cleantech
- SPIE Startup competition-3<sup>rd</sup> Place
- NSF I-Corps Bay Area Node Fall 2013-Best Team Overall
- California Dreamin' Competition-Finalist (represented UC Berkeley)
- UC Berkeley Skydeck Accelerator
- NSF SBIR Phase II