

Nonlinear Dynamic Chemical and Physical Sensing Methods Using MEMS

Disclosure Number

200902350

Technology Summary

The invention combines unique features of nanoscale mechanical oscillators with advantages of nonlinear systems. Nanoscale mechanical structures have the proven potential for inertial detection of small masses and forces. Fundamentally limited performance of appropriately designed nano-mechanical oscillators can approach one atomic mass unit provided that only thermal noise is present in the system. However, experimental implementation of such systems is very challenging as it deals with multiple sources of noise and energy dissipation in addition to the thermal noise. The submitters are well positioned to tackle this challenge due to their previous success with mass sensitive NEMS and their more recent research that involves various MEMS and NEMS detectors.

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