



Contribution ID: 17

Type: **Talk**

【52】 From picogram-level infrared absorption spectroscopy towards photon-noise limited infrared detection

Thursday, 2 September 2021 14:50 (20 minutes)

The challenges of our modern society require the development of novel sensors for the rapid detection and quantification of chemicals. We developed an uncooled infrared (IR) detector based on nanoelectromechanical sensing (NEMS) where resonators made of silicon nitride act as highly sensitive platforms for photothermal sensing. NEMILIE combines air filtering and nebulization techniques to allow the direct sampling and measurements of water (nanoplastics, pesticides,...) and airborne (viruses, nanoparticles, pollution,...) contaminants at the picogram level. By adding a broad spectral absorber, NEMILIE LIGHT can be further used as a multipurpose room temperature detector operating close to the photon-noise limit.

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Session Classification: Start-ups: From great physics to innovative products

Track Classification: Start-ups: From great physics to innovative products