ID de Contribution: **20** Type: **Oral presentation**

Optomechanical measurement of individual nanoparticles: towards the analysis of a single virus

mercredi 2 novembre 2022 09:15 (15 minutes)

We demonstrate the effectiveness of optomechanical devices for the measurement of individual nanoparticles. A semiconductor optomechanical disk resonator is optically driven and detected under ambient conditions, as nebulized nanoparticles land on it. Multiple mechanical and optical resonant signals of the disk are tracked simultaneously, providing access to several pieces of physical information about the landing analyte in real time. Thanks to a fast camera registering the time and position of landing, these signals can be employed to weigh each nanoparticle with a sensitivity down to 30 attograms. Sources of error and deviation are discussed and modelled, indicating a path to evaluate the elasticity of the nanoparticle on top of its mere mass. The device is optimized for the future investigation of nanometric objects such as sessile nanodroplets and biological particles in the high megadalton range, including the class of large viruses.

Sbarra, S., **Waquier, L.**, Suffit, S., Lemaître, A., & Favero, I. (2022). Multimode optomechanical weighting of a single nanoparticle. *Nano Letters*, *22(2)*, 710-715.

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