

# **Direct label-free visualisation of virus particle assembly**

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## **1. Abstract**

Scanning Ion Conductance Microscopy (SICM) is a powerful microscopy technique that has been developed and improved in past three decades to face growing demand of life sciences for imaging of soft, biological samples, with high resolution, in fully physiological conditions. SICM is a type of scanning probe microscopy that utilizes glass nanopipette in conducting solution to follow surface topology. As a first truly non-contact method, SICM allow 3D imaging of various cells types, with high temporal and spatial resolution (up to 10 nm) in fully physiological conditions, without risk of damage. A combination of SICM with confocal microscopy enables correlative fluorescence and topography imaging, allowing tracking a wide range of biological processes occurring in the cell membrane such as endo- and exocytosis, virus entry and release, interaction with pathogens in real time. SICM technique allowed us show, for the first time, topographically resolved HIV-1 Virus Like Particles (VLPs) on the surface of the living cell and determine the kinetic of the process of HIV assembly and release. In my presentation, I explain the principles of SICM imaging and results of the real time HIV tracking on the surface of a living cell.