

Relevance of Atomic Force Microscopy to Africa: From NanoBio Devices to Biomass Conversion in Bioenergy

Maryse D. NKOVA NGAVOUKA

Faculté des Sciences et Techniques, Université Marien Ngouabi, Brazzaville-Congo

Unité de Recherche en Nanomatériaux et Nanotechnologies, Institut National de Recherche en Sciences Exactes et Naturelles Brazzaville-Congo

Abstract:

Advanced nanotechnologies allow the manipulation of molecules with nanoscales precision, and can be used for the production of sensitive devices or aspire to discover structures and invent ways to apply these structures to solve human problems.

Surface characterization technique such as Atomic Force Microscopy (AFM) can manipulate biomolecules in physiological environment by the controlled action of a nanoscale probe, but can also measure bio-molecular interactions and mechanical properties among molecules.

Maryse will present an overview application of AFM to possibly improve the provision of health and energy services in the African continent.

In the first part, the talk will present how AFM assisted nanolithography techniques, with computer simulations complement, improve understanding/achieving ultrasensitive nanodevices to protein or nucleic acids detection for clinical use.

In the second part, Maryse will explore how the use of AFM can play a very good selectivity role by characterizing nanoparticles influencing a successful biorefinery for a better biofuels production.