



ESPCI
Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Amphithéâtre Langevin (A4), Escalier N, 2^{ème} étage

Vendredi 3 mars 2017, 11h00-12h00

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Elasticity of nano structured objects probed by AFM

In this communication we will describe how Atomic Force Microscopy (AFM) was used to investigate the mechanical properties of nanostructured objects. These objects are nanocapsules designed for a theranostic approach where they can provide both acoustic imaging properties in vivo and release properties of encapsulated drugs. The nanocapsules are made of a polymer shell (of variable thickness) and a fluorinated liquid core (of variable size). AFM provides force approach curves on individual objects which can be interpreted to provide the elasticity of the capsules as a function of their dimensions and of external parameters such annealing temperature or frequency. To reach these goals, we will explain the calibration and measurement procedures that were designed and the models which can be used for dealing with such complex composite objects.[1] The influence of the viscoelastic nature of the polymer will be also discussed as well as measurements on expected stealth nanocapsules.

[1] Baptiste Sarrazin, Nicolas Tsapis, Ludivine Mousnier, Nicolas Taulier, Wladimir Urbach and PG AFM Investigation of Liquid-Filled Polymer Microcapsules Elasticity, *Langmuir*, (2016), **32**, 4610-4618.

