

Swarming hybrid nanobots and their imaging in vitro and in vivo

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The combination of biological components and artificial ones emerges into what we called hybrid bots. Alike bacteria or small swimmers found in nature, these *artificial nanobots* convert bio-available fuels to generate propulsion force to swim at the nanoscale. One of the dreams in nanotechnology is to engineer small vehicles which can eventually be applied *in vivo* for medical purposes. In my talk, I will present how we bioengineer hybrid nanobots combining the best from the two worlds: biology (enzymes) and (nano)technology (nano- micro-particles) providing swimming capabilities, biocompatibility, remote control, multifunctionality and actuation. I will present some of the proof-of-concept applications such as the efficient transport of drugs into cancer cells and spheroids, sensing capabilities and the use of molecular imaging techniques for their tracking and localization both in vitro and in vivo in confined spaces like mice bladder.