

Nanomaterials toxicity mechanisms: general presentation and experimental challenges.

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The exhaustive characterization of the physico-chemical properties of engineered nanomaterials (ENMs) is essential to understand their mode of action and potential interaction mechanisms with living systems. We provide some example of the combination of techniques leading to the determination of size, density and surface properties of ENMs. Furthermore, carrying out in vitro tests to understand the different mechanisms of interaction represent a real experimental challenge. We show by practical examples the difficulties related to the understanding of the toxicity testing of nanomaterials, in particular in relation to the dosimetry, the interactions of the ENMs with the medium and the high complexity of the of the response observed during the tests.

Finally, a general presentation of the new developments related to the applications in nanomedicine will be given.