Nanometric micelles for *in vivo* imaging and drug delivery

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Over the past few years, medicine has been a field where nanotechnologies have shown great promise particularly for diagnosis and drug delivery applications. The challenge of nanomedicine consists in carrying active molecules through the different biological barriers and reaching specific targets in an efficient and non-toxic way. In addition, some active agents require specific formulations to overcome intrinsic problems associated with aqueous insolubility, *in vivo* stability and bioavailability. With the advent of nanotechnologies, a whole range of new carriers with different properties and functionalities are now available. However, the development of small biocompatible carriers with high loading capacity, extended circulation time, and favourable biodistribution has several unanswered issues. This talk will give an overview of our recent findings regarding photopolymerized micelles obtained from the self-assembly of diacetylene-containing amphiphiles. Their synthesis and characterization will be presented as well as some biomedical applications such as tumour imaging and drug delivery.