Abstract/Summary:
Nanoparticle technologies intended for human administration must be designed to interact with living host environment. The concept of bioinspired smart drug delivery carriers include scheming and developing biocompatible nanomaterials which can be loaded with cargo for specific drug delivery application. Such carriers are used for versatile applications in delivering drugs and pharmaceuticals for therapeutic applications, biological markers and contrast agents for imaging applications, genes and nucleic acids for gene therapy applications. These bio-inspired nanocarriers are capable of carrying bioactive molecules to the target sites based on their ability to act in response to the environmental stimuli available in living cells and/or human body. These bio-inspired nanosystems are constituted of lipids, polymers and biomaterials, thus utilizes endogenous responsiveness sensors for targeted drug delivery application. Moreover, external stimuli such as heat, light, magnetic or electric field and ultrasounds, as well as endogenous ones, such as temperature change, pH variations, redox potential and ionic strength differences can distress the responsiveness of a bio-inspired smart nanosystem for drug delivery. In relation to a variety of drug nanocarriers that can be rendered stimuli-responsive, there are quite a few classes such as liposomes, niosomes, lipoplexes and polymersomes, micellar delivery nanosystems, dendrimers, polymer-drug and polymer-protein conjugates. In this context, the purpose of this thematic issue is to highlight the key opportunities and challenges in the development of bio-inspired smart nanocarriers for therapeutic management of the diseases.

Tentative date of Submission of ALL manuscripts: January, 2019