

Cover Page



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Title: Mesoporous silica nanoparticles as drug delivery systems

Issue Date: 2012-05-09

Stellingen

1. The discovery of mesoporous silica nanomaterials revolutionized many fields in science, leading to a variety of applications from food manufacturing to pharmaceutical technology. (*Chapter 1*)
2. The inner porous structure consents to incorporate an enormous number of guest molecules which can be released on demand upon specific endogenous stimulus; this property renders them very attractive as innovative tools for bioimaging and nanomedicine. (*Chapter 2*)
3. The nanovalve systems is a molecular machine composed of interlocked molecules which allows the release of the cargo upon specific stimuli leading the formation of a “smart” delivery system. (*Chapter 3*)
4. The surface of MSNs can be functionalized to modify physical properties of the nanoparticles, such as dispersibility in aqueous media and release characteristics of the guest compound. (*Chapter 4*)
5. Zebrafish are very popular tools for drug discovery due to their versatility and to their fast development which consents rapid screening of chemical compounds. (*Chapter 5*)
6. The versatile nature of colloidosomes makes these microparticles good candidates to design a potential drug delivery system. (*Chapter 6*)
8. The colloidosomes silica shell composition is important to control the release properties of the microparticles. (*Chapter 6*)
9. The heterogeneous structure of the colloidosomes opens up possibility to deliver hydrophilic compounds from the core while hydrophobic compounds may be delivered from the mesoporous silica nanoparticles shell. (*Chapter 6*)
10. The dilution of an Italian espresso leads to the formation of an American coffee; however an American coffee cannot constitute an Italian espresso unless dialysis or water evaporation is performed.