



**Calcium phosphate nanoparticle with tailored properties
for targeted drug delivery and bone tissue
repair**

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In last few decades, pharmaceutical and medical research has advanced dramatically with new and more effective drugs and bone replacement implants introduced into the market every year. However these drugs also suffer from drawbacks such as non-selective distribution, low gastro-intestinal permeability, high first pass metabolism, poor stability and poor water solubility while the implants suffer from drawbacks such as mechanical properties mismatch and biocompatibility. In recent years, novel particulate drug delivery systems have been assessed to overcome one or more of these drawbacks. Drug delivery via nanoparticles (NPs) has shown promising results in overcoming these problems with the potential to improve therapeutic outcomes. Among various nanoparticulate systems calcium phosphate NPs comes as an attractive yet less explored candidate. It has numerous advantages including ease of synthesis, control of physico-chemical properties, strong interactions with biological and drug molecules, biocompatibility and biodegradability. In this talk I intend to show results of my past work related to synthesis of ceramic as well as calcium phosphate nanoparticles and their use in generating nanostructured materials. I will also discuss how some these synthetic strategies could be used to generate nanoparticulate/ nanostructured calcium phosphate materials for drug delivery and bone tissue repair applications.