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Quantum dot-coupled amorphous calcium phosphate nanoparticle as an ideal drug delivery and imaging agent

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In this study, quantum dots were coupled with amorphous calcium phosphate (ACP) utilising biomineralization principle. The synthesized nanoparticles revealed the core-shell structure and long-time stable fluorescent properties. On one hand, the fluorescent emission of the quantum dot cores shows narrow photoluminescence, colour tunability, longer fluorescent life-time and photo-bleaching resistance, etc. On the other hand, the ACP shell plays a crucial role in reducing toxicity of drug components and quantum dot agents as well due to its excellent biocompatibility. Our results suggest that this type of nano-carriers can serve as a model system for drug delivery with very high biocompatibility and well-imaging properties compared with other drug delivery systems coupled with organic dyes or fluorophores.

Biography

Duc Viet Nguyen is currently a PhD candidate under the supervision of Prof. Xiang Yang Liu in the field of biomineralization. His interests focus mainly on the influence of substrates and electric field on the formation of hydroxyapatite, calcium carbonate and the utilisation of biomineralization principle on engineering advanced multifunctional materials.

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