



POROUS SILICON NANOPARTICLES FOR DRUG DELIVERY APPLICATIONS

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This research focuses on Porous Silicon Nanoparticles (PSiNPs) and explores the potential surface passivation with bioorganic molecules for therapeutic purposes.¹ Porous Silicon (PSi) is a nanostructured material known for its optical properties and sponge-like structure, providing a substantial surface area suitable for decorating with biomolecules. The optical characteristics of PSi arise from voids in its network, which can be controlled by adjusting various process parameters, resulting in diverse photonic structures.^{2 3 4}

However, the main challenge with using PSi is its chemical instability in air or aqueous environments. Exposure leads to the replacement of native Si-H bonds with Si-O-Si bonds, forming a surface oxide layer and compromising stability. To address this issue and ensure the stability of PSiNPs, a crucial passivation process for their surface is necessary.⁴ In this study, carbohydrates were employed for the effective passivation of PSiNPs, enhancing their suitability for applications in drug delivery.

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