



The polyacrylic acid/modified chitosan capsules with tunable release of small hydrophobic probe and drug



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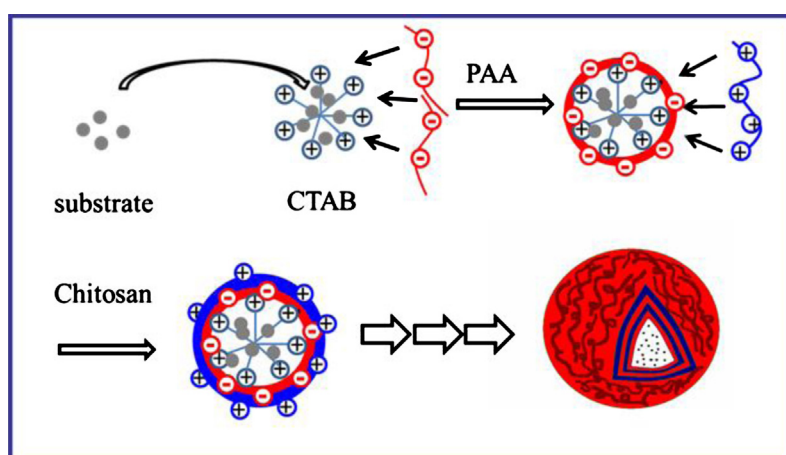
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HIGHLIGHTS

- Polyelectrolyte nanocapsules (≤ 200 nm) with a tunable behavior were obtained.
- Polyacrylic acid/chitosan deposition occurs on the load pretreated by CTAB.
- The size and charge of the capsules and their protective effect were controlled.
- Nature of the loads served as a template controls the shell permeability.

GRAPHICAL ABSTRACT



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ABSTRACT

Nanocapsules (≤ 200 nm) with a protection effect toward small hydrophobic guests (p-nitrophenyl lactate and acetylsalicylic acid, aspirin) and a tunable sustained release behavior have been fabricated through the layer-by-layer deposition of polyacrylic acid and modified chitosan. Cationic surfactant cetyltrimethylammonium bromide, was used to increase the affinity of polyelectrolyte to the substrate. The release profile was monitored through original protocol involving a fast cleavage of the substrate released and a spectrophotometric control of the product. The shell permeability of the capsules and hence their protective effect may be tuned through the variation of the number of layers deposited, sonication, and the adjustment of solution pH. Importantly, the dispersed loads serving as a template for the capsule fabrication may control their properties, including shell permeability.

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