Cell Uptake of Mesoporous silica Nanoparticles by Flourescence Imaging

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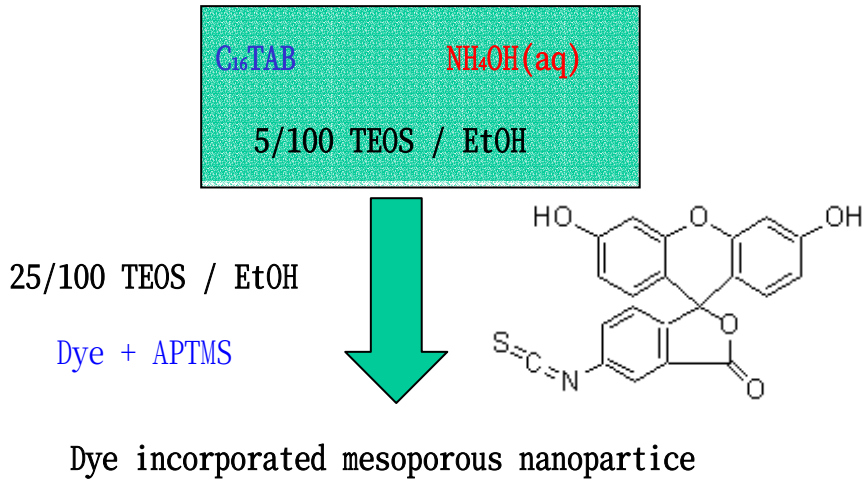
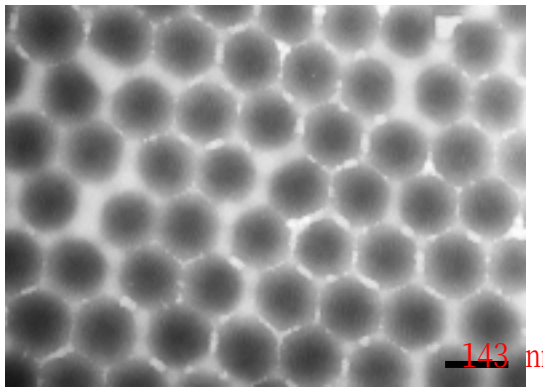
Abstract:
Mesoporous silica is envisioned as a container for drug. Because the easy derivation of silica it should be an excellent candidate for targeted drug delivery. Well ordered hexagonal shaped mesoporous silica with size of 100 nm have been synthesized, and green luminescence dye, flurosceine incorporated in the nanoparticle to track the silica. The murin 3T3 cell uptake of the mesoporous silica has been demonstrated. This sets up the base for targeted drug delivery.

I. Incorporation of dye in mesoporous silica

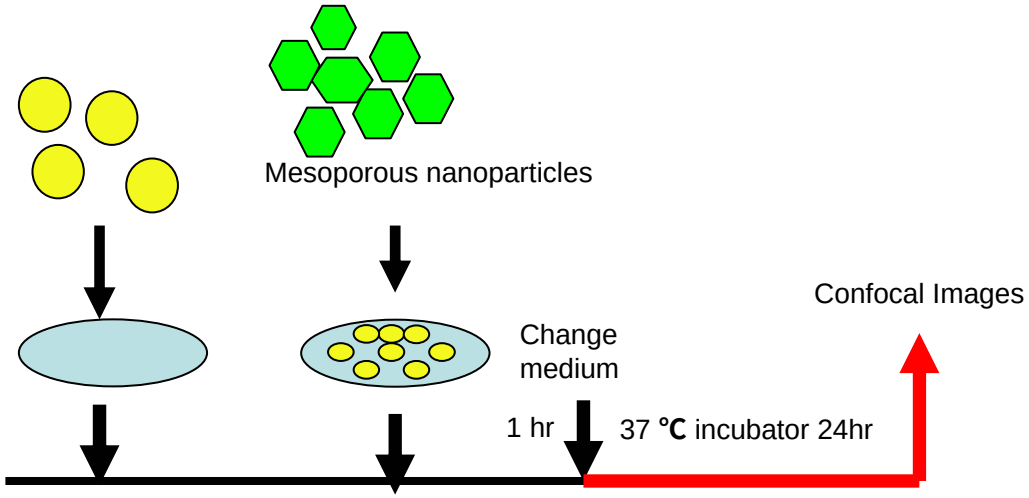


Dye incorporated mesoporous nanopartice

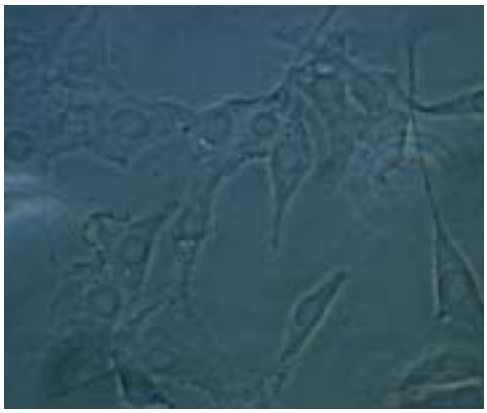
II. 3T3 Cell uptake

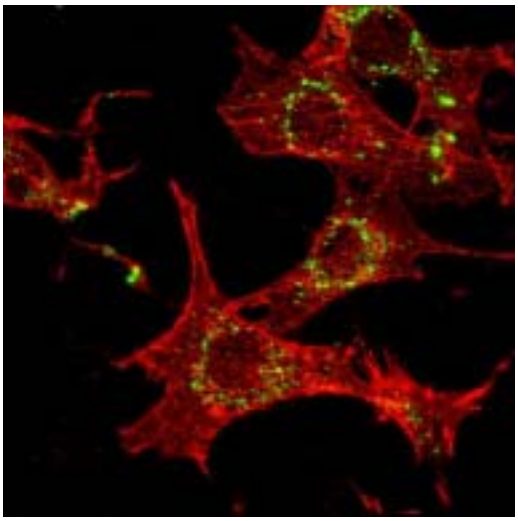


III. Results



NIH 3T3 Cell





- Demonstrated mesoporous silica can internalize into 3T3 cell.
- Nanoparticles accumulated around cell nucleus and through out the cytoplasm, but not inside the nucleus.
- Preliminary flow cytometry results indicated the internalization process appeared to be quite efficient, around 15%.
- Cell viability appeared not affected.