

## MONODISPERSE AMORPHOUS CALCIUM PHOSPHATE NANOSPHERES

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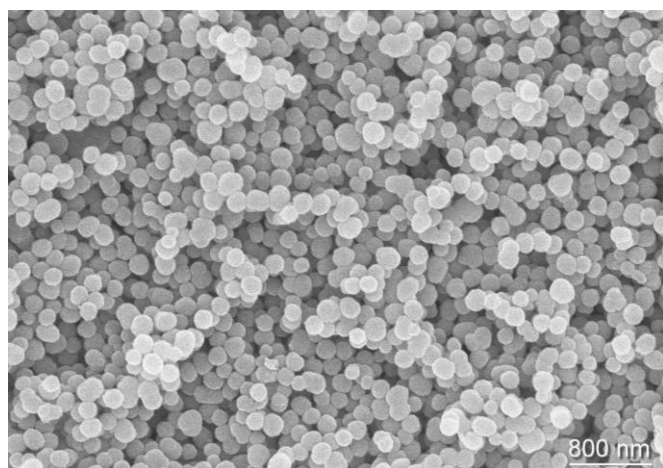
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Production of monodisperse amorphous calcium phosphate (ACP) nanospheres/nanoparticles is finally made possible by two recently published extremely easy synthesis methods.

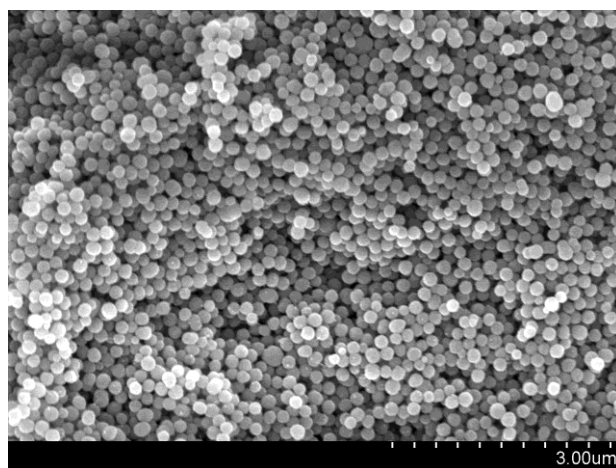
Clicking on the photos will automatically load these recent publications.

The first method (*i.e.*, the photo on the left) used an easy-to-prepare [solution](#) (*i.e.*, BM-7), which is similar to “the inorganic compartment” of a quite common cell culture medium known as DMEM (Dulbecco’s Modified Eagle Medium).

The second method (*i.e.*, the photo on the right) used an SBF (Synthetic Body Fluid) [solution](#) (which resembled human blood plasma) free of non-metabolic Tris or Hepes.



A. C. Tas, [J. Mater. Chem. B, 2013](#) \*



A. C. Tas, [J. Non-Cryst. Solids, 2014](#)

Nanoparticles have the potential to serve as drug, gene or vaccine delivery agents or carriers, as well as finding use in *in vitro* diagnostics or MR imaging research. Most current research for drug delivery focuses on development of polymeric or metallic nanoparticles, which may have some toxic side effects and which need further tedious and expensive *in vivo* testing for their toxicity.

One needs to see the [article](#) of W. H. De Jong and P. J. A. Borm for possible hazards of currently considered nanoparticles of polymeric or metallic origin.

[Amorphous calcium phosphate](#) (ACP) is the substance (or phase) which forms first in any *in vitro* calcium phosphate crystallization process. Until recently, “phase-pure” ACP synthesis attempts resulted in agglomerated ACP with irregular and unpredictable shapes. We showed production of “monodisperse ACP nanospheres” is possible without using any cytotoxic chemicals or reagents even at the ppb level.

\* A. C. Tas, [US patent 9,108,860](#) (August 18, 2015)