450d Microemulsion-Based Synthesis of Calcium Phosphate Nanoshells

Agnes Ostafin and Hartley T. Schmidt

Calcium Phosphate encapsulated microemulsions of nanometer dimensions are an excellent delivery vehicle for hydrophobic substances both for in vitro cell culture and in vivo therapies where drugs used are too hydrophobic to be delivered via the bloodstream. The inherent biocompatibility of nanosized calcium phosphates and their ability to pass the cell plasma membrane are important features of this unique biomaterial. Recently, we established the liquid-phase synthesis of aqueous cored calcium phosphate nanoshells, and here we have extended the approach to permit the production of oil-filled calcium phosphate nanomaterials. Details about the synthesis and the characteristics of the materials are described. A hydrophobic dye is used to demonstrate the loadability of these materials with hydrophobic substances.