

International Conference on Significant Advances in Biomedical Engineering

April 27-29, 2015 Philadelphia, USA

Synthesis and surface modification of hydroxyapatite nanorods incorporating functionalized surfaces for dental restoration

A Anwar, J A Darr and Q Pankhurst
University College London, UK

A new approach for surface modification of hydroxyapatite (HA) is described. The surface of HA was modified using poly-vinyl alcohol, adipic acid, citric acid, vinylphosphonic acid and methacrylic acid, respectively using a continuous (plastic) flow reactor which gives a reaction temperature of 70°C and total reaction time of ca. 5 minutes. The nanoparticles obtained from this method possess remarkably high surface area (>200 m²g⁻¹) and are potentially suitable for a range of biomedical and dental applications. The presence of surface modifiers had a substantial influence on the properties of the HA, affectively. It was observed that the Ca/P molar ratio decreased from 1.67 to 1.37 by the addition of organic modifiers. Transmission electron microscopy (TEM) studies revealed highly dispersed nanosized rods with a length and diameter ranges of 20-60 nm and 4-10 nm, respectively. Dynamic light scattering (DLS) measurements indicated that the colloidal stability of modified HA tremendously increased the stability of particles in water in comparison to ungrafted HA. Surface modification with different carboxylic containing organic agents resulted in the production of nano-sized HA crystals which could be readily dispersed in dental composites and possessed good radiopacity.

Biography

Aneela Anwar, an outstanding student throughout her academic career and extraordinary university teacher, has recently completed PhD from University College London, UK on IDB merit scholarship. She has been an exceptional student as she was conferred roll of honor in graduation, secured positions in her master and M Phil program and did exceedingly well in her PhD. Her work was lauded much and she successfully patented her PhD work. Besides good in academics, Aneela is well known for her teaching and research. She has taught at various levels in well reputed universities in Pakistan and many of her students in M Phil produced great research thesis. Aneela has presented her research work at various national and international conferences. Her sessions were much admired for the quality of subject matter and excellent presentation skills.

aneelaanwar83@gmail.com