

Abstract Submitted
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Nanoparticle Formation of Compound Materials¹

OMAR MUSAEV, VLADIMIR DUSEVICH, DAVID WIELICZKA, JERZY WROBEL, MICHAEL KRUGER, UMKC — UV pulsed laser radiation was applied to synthetic polycrystalline hydroxyapatite, the mineral that is the main component of bone. The process was carried out in deionized water. The ablated nanoparticles have been studied with Raman spectroscopy, TEM and XPS. According to transmission electron microscopy micrographs, the ablated particles were approximately spherical and had a size of ~ 100 nm. Raman spectroscopic analysis indicated that particles had the same structure as the original crystal. XPS demonstrated that the surface chemical composition is similar to that of the original material. The advantage of this method in comparison with ablation in vacuum and gas is that due to the confinement conditions produced by the water, the composition of the ablated nanoparticles remains the same as the target material. Another advantage is in the simplicity of the method in comparison to both ablation in vacuum or low pressure gas and to chemical methods for nanoparticle synthesis.

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