**Nanocomposites and nanomaterials**

**The comparison of hydroxyapatite/ iron oxide composite properties and its constituents**

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Nanotechnology has become a vital field of science. Development of nanoscale materials is of great interest due to properties exhibit by nanoparticles, which are different from those in macroscale and often demonstrate new application possibilities [1].

Many chemical compounds can be obtained in nanoscale. Among them, hydroxyapatite and several iron oxides attract significant attention due to their characteristic properties and potential utilization. First of them, is a mineral composed mainly from calcium and phosphorus. Hydroxyapatite has an ability to combine and incorporate other substrates, which makes it a multifunctional material [2]. In turn, iron oxides are mainly distinguished mainly by their magnetic properties. Main forms of these are hematite, magnetite and maghemite, which also have unique characteristics [1].

Currently, many scientists are focused on development new composites derived from constituents exhibiting extraordinary properties, especially in nanoscale. Composite formed by hydroxyapatite and selected iron oxide is stated as multifunctional material, which can be applied in many areas. Consequently, there is a need to developing research concerning synthesis efficiency and improvement of properties [3].

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