

## NANOSTRUCTURED MAGNETIC MATERIALS USED IN CANCER TREATMENT

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**Abstract.** *Nanostructured biomaterials present a series of advantages which have greatly contributed to the advancements made in the biomedical field. Magnetic nanoparticles are often used as a core, which is covered by a biocompatible layer, determining a core-shell structure that can be used in the transport of bioactive components. Magnetite is a mineral that belongs to the iron oxide category and differs from the rest of the iron oxides by the fact that it contains both divalent and trivalent iron ions. The present study is focused on the development of magnetite based nanostructures functionalized with cytostatic by co-precipitation method, starting from FeCl<sub>3</sub> and FeSO<sub>4</sub>, in an alkaline environment. For characterizing the obtained materials, a set of techniques were used, among which FT-IR spectrometry, Scanning electron microscopy, Transmission electron microscopy etc.*

**Keywords:** magnetite, chitosan, cannabidiol, co-precipitation, cancer

### 1. Introduction

Cancer is a major health problem throughout the world, which is accentuated by changing environmental conditions and especially lifestyle [1]. Lung cancer is one of the most common forms of cancer and an important cause of death in adults. Pulmonary neoplasms are often diagnosed late, in advanced stages of cancer, the large size of the lung allowing the tumor to grow and develop long before the first symptoms appear [2, 3]. Hence over one million deaths occur annually worldwide following a diagnosis of lung cancer. The current treatment methods have a multimodal approach, which combines the benefits of surgery,

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