

Synthesis by sol-gel technique and Antibacterial activity of bioactive hybrid SiO₂ inorganic matrix by different structures of Ferrous citrate (Fe(II)C): comparative study

M.Catauro^{1,*}, Y. D'Errico¹, G. Dal Poggetto², D. Montesano³, D.Naviglio⁴, M.Gallo⁵

¹*Department of Engineering, University of Campania "Luigi Vanvitelli", via Roma 29, I-81031 Aversa, Italy*

²*Department of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia, Via P. Vivarelli n. 10, 41125 Modena, Italy.*

³*Department of Pharmacy, University of Naples Federico II, via D. Montesano, 49, 80131 Naples, Italy*
⁴*Department of Pharmaceutical Sciences, Section of Food Science and Nutrition, University of Perugia, via San Costanzo 1, 06126 Perugia, Italy*

⁴*Department of Chemical Sciences, University of Naples Federico II, via Cintia, 4; 80126 Naples, Italy.*

⁵*Department of Molecular Medicine and Medical Biotechnology, University of Naples Federico II, via Pansini, 5; 80131 Naples, Italy.*

*Correspondence: michelina.catauro@unicampania.it

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Abstract.

The aim of this work was to characterize and compare three different structures of Ferrous citrate (Fe(II)C), amorphous, semi-crystalline and crystalline incorporated into a SiO₂ inorganic matrix by sol-gel technique. On this system thus obtained, colorimetric assay was carried out to confirm the only presence of Fe²⁺; Fourier transform infrared spectroscopy (FTIR) confirmed not only the Fe(II)C presence in the silica matrix but also showed us the interactions among different components in the hybrid materials. The bioactivity of the synthesized hybrid materials was evaluated by the formation of a layer of hydroxyapatite on the surface of samples soaked in SBF using FTIR spectroscopy. Finally, the antibacterial properties of the hybrid materials were investigated.