

S1-P.13

Silanized Citric Acid Capped Magnetic Nanoparticles and Influence on Chlorophyll

L. Popescu¹, L. Sacarescu², M. Grigoras³, C. Morosanu¹, D. Creanga¹,
D. Dorohoi¹, and C. Stan⁴

¹Alexandru Ioan Cuza University, Physics Faculty, Iasi, Romania

²P. Poni Institute of Macromolecular Chemistry, Iasi, Romania

³National Institute National Institute of Research and Development for Technical Physics, Iasi, Romania

⁴Politehnica University, Applied Science Faculty, Bucuresti, Romania

Two step synthesis of cobalt ferrite nanoparticles capped with citric acid and coated with silica was carried out. Citric acid coated magnetic grains were synthesized by chemical co-precipitation starting from iron and cobalt salt solutions in stoichiometric ratio. Adapted sol-gel method was applied to yield the silica/citrate/cobalt ferrite nanocomposites. Microstructural and magnetic properties were evidenced by TEM, XRD and VSM. Nanotoxicity tests were done on maize plants during their early ontogenetic stages. Quantum mechanical characterization was performed with specialized software to evidence chlorophylls molecular properties for discussing their diminished contents in the green tissues of young seedlings supplied with magnetic nanocomposites.