

Anexa 2a

Titlu proiect: Synthesis and characterization of some nanoparticles, nanocomposites and thin films for medical applications

Categoria de proiect: 03-4-1104-2011/2016 – IUCN DUBNA

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Manager proiect: Iacomi Felicia

Lista rezultate

Nr. crt.	NUME AUTORI	TITLUL ARTICOLULUI/ CĂRȚII/ COMUNICĂRII ȘTIINȚIFICE	REVISTA / VOLUMUL/EDITURA IN CARE A APARUT / CONFERINTA LA CARE S-A COMUNICAT	ANUL PUBLICĂRII/ COMUNICĂRII
ARTICOLE ISI				
1	R. Danac, L. Leontie, A. Carlescu, S. Shova, V. Tiron, G.G. Rusu, F. Iacomi, S. Gurlui, O. Șușu, G.I. Rusu	Electric conduction mechanism of some heterocyclic compounds, 4,4'-bipyridine and indolizine derivatives in thin films	Thin Solid Films, 612 (2016)358-368	2016
n	M. Andries, D. Pricop, L. Oprica, D.-E. Creanga, F. Iacomi	The effect of visible light on gold nanoparticles and some bioeffects on environmental fungi	International Journal of Pharmaceutics, 505 (1-2) (2016) 255-261	2016
ARTICOLE ALTE BAZE DE DATE				
1				
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CARTI				
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COMUNICARI ȘTIINȚIFICE NATIONALE				
1				
n				
COMUNICARI ȘTIINȚIFICE INTERNAZIONALE				
1	F. Iacomi	Studies on some iron oxide nanoparticles, nanocomposites and thin films for advanced applications	SANS YUMO, Dubna	2016
2	G. Bulai, A. Popa, D. Toloman, C. Focsa, S. Gurlui, F. Iacomi	Magnetic properties of Gd and La doped cobalt ferrite thin films	NanoSea 2016, Giardini Naxos, Italy - oral presentation	2016
3	R. Bosinceanu, A. Vasile, E. Vasile, I. Deac, M.N. Palamaru, A.R. Iordan, M. Iacob, C. Turta, F. Iacomi		NanoSea 2016, Giardini Naxos, Italy- oral presentation	2016
4	D. Pricop, M. Andries, D. Creanga G. Bulai, M. Dobromir, I. Motrescu, F. Doroftei, C. Ciobanasu, S. Boninelli, F. Iacomi		NanoSea 2016, Giardini Naxos, Italy - poster presentation	2016

5	M. Irimia, C. Doroftei, A. Yildiz, M. Dobromir, D. Timpu, Gh. Zoderiu, M. Toma, F. Iacomi	Effect of substrate nature and annealing procedure on functional properties of Ga-doped ZnO thin films	NanoSea 2016, Giardini Naxos, Italy - poster presentation	2016
ATLASE, DICTIONARE DE SPECIALITATE				
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CERERI BREVET DE INVENTII/BREVET OBTINUT				
ALTE rezultate				
1	<p>The purpose of this project was the synthesis and the study of the properties of some biocompatible metallic and oxide nanoparticles, non isolated and superficially isolated with biocompatible polymers which can be dispersed and stabilized in various biocompatible liquids such as saline solution.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1) The synthesis of oxide and metallic nanoparticles, nanocomposites, and thin films with desired properties, for use in dentistry, biosensors and medical devices; 2) physical characterization of the synthesized materials by XRD, XPS, HRTEM, BET, and ND 3) the design of a nanocomposite biosensor based on magnetic nanoparticles used for biomolecules detection. <p>Iron oxide nanoparticles, Fe₂O₃/MCM-41, Fe₂O₃/polymer+silica nanocomposites, hematite thin films and iron oxide/mineral clay were prepared. Nanostructured character was investigated using XRD, SEM, HRTEM, AFM and XPS/ EPR investigation evidenced that aggregation processes determine the increase in magnetic anisotropy, becoming more visible by increasing the pore sizes (MCM-41, mineral clay), the iron content, the silicon content (nanocomposites based on polymers) and in thin films. Mössbauer spectra confirmed the presence of two iron oxide species : hematite and superparamagnetic iron oxide species. ZFC and FC magnetization curves enabled the evaluation of TB (blocking temperature) and T_{ir} (separation temperature) and to distinguish superparamagnetic from regular ferrimagnetic behavior. EPR and magnetic investigations of iron oxide/mineral clay evidenced the importance of irradiation and annealing processes in controlling the iron oxide phases content. The resulted properties recommend these nanoparticles, thin films and nanocomposites for advanced medical applications.</p> <p>Two sets of gold colloids were prepared: one with an incomplete nucleation, than exposed to irradiation with green light or white light(90 min); a second one with a complete nucleation than exposed to irradiation with green light or white light(90 min). The resulted gold colloids were analyzed using HRTEM and UV-VIS spectroscopy and dark field spectroscopy. In order to have structural informations thin layers were deposited on glass and analysed by XRD, Raman and XPS methods. HRTEM and dark field spectroscopy analysis evidenced that the irradiation of incomplete nucleated gold colloids with green light favorize the formation of gold sea-urchin-shaped nanoparticles. The absorption peaks of these samples were located at 530 nm in comparison with the colloids with complete nucleation (sferical shaped) located at 527 nm. Raman spectra and C1s, O1s XPS spectra (registered on thin films) showed changes in surface citrate molecules attached to the gold nanoparticles. These changes were confirmed by Au 4f XPS spectra that showed different Au species at the nanoparticles surface. The nanoparticles elaborated under green light exposure showed an increased bioeffects on environmental fungi.</p> <p>A new 64SiO₂·27CaO·4P₂O₅·3TiO₂·2Al₂O₃ (mol%) glass was prepared by sol-gel method. The glass was analysed by using XRD, FTIR, SEM and XPS methods and it was evidenced an homogenous amorphous, porous structure suitable for dentistry applications.</p>			

Director proiect,

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