

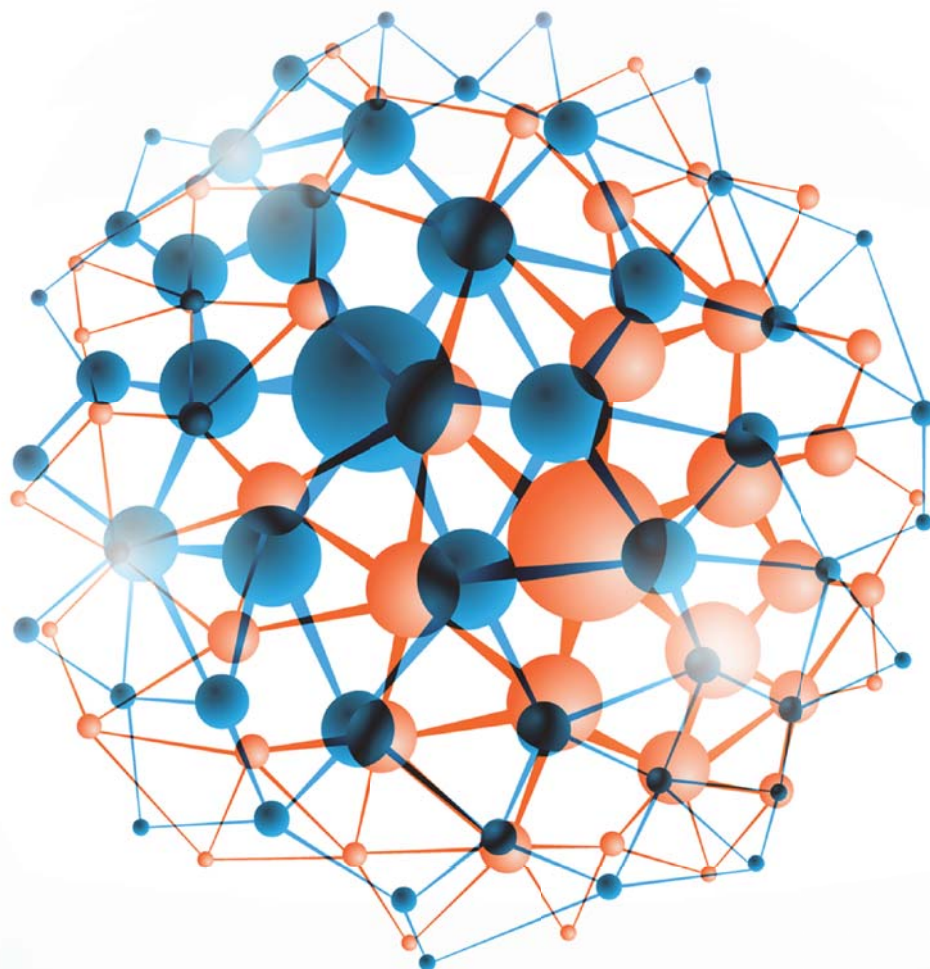
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BOOK OF ABSTRACTS

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Understanding of two distinct and independent mechanisms of apoptosis and autophagy-mediated necrosis in human endothelial cells to determine size allowance of silica nanoparticles for biomedical application	170
<u>Dr. Young-Lai Cho, Ms. Na Geum Lee, Dr. Kwang-hee Bae</u>	
Wireless electronic manometer based on nanomaterials	172
<u>Ms. Zhuldyz Otarbay, Ms. Dilyara Abay, Ms. Madengul Token, Dr. Mukhit Muratov, Mr. Daniyar Ismailov, Mr. Nazim Guseinov, Dr. Maratbek Gabdullin</u>	
Antibiotic-Encapsulated Poly(lactic acid) Particles integrated in Porous Gelatin Scaffolds for Tissue Engineering Applications	173
<u>Dr. Patcharakamon Nooeaid, Dr. Piyachat Chuysinuan, Dr. Chalinan Pengsuk, Dr. Decha Dechtrirat, Prof. Supanna Techasakul</u>	
Microstructure Characterization of Mechanically-Induced Synthesizing of Zinc Metatitanate	174
<u>Dr. Latifah Alhajji</u>	
Cytochrome P450 genes expression in HepG2 cells after treatment with nanostructures of different allotropic forms of carbon	175
<u>Ms. Barbara Strojny, Dr. Marta Grodzik, Ms. Malwina Sosnowska, Mr. Jarosław Szczepaniak, Dr. Marta Kutwin, Dr. Sławomir Jaworski, Ms. Natalia Kurantowicz, Dr. Mateusz Wierzbicki, Dr. Anna Hotowy, Prof. Ewa Sawosz</u>	
Anti-inflammatory properties of new hybrid biomaterials based on silver nanoparticles and polyphenols from European elderberry fruits	176
<u>Prof. Luminita David, Dr. Bianca Moldovan, Mrs. Nicoleta Decea, Prof. Gabriela Adriana Filip</u>	
Microstructure analysis of differently shaped nanocrystalline (Fe,Y)3O4	177
<u>Dr. Bratislav Antic</u>	
Luminescent Dye-Doped Polymer Nanofibers Produced by Electrospinning Technique	178
<u>Dr. Monica Enculescu, Mr. Alex Evanghelidis, Dr. Ionut Enculescu</u>	
Poly (lactic acid) (PLA) electrospun nanofibers containing rice extracts for biomedical applications	179
<u>Dr. Piyachat Chuysinuan, Mr. Nitirat Chimnoi, Mrs. Lalita Pattani, Mrs. Panita Khlaychan, Dr. Patcharakamon Nooeaid, Prof. Supanna Techasakul</u>	
Observation of partial relaxation mechanisms via anisotropic strain relief on epitaxial islands using semiconductor nanomembranes	180
<u>Ms. Bárbara Rosa, Ms. Lucas Marçal, Dr. Rodrigo Andrade, Dr. Luciana Dornelas, Prof. Wagner N Rodrigues, Prof. Patricia Lustoza, Prof. Maurício Pires, Prof. Ricardo W Nunes, Prof. Ângelo Malachias</u>	
The effects of biofunctionalized silver nanoparticles with polyphenols from Cornus Mas in experimental inflammation	182
<u>Prof. Gabriela Adriana Filip, Prof. Simona Clichici, Mrs. Nicoleta Decea, Dr. Ioana Baldea, Dr. Diana Olteanu, Dr. Ramona Suharoschi, Dr. Ioana Scrobota, Dr. Mihai Cenariu, Dr. Bianca Moldovan, Prof. Luminita David</u>	
Magnetic and Structural Properties of the Maghemite Core-Shell Nanoparticles at Elevated Temperatures	183
<u>Mr. Ihor Syvorotka, Mr. Stepan Hurskyy, Prof. Sergii Ubizskii, Prof. Leonid Vasylechko</u>	
Development of a thermo-reversible in situ forming implant associated with Nanostructured Lipid Carriers (NLC) as sustained delivery system for estradiol valerate.	184
<u>Mrs. María Teresa Pineda Hernández, Dr. Flora Adriana Ganem Rondero</u>	

Wireless electronic manometer based on nanomaterials

Thursday, 19th October - 13:30 - Poster Session - Hall & Room 3 - Poster - Abstract ID: 803

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Introduction

Currently, nanomaterials are widely used in all fields of activity. They have unique properties due to small size, structure, chemical composition and large surface area. This article examines the use of electronic sensors based on nanomaterials. Manometer-instrument for measuring of excess pressure in liquid and gaseous media. Manometric devices have a variety of applications: industry, transport, household appliances, scientific researches etc.

Methods

The main method of obtaining the CNM was the CVD method. This method is relevant, in connection with the frequency of output. The essence of the method is the pyrolytic decomposition of a gas containing carbon and the synthesis of CNTs on catalyst particles that are in the form of a thin film on a substrate or a powder in a stationary or mobile (pseudo-boiling) layer.

Results

Initially, Si substrates were used which were previously deposited by spraying the film with Ni catalysts, for the further growth of CNTs. The process of synthesis, growth of CNTs passed in a tube furnace with a gradual heating up to 750⁰ C, and also with a constant supply of hydrogen. After the temperature of the preset bar 750⁰ C was set, the alcohol itself was supplied directly for 15-20 minutes, the carbon carrier, which when decomposed into the oven and deposited on the film, formed CNTs with Ni catalysts on the film, the average tube diameter reached 80 nm, and the structure was a felt of a long order of 1.5 μm.

Discussion

In this work, an experiment was carried out with Ni catalysts at a temperature of 750 ° C for 15-20 min, and CNTs with a diameter of 80 nm were formed on the film, and the structure was 1.5 μm. The resulting nanotubes were used in manometers with a possible remote control system. Next, a hardware part was created that was a set of mounted PCBs and a software part with output to wireless interfaces. The wireless electronic manometer reduces operational costs, improves security and provides continuous access to data through a wireless device via Bluetooth or Wi-Fi.

Mohamed, S.	120	Oliva, R.	273
Molchanov, V.	243	Oliveira, F.	158
Moldovan, B.	176, 182	Olsbye, U.	242
Monaco, S.	318	Olteanu, D.	182
Morales, N.	24	Omirbekov, D.	305
Moreels, I.	276	Orazbayev, S.	305
Mortazavi, S.	291	Ortega Arroyo, L.	188
Mosinger, J.	15	Ortega Mendoza, J.	24
Mosselhy, D.	215	Osmanova, E.	308
Mouloud, K.	198	Otarbay, Z.	23, 172, 305
Muller, O.	74, 223	Otsuji, T.	206
Muratov, M.	172	Ouarez, L.	30, 154
Murotani, H.	307	Oyanedel Craver, V.	317
Mustafaeva, Z.	270	Ozdemir, E.	237
N. Oliveira Jr., O.	131	Paci, B.	218
Nadal, E.	76	Padilla Martínez, J.	24
Namoune, A.	145	Palade, C.	226
Narumi, A.	68	Palazon, F.	136
Nasir, M.	297	Palermo, V.	2
Navratil, J.	107	Palva, A.	215
Nayak, P.	63	Pananon, P.	10
Nechanická, M.	36	Panniello, A.	220
Nechepurenko, I.	98	Paolella, A.	318
Necib, K.	154	Parak, W.	124
Neto, M.	158	Paraschiv, G.	113, 151
Niedziolka Jonsson, J.	16	Park, B.	84
Nimbalkar, S.	209	Park, E.	45
Nissan, Y.	86	Park, H.	45, 322
Nogajewski, K.	333	Park, K.	99, 298
Noh, Y.	28, 285, 295	Park, N.	298
Nooeaid, P.	173, 179	Park, S.	264
Nordström, K.	215	Parkula, V.	78
Notomista, E.	273	Passoni, L.	116
Nouredine, O.	104	Pastene, C.	97
Novak, P.	338	Pattani, L.	179
Nunes, R.	180	Pedersen, E.	138
Nyamori, V.	278	Peikrishvili, A.	166, 185
Nykl, P.	214	Pelit Arayıcı, P.	270
Oancea, M.	281	Pelleg, J.	27
Obreja, P.	262	Pellegrino, T.	213
Oh, C.	45	Pengsuk, C.	173
Ohnishi, N.	9	Peres, L.	76
Okahisa, S.	32	Perez Rea, L.	188
Okolo, C.	280	Pertegas, S.	296
Oladimeji, E.	77	Petica, A.	35
Olejnik, R.	56, 169, 296	Petraccone, L.	273
		Petralanda, U.	136