

Titlu proiect: Imbunatatirea materialelor TCO pentru noua generatie de electronica transparenta si investigarea lor completa pe un domeniu larg cu ajutorul elipsometriei de la UV la Mid IR

Categoria de proiect: PN-II-ID-PCE-2011-3-0446

Contractul de finantare: 12/2011

Manager proiect: Gartner Florica Mariuca

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	M. Covei, L. Predoana, P. Osiceanu, J.M. Calderon-Moreno, M. Anastasescu, S. Preda, M. Nicolescu, M. Gartner, M. Zaharescu	Niobium / Vanadium doped TiO ₂ multilayered sol-gel films: structure, surface chemistry and optical properties	Ceramics International, 42 (2016) 13805–13811	2016
2	M. Duta, S. Simenov, V. Teodorescu, L. Predoana, D. Spasov, S. Preda, M. Nicolescu, M. Gartner, M. Zaharescu, A. Szekeres	Structural and electrical properties of Nb doped TiO ₂ films prepared by the sol-gel layer-by-layer technique	Materials Research Bulletin, 74 (2016) 15–20	2016
3	M. Duta, M. Anastasescu, J.M. Calderon-Moreno, L. Predoana, S. Preda, M. Nicolescu, H. Stroescu, V. Bratan, I. Dascalu, E. Aperathitis, M. Modreanu, M. Zaharescu, M. Gartner	Sol-gel versus Sputtering Indium Tin Oxide Films as Transparent Conducting Oxide Materials	Journal of Materials Science: Materials in Electronics (JMSE), 27 (2016) 4913–4922	2016
4	L. Predoana, I. Stanciu, M. Anastasescu, J. M. Calderon-Moreno, M. Stoica, S. Preda, M. Gartner, M. Zaharescu	Structure and properties of the V-doped TiO ₂ thin films obtained by sol-gel and microwave assisted sol-gel method	Journal of Sol-Gel Science and Technology (JSST), 78 (2016) 589–599	2016
5	M. Duta, S. Mihaui, C. Munteanu, M. Anastasescu, P. Osiceanu, A. Marin, S. Preda, M. Nicolescu, M. Modreanu, M. Zaharescu, M. Gartner	Properties of In-N codoped p-type ZnO nanorods grown through a two-step chemical route	Applied Surface Science, 344 (2015) 196–204	2015
6	M Duta, S Simeonov, D Spasov, S Mihaui, M Anastasescu, A Szekeres, M Gartner, M Zaharescu	Electrical characterization of In-N codoped p-type ZnO films grown by chemical methods	Journal of Physics: Conference Series, 558, (2014) 012038	2014
7	L. Predoana, S. Preda, M. Nicolescu, M. Anastasescu, J.M. Calderon-Moreno, M. Duta, M. Gartner, M. Zaharescu	Influence of the substrate type on the microstructural, optical and electrical properties of sol-gel ITO films	Journal of Sol-Gel Science and Technology (JSST), 71 (2014) 303–312	2014
8	M. Anastasescu, V.S. Teodorescu, O. Buiu, P. Osiceanu, J.M. Calderon-	Substrate impact on optical and microstructural properties of TiO ₂ –PEG sol-	Ceramics International, 40 (2014) 11803–11811	2014

	Moreno, L. Predoana, S. Preda, M. Nicolescu, A. Marin, B. Serban, M. Mihaila, M. Stoica, M. Zaharescu, M. Gartner	gel films		
9	M. Gartner, H. Stroescu, A. Marin, P. Osiceanu, M. Anastasescu, V. S. Teodorescu, M. Duta, E. Aperathitis, M. Modreanu,	Effect of nitrogen incorporation on the structural, optical and dielectric properties of reactive sputter grown ITO films	Applied Surface Science, 313 (2014) 311–319	2014
10	M. Zaharescu, S. Mihaiu, A. Toader, I. Atkinson, S. Preda, J. Calderon, M. Anastasescu, M. Nicolescu, M. Duta, M. Gartner	ZnO based transparent conductive oxide films with controlled type of conduction	Thin Solid Films, 571 (2014) 727–734	2014
11	J. Calderon Moreno, S. Preda, L. Predoana, M. Zaharescu, M. Anastasescu, M. Nicolescu, H. Stroescu, M. Gartner, O. Buiu, M. Mihaila, B. Serban	Effect of Polyethylene Glycol on Porous Transparent TiO ₂ Films prepared by Sol-Gel	Ceramics International, 40 (2014) 2209–2220	2014
12	M. Dudita, L.M. Mancieru, M. Anastasescu, M. Nicolescu, M. Gartner, A. Duta	Colored TiO ₂ based glazing obtained by spray pyrolysis for solar thermal application	Ceramics International, 40 (2014) 3903–3911	2014
13	L. Predoana, M. Gartner, V.S. Teodorescu, M. Nicolescu, M. Anastasescu, M. Zaharescu	Sol-gel hybrid nanocomposites with oxide nanoparticles	Revue Roumaine de Chimie, 58 (2-3) (2013) 239–249	2013
14	H. Stroescu, M. Anastasescu, S. Preda, M. Nicolescu, M. Stoica, N. Stefan, E. Aperathitis, M. Modreanu, M. Zaharescu, M. Gartner	Influence of thermal treatment in N ₂ atmosphere on chemical, microstructural and optical properties of ITO and ITO:N sputtered thin films	Thin Solid Films, 541 (2013) 121–126	2013
15	M. Nicolescu, M. Anastasescu, S. Preda, H. Stroescu, M. Stoica, V.S. Teodorescu, E. Aperathitis, V. Kampylafka, M. Modreanu, M. Zaharescu, M. Gartner	Influence of the substrate and nitrogen amount on the microstructural and optical properties of thin r.f.-sputtered ZnO films treated by rapid thermal annealing	Applied Surface Science, 261 (2012) 815–823	2012
ARTICOLE ALTE BAZE DE DATE				
1	E.P. Zaretskaya, I.A. Victorov, O.V. Goncharova, T.R. Leonova, M. Gartner, N.N. Mursakulov, N.N. Abdulzade, Ch.E. Sabzaliyeva,	Deposition of Al-doped ZnO films by DC magnetron sputtering: effects of damp exposure and annealing on their properties	Azerbaijan Journal of Physics, XVIII (4) (2012) 26-30	2012
2	Al. Toader, S. Mihaiu, M. Voicescu, M. Anastasescu, H. Stroescu, M. Nicolescu, I. Atkinson, M. Gartner, M. Zaharescu	Optical investigations of tin and zinc oxides as TCOs films	Proceedings of SPIE, vol 8411 (2012) pp 84111U-1_84111U-8	2012
3	S. Mihaiu, I. Atkinson, M. Gartner, M. Anastasescu, E. Manea, M. Zaharescu	Synthesis and optical properties of Ni doped SnO ₂ films	Proceedings of SPIE, vol 8411 (2012) pp 84111R-1_84111R-6	2012
4	N Dulgheru (Nedelcu) , M Anastasescu , M Nicolescu, M.Stoica, M Gartner V. Pamukchieva , A Szekeres and K Todorova	Surface topography and optical properties of Ge-Sb(As)-S-Te thin films by atomic-force microscopy and variable angle spectroscopic ellipsometry	Journal of Physics: Conference Series, 356 (2012) 012019	2012
5	M Zaharescu, M Nicolescu,	Hybrid sol-gel silica films	Journal of Physics:	2012

	M Gartner, A Barau, L Predoana, M. Anastasescu, M Stoica and A Szekeres	with (TiO ₂ -CeO ₂) binary nanopowders	Conference Series, 356 (2012) 012018	
6	V Pamukchieva, K Todorova, O C Mocioiu, M Zaharescu, A Szekeres, M. Gartner	IR studies of impurities in chalcogenide glasses and thin films of the Ge-Sb-Te system	Journal of Physics: Conference Series, 356 (2012) 01204	2012
7	S Alexandrova, E Halova, A Szekeres, E Vlaikova, M Gartner, M Anastasescu	Annealing of Si surface region modified by plasma immersion implantation of nitrogen	Journal of Physics: Conference Series, 356 (2012) 012031	2012
8	M Duta, S Simeonov, D Spasov, S Mihaiu, M Anastasescu, A Szekeres, M Gartner, M Zaharescu	Electrical characterization of In-N codoped p-type ZnO films grown by chemical methods	Journal of Physics: Conference Series, 558 (2014) 012038	2014
		CARTI		
1	Maria Covei, Mariuca Gartner, Susana Mihaiu	„Transparent conducting oxides in solar energy conversion”	Transilvania University Publishing House, Brasov- ISBN 978-606-19-0626-0	2016
		COMUNICARI STIINTIFICE NATIONALE		
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		COMUNICARI STIINTIFICE INTERNATIONALE		
1	M. Gartner, M. Anastasescu, P. Osiceanu, L. Predoana, M. Nicolescu, S. Preda, H. Stroescu, M. Covei, S. Simeonov, A.M. Szekeres, M. Zaharescu	The effect of transition metals incorporated in the TiO ₂ sol-gel films on their microstructural, optical and morphological properties	19 th INTERNATIONAL SCHOOL ON CONDENSED MATTER PHYSICS, August 28th – September 2nd, 2016, Varna, Bulgaria	2016
2	H. Stroescu, M. Anastasescu, M. Covei, M. Nicolescu, J. M. Calderon-Moreno, L. Predoana, S. Preda, M. Modreanu, E. Aperathitis, M. Zaharescu, M. Gartner	Studies of different transparent conducting oxide (TCO) films prepared by r.f. sputtering and sol-gel methods		2016
3	L. Predoana, I. Stanciu, M. Anastasescu, J.M. Calderon-Moreno, M. Stoica, S. Preda, M. Gartner, M. Zaharescu	Influence of the substrate and microwaves on the structure and properties of the TiO ₂ based thin films	RomPhysChem-16, September 23-26, 2016, Galati, Romania	2016
4	S. Mihaiu, C. Vladut, A. Toader, M. Covei, M. Stoica, M. Gartner, M. Zaharescu	Zinc oxide based TCO's films for solar cell applications		2016
5	H. Stroescu, M. Anastasescu, S. Mihaiu, L. Predoana, M. Modreanu, V. Kampylafka, M. Zaharescu, M. Gartner	Ellipsometry study on TCO thin films used in optoelectronic applications		2016
6	M. Nicolescu, L. Predoana, M. Anastasescu, S. Preda, P. Chesler, M. Gartner, M. Zaharescu	Structural and optical characterization of doped TiO ₂ films		2016
7	S. Simeonov, A. Szekeres, D. Spasov, M. Covei, L. Predoana, M. Gartner, M. Zaharescu	Electrical characterisation of sol-gel multilayered TiO ₂ films doped with transition metals;		2016
8	M. Gartner, M. Anastasescu, P. Osiceanu, L. Predoana, M. Nicolescu, S. Preda, H. Stroescu, M.	Structural, morphological, chemical and optical properties of TiO ₂ sol-gel films doped with Nb and V		2016

	Covei, S. Simeonov, A.M. Szekeres, M. Zaharescu			
9	M. Gartner, M. Anastasescu, L. Predoana, M. Nicolescu, S. Preda, H. Stroescu, M. Stoica, M. Duta, I. Dascalu, S. Simeonov, A.M. Szekeres, M. Zaharescu	A detailed comparison of Nb and V doped TiO ₂ thin films prepared by the sol-gel method;	E-MRS 2015 Spring Meeting, May 11, 2015, Lille, France	2015
10	L. Predoana, I. Stanciu, M. Anastasescu, M. Stoica, S. Preda, J.M. Calderon-Moreno, P. Osiceanu, M. Gartner, M. Zaharescu	Structure and properties of the TiO ₂ based nanostructures obtained by sol-gel and microwave assisted sol-gel methods	8th Edition of symposium with international participation - New trends and strategies in the chemistry of advanced materials with relevance in biological systems, technique and environmental protection June, 4-5, 2015, Timisoara, Romania	2015
11	M. Duta, L. Predoana, S. Preda, P. Osiceanu, M. Nicolescu, M. Gartner, M. Zaharescu, S. Simeonov, A. Szekeres, P. Terziyska, D. Spassov	Electrical properties of sol-gel TiO ₂ multilayers films doped with transition metals	EMRS-2015 Fall meeting, 15 - 18 September, 2015, Warsaw, Poland	2015
12	M. Duta, J.M. Calderon-Moreno, S. Preda, P. Osiceanu, S. Mihaiu, M. Zaharescu, M. Gartner, S. Simeonov, A. Szekeres	Electrical properties of p-type In-N co-doped ZnO thin Films deposited on different substrates	VEIT2015- Nineteenth International Summer School on Vacuum, electron and ion Technologies, 21 - 25 September 2015, Sozopol, Bulgaria	2015
13	L. Predoana, I. Stanciu, M. Anastasescu, J.M. Calderon-Moreno, M. Stoica, S. Preda, M. Gartner, M. Zaharescu	TiO ₂ based thin films obtained by sol-gel and microwaves assisted sol-gel methods	7th edition of the workshop "Advanced optical and X-ray characterization techniques of multifunctional materials for information and communication technologies, sensing and renewable energy applications", Section: Materials for sensing applications, September 16-18, 2015, Bucharest, Romania	2015
14	M. Duta, M. Nicolescu, M. Anastasescu, J.M. Calderon-Moreno, S. Preda, A. Marin, P. Osiceanu, S. Mihaiu, M. Zaharescu, M. Gartner, S. Simeonov, A. Szekeres	Substrate influence on opto-electrical properties of p-type In-N co-doped ZnO thin films		2015
15	J.M. Calderon-Moreno, L. Predoana, S. Preda, M. Nicolescu, M. Anastasescu, M. Duta, M. Gartner, M. Zaharescu	Influence of the substrate type on the microstructure of sol-gel films for optical and electrical applications		2015
16	M. Nicolescu, L. Predoana, S. Mihaiu, M. Anastasescu, J.M. Calderon-Moreno, S. Preda, M. Modreanu, M. Gartner, M. Zaharescu	Infrared ellipsometry study of TCO thin films		2015
17	M. Gartner, M. Anastasescu, J.M. Calderon-Moreno, L. Predoana, S. Preda, M. Duta, M. Nicolescu, V. Bratan, H. Stroescu, E. Aperathitis, A. Pantazis, V. Kampylafka, M. Modreanu,	Sol-gel vs. sputtering ITO films as TCO materials	SummerMeeting, June 9-12, 2014 Cancun, Mexico	2014

	M. Zaharescu			
18	J.M. Calderon-Moreno	Effect of polyethylene glycol on porous transparent TiO ₂ films prepared by sol-gel method	6th International Workshop "Advanced optical and X-ray characterization techniques of multifunctional materials for information and communication technologies, health and renewable energy applications", 10-12 September, 2014	2014
19	M. Anastasescu, L. Predoana, M. Nicolescu, S. Preda, H. Stroescu, M. Stoica, M. Duta, S. Simeonov, A.M. Szekeres, M. Zaharescu, M. Gartner	A comparison of optical and microstructural properties of Nb- and V-doped TiO ₂ thin films prepared by sol-gel method		2014
20	M. Nicolescu, M. Anastasescu, L. Predoana, M. Duta, A. Szekeres, S. Simeonov, M. Gartner, M. Zaharescu	TCO thin films prepared by sol-gel method;		2014
21	M. Duta, S. Mihaie, P. Osiceanu, A. Marin, S. Preda, M. Nicolescu, C. Munteanu, S. Simeonov, A. Szekeres, M. Gartner	p-Type behavior of In,N-codoped ZnO thin films obtained through a two-step chemical routes		2014
22	L. Predoana, A. Rusu, S. Preda, M. Nicolescu, M. Anastasescu, J.M. Calderon-Moreno, M. Duta, M. Gartner, M. Zaharescu	Influence of substrate on ITO sol-gel films for solar cell applications		2014
23	S. Mihaie, S. Preda, M. Anastasescu, H. Stroescu, M. Nicolescu, I. Atkinson, Al. Toader, M. Voicescu, M. Gartner, M. Zaharescu	Tin and zinc oxides based-TCOs films prepared by sol-gel method		2014
24	M. Duta, S. Mihaie, M. Anastasescu, S. Simeonov, A. Szekeres, P. Osiceanu, A. Marin, M. Gartner	Electrical characterization of In-N codoped p-type ZnO films grown by chemical methods		2014
25	S. Preda, M. Gartner, S. Mihaie, L. Predoana, M. Zaharescu	Structural characterization of ITO films obtained by sputtering deposition		2014
26	M. Zaharescu, S. Preda, M. Rutar, P. Umek	Structure of the titanate nanotubes obtained by microwave assisted synthesis		2014
27	M. Duta, M. Anastasescu, J.M. Calderon-Moreno, L. Predoana, S. Preda, M. Nicolescu, V. Bratan, H. Stroescu, E. Aperathitis, A. Pantazis, V. Kampylafka, M. Modreanu, M. Zaharescu, M. Gartner	ITO films prepared by physical and chemical methods for TCO materials		2014
28	M. Gartner, H. Stroescu, A. Marin, P. Osiceanu, M. Anastasescu, V.S. Teodorescu, M. Duta, E. Aperathitis, M. Modreanu	Optical, microstructural and electrical properties of ITON films with Nitrogen gradient by spectroscopic ellipsometry and complementary techniques;	The 6th International Conference on Spectroscopic Ellipsometry (ICSE-VI), May 26-31, 2013, Kyoto, Japan	2013
29	M. Zaharescu, S. Mihaie, A. Toader, I. Atkinson, S. Preda, J.M. Calderon-Moreno, M. Anastasescu, M. Nicolescu, M. Duta, M. Gartner	ZnO based transparent conductive oxide films with controlled type of conduction		2013
30	S. Mihaie, A. Toader, I. Atkinson, M. Duta, M. Nicolescu, H. Stroescu,	Lithium-doped zinc oxide TCO's films by sol-gel route;	13th International Conference of the European Ceramic	2013

	J.M. Calderon-Moreno, M. Gartner, M. Zaharescu		Society (ECERS-13), 23-27 June, 2013, Limoges, France	
31	A. Marin, P. Osiceanu, M. Modreanu, E. Aperathitis, M. Gartner	XPS depth profile study of thermally treated ITON thin films	13th European Conference on Organised Films, 8-12 July 2013, Cork, Ireland	2013
32	L. Predoana, A. Rusu, M. Nicolescu, M. Anastasescu, J.M. Calderon-Moreno, S. Preda, M. Gartner, M. Zaharescu	Optimization of sol-gel ITO films for solar cell applications	The XVII International Sol-Gel Conference (Sol-Gel 2013), 25-30 August, 2013, Madrid, Spain	2013
33	M. Duta, S. Mihaiu, M. Anastasescu, M. Nicolescu, M. Gartner	Optical and electrical properties of In-N doped sol-gel ZnO films	RomPhysChem-15, 11-13 September, 2013, Bucharest, Romania	2013
34	A. Marin, P. Osiceanu, M. Modreanu, E. Aperathitis, M. Gartner	Chemical state distribution study on transparent conductive oxide materials		2013
35	M. Nicolescu, L. Predoana, S. Preda, M. Anastasescu, M. Duta, M. Gartner M. Zaharescu	Nb-doped TiO ₂ thin films prepared by sol-gel method		2013
36	H. Stroescu, M. Anastasescu, M. Gartner, P. Osiceanu, S. Preda, E. Aperathitis, M. Modreanu	Complex characterization of TCO thin films deposited on different substrates		2013
37	H. Stroescu, E. Aperathitis, P. Osiceanu, M. Anastasescu, A. Marin, M. Modreanu, O. Buiiu, M. Gartner	The stability of the ITO sputtering films by thermal treatment in N ₂ atmosphere	"7th Workshop Ellipsometry", 4-8 Martie, 2012, Leipzig, Germania	2012
38	H. Stroescu, M. Anastasescu, S. Preda, M. Nicolescu, M. Stoica, N. Stefan, E. Aperathitis, M. Modreanu, M. Zaharescu, M. Gartner	Influence of thermal treatment in N ₂ atmosphere on chemical, microstructural and properties of ITO and ITO:N sputtered thin films	EMRS, Spring Meeting, 13-18 Mai 2012, Strasbourg, Franta	2012
39	A. Marin, E. Aperathitis, P. Osiceanu, S. Preda, M. Modreanu, M. Gartner, M. Zaharescu	Investigation of the surface chemistry of ITO / ITON thin films before and after N ₂ passivation		2012
40	M. Nicolescu, M. Anastasescu, S. Preda, H. Stroescu, M. Stoica, V.S. Teodorescu, E. Aperathitis, M. Modreanu, M. Zaharescu, M. Gartner	Influence of the substrate and nitrogen amount on the microstructural and optical properties of thin r.f.-sputtered ZnO films treated by rapid thermal annealing	JVC-14 / EVC-12 / AMDVG-11 / CroSloVM-19 conference, 3-8 Iunie 2012, Dubrovnik, Croatia	2012
41	S. Preda, M. Gartner, S. Mihaiu, L. Predoana, M. Zaharescu	Structural characterization of different TCO films obtained by various vacuum deposition method		2012
42	M. Stoica, H. Stroescu, M. Anastasescu, M. Modreanu, N. Jamond, G. Garry, M. Gartner	Structural, morphological and optical properties of SrCu ₂ O ₂ thin films		2012
43	E.P. Zaretskaya, V.A. Ivanov, V.B. Zalesski, M. Stoica, M. Nicolescu, M. Gartner	Preparation and characterization of nanostructured ZnO thin films for solar cell application	International Conference on Modern Applications of Nanotechnology, 27-29 June 2012, Minsk, Belarus	2012
44	Al. Toader, S. Mihaiu, M. Voicescu, M. Anastasescu, H. Stroescu, M. Nicolescu, I. Atkinson, M. Gartner, M. Zaharescu	Optical investigations of tin and zinc oxides as TCOs films	Atom-2012, 23-26 August, Constanta, Romania	2012

45	A. Marin, P. Osiceanu, E. Aperathitis, A. Szekeres, M. Modreanu, M. Gartner	Nitrogen evolution during annealing of sputtering indium tin oxide films studied by XPS	"17th International School on Condensed Matter Physics", 2-8 Septembrie, Varna, Bulgaria	2012
46	H. Stroescu, M. Nicolescu, M. Anastasescu, M. Stoica, A. Marin, P. Osiceanu, M. Modreanu, E. Aperathitis, M. Gartner	Optical, structural and chemical study of TCO thin film after chemical and physical treatment		2012
47	A. Marin, P. Osiceanu, E. Aperathitis, A. Szekeres, M. Modreanu, M. Gartner	Surface chemistry of RF-sputtering indium tin oxide and indium tin oxynitride thin films	"Current trends and advanced ellipsometry and all X-ray techniques for the characterization of TCO, BIO and other nanostructured materials" workshop, 12-14 Septembrie 2012, Bucuresti, Romania	2012
48	H. Stroescu, M. Nicolescu, M. Anastasescu, M. Stoica, A. Marin, P. Osiceanu, M. Modreanu, E. Aperathitis, M. Gartner	AFM, XPS and ellipsometric observations on ITO thin film versus annealing type		2012
49	M. Anastasescu, M. Nicolescu, S. Preda, H. Stroescu, M. Stoica, E. Aperathitis, V. Kampylafka, M. Modreanu, M. Zaharescu, M.Gartner	Transparent conductive oxides (TCO) - properties and stability studies		2012
50	Al. Toader; S. Mihaiu, M. Voicescu, M. Anastasescu, H. Stroescu, M. Nicolescu, I. Atkinson, M. Gartner, M. Zaharescu	TCO sol-gel films based on tin and zinc oxides;		2012
ATLASE, Dictionare de specialitate				
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Lista achizițiilor realizate în cadrul proiectului

Denumire echipament	Categorie de achiziții*: (numai mijloace fixe)	Valoarea (lei)	Locație
Dell - Laptop Inspiron N5110 (Intel Core i3-2330M, 15.6", 3GB, 500GB, Intel HD Graphics 3000, BT, Negru)	Directa/2011	2287.70	Stroescu Hermine Cam. 131
Dell - Laptop Inspiron 14Z N411Z (Intel Core i3-2330M, 14", 4GB, 500GB, Intel HD Graphics 3000, BT, USB 3.0, Ubuntu, Maro)	Directa/2011	2599.00	Gartner Mariuca Cam 134
Echipament pentru masuratori electrice de tip Hall- functie de temperatura conf. contr. 1903/23.07.2012	Cerere de oferta/2012	171733.80	Anastasescu Mihai Cam. 135

Ultrabook Toshiba Z930-118 cu procesor Intel Core i5-3317U, modem si cartela date 500mb	Directa/2012	4199,99	Gartner Mariuca Cam 134
Sistem Desktop ASUS K31CD- RO023D cu procesor Intel Core IS-6400 2.70GHz, Skylake, 4GB, 1TB, DVD-RW, nVIDIA Geforce GT 730 2GB, Free dos, Negru, Mouse + Tastatura	Directa/2016	2.279,99	Penea Cornelia Cam.134
Microsoft Windows 7 Professional 64 bit English OEM SP1	Directa/2016	699,99	

Director proiect,

Dr. Gartner Florica - Mariuca