# Curriculum vitae Professor Katia Vutova, D.Sci., PhD

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## Name, academic position and degree

Katia Zheleva Vutova, Professor, D.Sci., PhD

## Current position and address

Head of laboratory "Physical problems of electron beam technologies" (since 2011)
Institute of Electronics of the Bulgarian Academy of Sciences (IE-BAS),
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## PERSONAL INFORMATION

Date and place of birth: 12 October 1962, Momchilgrad, Bulgaria
Marital status: married
Nationality: Bulgarian
Foreign Languages: English, Russian

## EDUCATION and ACADEMIC QUALIFICATIONS

| | |
|---|---|
| 1977 - 1980 | National Scholl of mathematics, Sofia, Bulgaria |
| 1980 - 1985 | Sofia University, Faculty of mathematics and mechanics, Sofia, Bulgaria; MSc in Mathematics, awarded qualification: mathematician with specialisation in mathematical modeling, Thesis title: "Monte Carlo method to solve Laplas and Poisson equations in $R^3$", Supervisor: Prof. D.Sci. Ivan Dimov |
| 1988 – 1991 | Ph.D. in Physics, Institute of Electronics, Bulgarian Academy of Sciences, Sofia, Bulgaria; Ph.D.Thesis title: "Modelling of processes of exposure and development in electron and ion lithography", Supervisor: Prof. D.Sci. Georgi Mladenov |
| 2007 | Doctor of Physical Sciences (D.Sci.), Bulgarian Academy of Sciences, Sofia, Bulgaria, DSc Thesis Title: "Modeling of physical processes at material treatment by electron and ion beams" |

## EMPLOYMENT

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| 1984 – 1985 | Master- specialist of scientific equipment, Research Laboratory of Physical Problems of Electron Beam Technologies (Lab PPEBT), Institute of Electronics (IE), Bulgarian Academy of Sciences (BAS), Sofia, Bulgaria |
| 1985 – 1988 | Mathematician, Lab PPEBT, Institute of Electronics, BAS |
| 1988 – 1991 | Ph.D. student in Physics, Institute of Electronics, BAS |
| 1991 – 1995 | Research Associate Second Grade, Institute of Electronics, BAS |
| 1995 – 2000 | Research Associate First Grade, Institute of Electronics, BAS |
| 2000 – 2009 | Associate Professor in Applied Physics, Institute of Electronics, BAS |
| 2000 – 2012 | Scientific Secretary of the Institute of Electronics, BAS |
| 2009 – present | Professor in Mathematical modeling and application of mathematics in physics, Institute of Electronics, BAS |

**RESEARCH EXPERIENCE**

Field of research: research and development activities in the qualification fields - physical sciences (physical electronics) and in mathematics (mathematical modelling and application of mathematics in physics); other fields – electron and ion beam technologies, nanotechnologies, nanostructuring, interaction of electron and ion beams with materials, physical models, modeling, technology optimization, nanolithography, new materials and material science, etc.

Publications: 6 chapters in books, more than 170 papers published in specialized scientific journals and proceedings (full text conference papers), editor of 1 proc., 2 dissertations

Citations - more than 320

Projects: participation in 60 (29 international) projects, including a leader of 19 (11 international) projects

Presentations: more than 100 presentations at scientific conferences (more than 90 at international forums, 8 presentations at national conf. with intern. participation)

Invited lectures: in Japan, Germany, India, Romania, Slovakia

Some awards: 2004 and 2008 - awards "Acad. E.Djakov" for the best scientific publications; 2014 - Academic Achievement Award for progress in field of electron beam technologies, Union of electronics, electrical engineering and communications and Federation of scientific and technical unions in Bulgaria; 2015 and 2016 - Certificates of Achievement - 2$^{nd}$ and 4$^{th}$ Education and Research Workshops of Electronic Devices, Circuits, Illuminations, and Systems, Illuminating Engineering Institute of Japan.

**PROFESSIONAL ACTIVITIES:**

Member of the Specialized Scientific Council on "Radiophysics, physics and quantum electronics" at High Testimonial Committee at the Council of Ministers of Bulgaria, 2004-2007.

Member of the Expert Commission on natural sciences at the Bulgarian National Scientific Fund, Ministry of Education and Science, Bulgaria, 2013-2016.

Member of the Expert Commission for supporting scientific conferences in Bulgaria and COST Actions at the Bulgarian National Scientific Fund, Ministry of Education and Science, Bulgaria, 2016.

National Representative of the Applied Surface Science Division of International Union for Vacuum Science, Technique and Applications (IUVSTA), 2016-2019.

Head of the Expert Commission for supporting scientific journals in Bulgaria, Bulgarian National Scientific Fund, Ministry of Education and Science, Bulgaria, 2017.

Member of the Program / Advisory / Organising Committees of six International Conferences and one Workshop.

Member of the Association Hiroshima-Bulgaria.

Member of the Scientific Council of the Institute of Electronics, Bulgarian Academy of Sciences, 2000-2009, 2013 - 2021.

Member of the Attestation Commission of the Institute of Electronics, Bulgarian Academy of Sciences, 2000-2009, 2017-2021.

Peer reviewer for a number of journals including: J. of App. Physics, JVST B: J. of Vacuum Science and Technology, Int. J. of Heat and Mass Transfer, Microelectronic Engineering, J. of Manufacturing Science and Engineering, Materials Science, Progress in Industrial Ecology, High Temperature Materials and Processes, Engineering Science and Technology an Intern. Journal, Journal of Physical Chemistry, Vacuum, etc.

**List of selected scientific publications:**


1. K.Vutova, G.Mladenov, "Methodology for determining the radiation efficiency and contrast characteristics in the case of electron and ion lithography, using positive polymer resists", Thin Solid Films, 200, (1991), 353-362.
2. K.Vutova, G.Mladenov, "Absorbed energy distribution in electron lithography of simple patterns", Journal of Information Recording Materials, 19, (1991), 4, 261-269.

3. K.Vutova, G.Mladenov, “Mathematical modeling of the development process in electron lithography”, Journal of Information Recording Materials, 19, (1991), 4, 271-282.
4. K.Vutova, G.Mladenov, “Modelling of physical processes in ion lithography”, Thin Solid Films, 214, (1992), 144-149.
5. V.Vassileva, K.Vutova, L.Georgiev, T.Nikolov, G.Mladenov, “The electron beam melting method for fabrication of oxygen-free copper”, Proc. of the Intern. Conf. on Electron Beam Melting and Refining, State of the Art 1992, Reno, Nevada, USA, ed. R.Bakish, (1992), 233-242.
6. K.Vutova, G.Mladenov, “Modeling of exposure and development processes in electron and ion lithography”, Modelling and Simulation in Materials Science and Engineering, 2, (1994), 239-254.
7. G.Mladenov, V.Vassileva, K.Vutova and T.Nikolov, “Investigations of refining processes during electron beam melting”, Vacuum, 47 (6-8), (1996), 825-828.
8. Y.M.Gueorguiev, K.Vutova, G.Mladenov, “Analysis of the proximity function in electron-beam lithography on high-$T_c$ superconducting thin-films”, Supercond. Sci. Technol., 9, (1996), 565-569.
9. K.Vutova, V.Vassileva, G.Mladenov, “Simulation of the Heat Transfer Process through Treated Metal, Melted in a Water-Cooled Crucible by an Electron Beam”, Vacuum, 48 (2), (1997), 143-148.
10. Y.Gueorguiev, K.Vutova, G.Mladenov, "Numerical modelling of the processes of exposure and development in electron beam lithography on high-temperature superconducting thin films", Mathematics and Computer in Simulation, 47, (1998), 299-307.
11. G.Mladenov, K.Vutova, S.Wojcicki, “Experimental investigation of the weld depth and thermal efficiency during electron beam welding”, Vacuum, 51 (2), (1998), 231-233.
12. K.Vutova, G.Mladenov, “Computer simulation of the heat transfer during electron beam melting and refining”, Vacuum, 53 (1-2), (1999), 87-91.
13. E.Koleva, G.Mladenov, K.Vutova, “Calculation of weld parameters and thermal efficiency in electron beam welding”, Vacuum, 53 (1-2), (1999), 67-70.
14. G.Mladenov, K.Vutova, T.Tanaka, K.Kawabata, “X-ray Photoelectron Profilography”, Journal of Surface Analysis, 5 (1), (1999), 82-85.
15. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, “Evaluation of thin film surface topology shapes”, Mathematics and Computers in Simulation, v.49, No 4-5, (1999), 275-283.
16. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, “Photoelectron Signal Simulation from Textured Overlayer Samples”, Surface and Interface Analysis, 30, (2000), 552-556.
17. V.Vassileva, K.Vutova, G.Mladenov, “An Investigation on the Heat Transfer Influence on the Crystallisation Processes during the Electron Beam Melting and Casting of Metals”, Vacuum, 62, (2001), 197-202.
18. E.Koleva, K.Vutova, S.Wojcicki, G.Mladenov, “Radial Distributions of the Beam Current Density as Source for Evaluation of Beam Emittance and Brightness”, Vacuum, 62, (2001), 105-112.
19. K.Vutova, G.Mladenov, I.Raptis, “Determination of the radiation efficiency, contrast and sensitivity in electron and ion lithography”, Proc. of the Intern. Conf. on Simulation of Semiconductor Processes and Devices, “SISPAD 2001”, Athens, ed. D.Tsoukalas, Publ. Springer-Verlag, (2001), 440-443.
20. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, “Photoelectron signal simulation from textured samples covered by a thin film”, Vacuum, 62, (2001), 297-302.
21. G.Mladenov, K.Vutova, I.Raptis, P.Argitis, I.Rangelow, “Simulation of latent image formation for ion beam projection lithography”, Microelectronic Engineering, 57-58, (2001), 335-342.
22. E.Koleva, K.Vutova, G.Mladenov, “The role of thermal contact ingot-crucible at mathematical modelling of the heat transfer during electron beam melting”, Vacuum, 62, (2001), 189-196.
23. K.Vutova, G.Mladenov, “Sensitivity, contrast and development process in electron and ion lithography”, Microelectronic Engineering, 57-58, (2001), 349-353.
24. K.Vutova, G.Mladenov, “Why light Ions in Future Ion Lithography”, Vacuum, 62, (2001), 273-278.
25. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, “Photoelectron Signal Simulation from Textured Samples with Modified Surface Composition”, Surface and Interface Analysis, 34, (2002), 597-600.
26. G.Mladenov, K.Vutova, G.Djanovsky, E.Koleva, V.Vassileva, D.Mollov, “Electron beam deposition of high temperature superconducting thin films”, published in “Emerging Applications of Vacuum-Arc-Produced Plasma, Ion and Electron Beams” – NATO Science Series, Series II: Mathematics, Physics and Chemistry-Vol.88, Kluwer Academic Publishers, (2003), 163-171.
27. A.Olziersky, K.Vutova, G.Mladenov, I.Raptis, T.Donchev, "Electron beam lithography simulation on superconducting substrates", Supercond. Sci. Technol., 17, (2004), 881-890.

28. Vutova K., G. Mladenov, "Application of XPS analysis for characterization of smooth samples, textured samples and overlayers on samples", Proc. of Indo-Bulgarian Workshop on Electron Beam Technology and Applications, Mumbai, India, ed. A.K.Das, publ. Ebenezer Printing House, (2004), pp.158-168.
29. Vutova K., G. Mladenov, "Electron and ion lithography – physical processes, computer simulation and experimental data", Proc. of Indo-Bulgarian Workshop on Electron Beam Technology and Applications, Mumbai, India, ed. A.K.Das, publ. Ebenezer Printing House, (2004), pp. 212-242.
30. Djanovski G., K. Vutova, S. Velinova, D. Mollov, G. Mladenov, "Preparation and characterization of high temperature superconducting$Y_1Ba_2Cu_3O_{7-x}$ thin films", Proc. of Indo-Bulgarian Workshop on Electron Beam Technology and Applications, Mumbai, India, ed. A.K.Das, publ. Ebenezer Printing House, (2004), pp 144-148.
31. Mladenov G., P. Petrov, E. Koleva, K. Vutova, "Electron beam welding process", Proc. of Indo-Bulgarian Workshop on Electron Beam Technology and Applications, Mumbai, India, ed. A.K.Das, publ. Ebenezer Printing House, (2004), pp. 287–298.
32. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, "Simulation of the energy absorption and the resist development at sub-150 nm ion lithography", Microelectronic Engineering, 78-79 (2005), 533-539.
33. V.Vassileva, K.Vutova, E.Georgieva, G.Mladenov, "Investigation of Refining Processes During EB Regeneration of Reactive Metals of Group IV B", Proc. of DAE-BRNS Symposium on Electron Beam Technology and Applications, SEBTA 2005, Mumbai, India, ed. M.Mascarenhas, (2005), pp.295-306.
34. E.Koleva, K.Vutova, G.Mladenov, "Characterization of Powerful Electron Beams", Proceedings of DAE-BRNS Symposium on Electron Beam Technology and Applications, SEBTA 2005, Mumbai, India, ed. M.Mascarenhas, (2005), pp.307-322.
35. V.Vassileva, G.Mladenov, K.Vutova, T.Nikolov, E.Georgieva, "Oxygen removal during electron beam drip melting and refining", Vacuum, 77, (2005), 429-436.
36. G.Djanovski, M.Beshkova, S.Velinova, D.Mollov, P.Vlaev, D.Kovacheva, K.Vutova, G.Mladenov, "Deposition of $CeO_2$ Films on Si(100) Substrate by Electron Beam Evaporation", Plasma Processes and Polymers, 3 (2), (2006), 197-200.
37. V.Vassileva, K.Vutova, G.Mladenov, "Analysis of the thermodynamic conditions of refining during electron beam melting of refractory metals", Materials Science and Engineering Technology, 37 (7), (2006), 613-618.
38. K.Vutova, G.Mladenov, I.Raptis, A.Olziersky, "Process simulation at electron beam lithography on different substrates", Journal of Materials Processing Technology, 184 (1-3), (2007), 305-311.
39. K.Vutova, G.Mladenov, T.Tanaka, K.Kawabata, I.Rangelow, "Electron and ion beam lithography simulation for sub-quarter-micron patterns", Nano Trends: A Journal of Nanotechnology and its Applications, 2 (1), (2007), 32-47.
40. K.Vutova, G.Mladenov, "Computer simulation of micro- and nano- structures at electron and ion lithography", Journal of Optoelectronics and Advanced Materials, 10 (1), (2008), 91-97.
41. K.Vutova, E.Koleva, G.Mladenov, I.Kostic, "Some peculiarities of resist-profile simulation for positive-tone chemically amplified resists in electron-beam lithography", Journal Vacuum Science and Technology B – Microelectronics and Nanometer Structures, 27 (1), (2009), 52-57.
42. K.Vutova, E.Koleva, G.Mladenov, I.Kostic, T.Tanaka, K.Kawabata, "A simulation model for Chemically Amplified Resist CAMP6", Microelectronic Engineering, 85, (2009), 714-717.
43. K.Vutova, G.Mladenov, Chapter 17. Computer simulation of Processes at Electron and Ion Beam Lithography, Part 1: Exposure modeling at electron and ion beam lithography, in: M. Wang, ed., Book Lithography, INTEH, ISBN 9789533070643, (2010), 319-350.
44. K.Vutova, V.Vassileva, E.Koleva, E. Georgieva, G.Mladenov, D.Mollov, M.Kardjiev, "Investigation of Electron Beam Melting and Refining of Titanium and Tantalum Scrap", Journal of Materials Processing Technology, 210, (2010), 1089-1094.
45. K.Vutova, E. Koleva, G.Mladenov, I.Kostic, T.Tanaka, "Computer simulation of resist profiles at electron beam nanolithography", Microelectronics Engineering, 87, (2010), 1108-1111.
46. E.Koleva, G.Mladenov, I.Batchkova, K.Velev, V.Vassileva, K.Vutova, "Quality control of refining process at electron beam melting and development and implementation of engineering support system for process modeling and control", Supplemental Proceedings: v.3: General Paper Selections TMS 2010, Seattle, USA, 777-784 (2010).
47. E.Koleva, K.Vutova, G.Mladenov, D.Todorov, "Method of emittance evaluation", Proc. 16th International Symposium on High Current Electronics (SHCE), Tomsk, Russia, (2010), 31-34.

48. K.Vutova, E.Koleva, G.Mladenov, Chapter 18. Computer simulation of Processes at Electron and Ion Beam Lithography, Part 2: Simulation of resist developed images at electron and ion beam lithography, in: M. Wang, ed., Book Lithography, INTEH, ISBN 9789533070643, (2010), 351-378.
49. K.Vutova, E.Koleva, V.Vassileva, G.Mladenov, "Surface modification of reactive metals by electron beam surface melting", Proc. 10th International Conference on Modification of Materials with Particle Beams and Plasma Flows (CMM), Tomsk, Russia, (2010), 302-304.
50. K.Vutova, E.Koleva, G.Mladenov, "Simulation of thermal transfer process in cast ingots at electron beam melting and refining", Journal International Review of Mechanical Engineering (IREME), Special Issue on Heat Transfer, 5 (2), (2011), 257-265.
51. G.Mladenov, E.Koleva, K.Vutova, "Electron lithography of submicron and nano structures", Chapter in a special review book "Practical Aspects and Applications of Electron Beam Irradiation", eds.: M.Nemtanu, M.Brasoveanu, publ. Research Signpost/Transworld Research Network, ISBN 978-81-7895-541-4, (2011), 135-166.
52. G.Mladenov, E.Koleva, K.Vutova, "Heat transfer and weld geometry at electron beam welding", Journal International Review of Mechanical Engineering (IREME), Special Issue on Heat Transfer, 5 (2), (2011), 235-243.
53. K.Vutova, V.Vassileva, G.Mladenov, E.Koleva, T.Prakash, N.Munirathnam, "Electron beam melting and recycling of hafnium", Supplemental Proceedings: v.3: General Paper Selections TMS2011, Wiley, San Diego, USA, (2011), 725-732.
54. K.Vutova, G.Mladenov, T.Tanaka, "Photoelectron signal simulation at surface analysis", Chapter in a special review book "Practical Aspects and Applications of Electron Beam Irradiation", eds.: M.Nemtanu, M.Brasoveanu, publ. Research Signpost/Transworld Research Network, ISBN 978-81-7895-541-4, (2011), 235-254.
55. K.Vutova, G.Mladenov, E.Koleva, I.Kostic, A.Bencurova, P.Nemec, T.Tanaka, "Nonlinear solubility behavior of polymer and oligomer resists at electron beam modification", Journal of Materials Science and Engineering B, 1, (2011), 523-529.
56. G.Mladenov, E.Koleva, K.Vutova, V.Vasileva, "Experimental and theoretical studies of electron beam melting and refining", Chapter in a special review book "Practical Aspects and Applications of Electron Beam Irradiation", eds.: M.Nemtanu, M.Brasoveanu, publ. Research Signpost/Transworld Research Network, ISBN 978-81-7895-541-4, (2011), 43-93.
57. M.Oane, K.Vutova, I.N.Mihailescu, V.Donchev, G.Florescu, L.Munteanu, G.Georgescu, "The study of vacuum influence on spatial-temporal dependence of thermal distributions during laser-optical components interaction", Vacuum, 86, (2012), 1440-1442.
58. Vutova K., Donchev V., Vassileva V., Amalnerkar D., Munirathnam N., Prakash T. "Application of non-stationary thermal model for simulation and investigation of heat and refining processes of Ti during EBMR", EPD Congress 2013 volume, TMS2013, Wiley, San Antonio, USA, (2013), 253-260.
59. Vutova K., Donchev V., "Electron Beam Melting and Refining of Metals: Computational Modeling and Optimization", Materials, 6(10), (2013), 4626-4640.
60. K.Vutova, V.Donchev, V.Vassileva, G.Mladenov, „Thermal processes in electron beam treatment of metals", Journal Metal Science and Heat Treatment, v.55, iss.11-12, (2014), 628-635.
61. Durina P., Bencurova A., A Konecnikova, I Kostic, K Vutova, E Koleva, G Mladenov, P Kus, A Plecenik, "Patterning of structures by e-beam lithography and ion etching for gas sensor application", IOP Publishing, Journal of Physics: Conference Series, 18th International Summer School on Vacuum, Electron and Ion Technologies, v.514, (2014), 012037, doi:10.1088/1742-6596/514/1/012037
62. Donchev V.,Vutova K., "Optimization method based on mathematical heat model for electron beam melting and refining of metals'', IOP Publishing, Journal of Physics: Conference Series, 2nd International Conference on Mathematical Modeling in Physical Sciences, Prague, Czech Republic, v.490, (2014), 012211, doi:10.1088/1742-6596/490/1/012211
63. Donchev V., Vutova K., Vassileva V., "Experimental and numerical investigation of the refinement of Hf by EBM'', IOP Publishing, Journal of Physics: Conference Series, 18th International Summer School on Vacuum, Electron and Ion Technologies, v.514, (2014), 012047, doi:10.1088/1742-6596/514/1/012047
64. K.Vutova, V.Vassileva, A.Stoimenov, E.Koleva, T.Ivanova, G.Bodurov, K.Gesheva, G.Mladenov, "Optical and structural investigation of WOx films, deposited by electron beam evaporation process", J. Electrotechnica and Electronica, Vol.49, N 5-6, (2014), 226-230.
65. K.Vutova, T.Nurgaliev, T.Koutzarova, S.Tinchev, T.Milenov, "Nanomaterials and nanotechnologies for electronics", Journal of the Bulgarian Academy of Sciences, v.5, (2015), pp.3-14 (in Bulgarian).

66. R.Andok, A.Bencurova, K.Vutova, E.Koleva, P.Nemec, P.Hrkut, I.Kostic, G.Mladenov, "Study of a new positive tone electron beam resist CSAR62 at 40 keV electron energy", IOP Publishing, Journal of Physics: Conference Series, 19th International Summer School on Vacuum, Electron and Ion Technologies, v.700, 012030, DOI: 10.1088/1742-6596/700/1/012030, (2016).
67. K.Vutova, V.Vassileva, "Obtaining Multiple Metals through Electron Beam Melting of Refractory Metal Wastes", 2016 EPD Congress, TMS2016, Wiley, pp.89-96, (2016), ISBN 978-1-119-22578-2, (SJR).
68. K.Vutova, V.Donchev, Non-stationary heat model for electron beam melting and refining – An economic and conservative numerical method, Applied Mathematical Modelling, http://dx.doi.org/10.1016/j.apm.2015.08.008, 40 (2), pp.1565-1575, (2016).
69. I.Kostic, K.Vutova, E.Koleva, R.Andok, A.Bencurova, A.Konecnikova, G.Mladenov, "Study on polymers with implementation in electron beam lithography", Chapter in book "Polymer science: research advances, practical applications and educational aspects", Eds. A. Méndez-Vilas, A. Solano-Martín, Publ. Formatex Research Center, ISBN: 978-84-942134-8-9, (2016), 488-497.
70. M.Brașoveanu, E.Koleva, K.Vutova, L.Koleva, M.Nemțanu. Optimization Aspects on Modification of Starch Using Electron Beam Irradiation for the Synthesis of Water-Soluble Copolymers. Romanian Journal of Physics. Volume 61 (9-10)/2016, pp.1519-1529.
71. K. Vutova, V. Vassileva, E. Koleva, N. Munirathnam, D. Amalnerkar, T. Tanaka. Investigation of Tantalum Recycling by Electron Beam Melting. Metals, 2016, 6, 287; pp.1-13, doi:10.3390/met6110287.
72. Andok, R., Bencurova, A., Kostic, I., Ritomsky, A., Skriniarova, J., Vutova, K., Study of negative electron beam nanoresist HSQ on GaAs substrate, ASDAM 2016 - Conference Proceedings, 11th International Conference on Advanced Semiconductor Devices and Microsystems, 2017, IEEE Catalog Number: CFP16469-PRT., pp.133-136, (2017), art.no.7805913, DOI: 10.1109/ASDAM.2016.7805913.
73. P. Ďurina, A. Benčurová, M. Truchlý, R. Andok, I. Kostič, B. Grančič, A. Plecenik, P. Kúš, K. Vutova, E. Koleva. Simple patterning method of sub-micro- and nanometer structures for gas sensor. ASDAM 2016 - Proceedings of the 11th International Conference on Advanced Semiconductor Devices and Microsystems, 2017, IEEE Catalog Number: CFP16469-PRT., pp.137-140, (2017), art. no. 7805914, DOI: 10.1109/ASDAM.2016.7805914.
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75. Vutova, K., Vassileva, V., Naplatanova, M., Tanaka, T., Refining effect of electron beam melting on recycling of nickel wastes, Proceedings of the 40th International Spring Seminar on Electronics Technology, IEEE 2017, art. no. 8000891, DOI: 10.1109/ISSE.2017.8000891
76. D.Adkar, P.Adhyapak, U. Mulik, S. Jadkar, K.Vutova, D. Amalnerkar, "Single-Stroke Synthesis of Tin Sulphide/Oxide Nanocomposites Within Engineering Thermoplastic and Their Humidity Response", Journal of Nanoscience and Nanotechnology, v.18 (5), pp.3441-3447, (2018), doi:10.1166/jnn.2018.14851.
77. I.Kostic, K.Vutova, A.Bencurova, R.Ritomsky, T.Tanaka, "Experimental and theoretical study on chemically-semi-amplified resist AR-P 6200", IOP Publishing, Journal of Physics: Conference Series, 20th International Summer School on Vacuum, Electron and Ion Technologies, VEIT2017, v.992, 012057, doi :10.1088/1742-6596/992/1/012057, (2018).