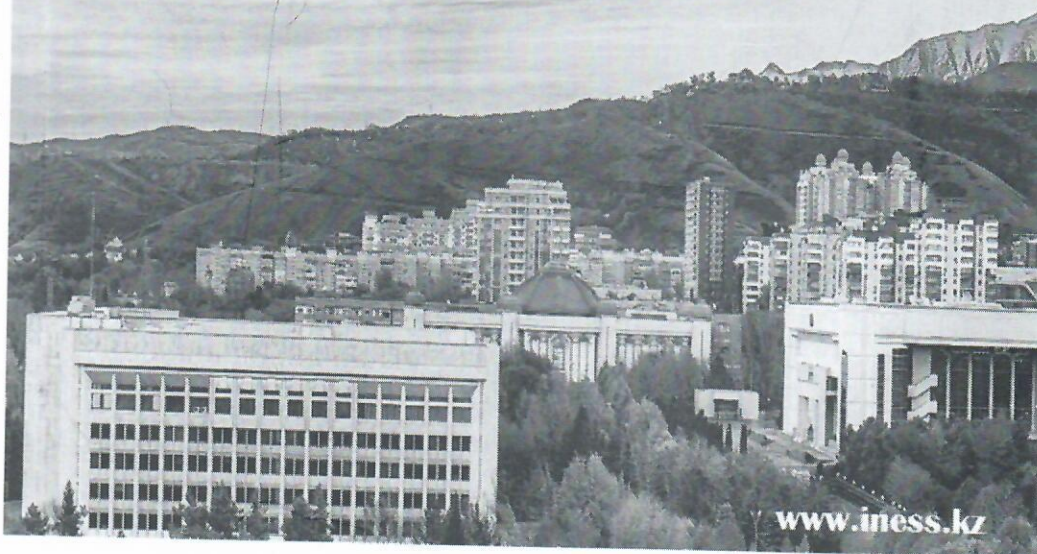




ABSTRACT BOOK

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CONTENT

PLENARY INVITED SPEAKERS

1.	<u>Masataka Wakihara</u> , Taisuke Koseki, Shun Murayama, Taku Murata, Hiroto Shimamura Improvement of Oxidation Potential in Superconcentrated Electrolytes	11
2.	<u>Rachid Yazami</u> Lithium Ion Batteries: Technology and Application	12
3.	<u>Kiyoshi Kanamura</u> All Solid State Battery Prepared by Composite Type Solid Electrolyte <u>Jean-Pierre Pereira-Ramos</u> , Rita Baddour-Hadjean, Thanh Nguyen Le Huynh, Nicolas Emery	13
4.	Promoting Na-pillar effect on the structural stability and cyclability of α'-NaV_2O_5 as cathode material for Li-ion battery	14
5.	<u>Seung-Taek Myung</u> Passivation of Aluminum Current Collectors in Non-aqueous Carbonate Solutions Containing Sodium or Potassium Hexafluorophosphate Salts	15
6.	<u>Maksym Myronov</u> Unlocking new devices applications with novel wafer scale Silicon Carbide heteroepitaxy	16
7.	<u>Hidehiro Sakurai</u> Morphology Effect on Metal Nanoparticle/Organic Polymer Composite	17
8.	Nurzhan Umirov, Byoung-Min Lee, Jae-Hak Choi, <u>Sung-Soo Kim</u> Cellulose Non-woven Fabric-derived Freestanding Electrode for Next Generation Flexible Secondary batteries	18
9.	<u>Toru Wakihara</u> , Zhendong Liu, Kotatsu Okabe, Chokkalingam Anand, Yasuo Yonezawa, Jie Zhu, Hiroki Yamada, Akira Endo, Yutaka Yanaba, Takeshi Yoshikawa, Koji Ohara, Tatsuya Okubo Continuous Flow Synthesis of ZSM-5 Zeolite on the Order of Seconds	19
10.	<u>Pavam Kaghazchi</u> Theory and Simulation of Energy Materials	20
11.	<u>Fu-Ming Wang</u> Investigation and characterization of in-situpolymer brush effects on Si anode material and its battery performance	21
12.	<u>Duygu Kaus</u> , Max Weeber, Kai Peter Birke Digitalization in Battery Cell Manufacturing <u>Barbara Laik</u> , Lucie Leveau, Aurélien Gohier, Costel-Sorin Cojocaru, Jean-Pierre Pereira-Ramo	22
13.	Different ways for electrochemical performance improvement of silicon nanowires as anode for lithium-ion batteries	23
14.	<u>Leming Sun</u> , Aipeng Li, Lianbing Zhang Functional Peptide Self-assembled Nanomaterials for Biomedical Applications	24
15.	<u>Yao Chen</u> , Qingxiao Yuchia, Jiaojiao Miao, Chenyang Huang, Jingyi Liua, Aipeng Lia, Tao Lia, Yong Qin* and Lianbing Zhang Precise Engineering of Ultra-thin Fe_2O_3 Decorated Pt-based Nanozymes via Atomic Layer Deposition to Switch off Undesired Activity	25
16.	<u>Shu-Qi Wu</u> , Yang Li, Lianbing Zhang Dual-functional persistent luminescent nanocomposite for mesenchymal stem cells homing and gene therapy	26
17.	<u>Liang-Yin Kuo</u> , Pavam Kaghazchi Modeling of $\text{LiNi}_x\text{Mn}_y\text{Co}_{1-x-y}\text{O}_2$ Cathode Materials	27
18.	<u>Yingqiu Xie</u> , Adilet Dautov, Medina Khamijan, Haiyan Fan Carbon nanodots induced drug resistance and how to overcome it	28
19.	<u>Nae-Lih Wu</u> Synthesis and Operation of High-Sulfur-Content Cathodes for Li-Sulfur Batteries	29
20.	<u>Thierry Dienizian</u> A new concept of microstructured electrodes for high performance stretchable microbatteries	30
21.	<u>Stanislav Fedotov</u> , Artem Abakumov1, Evgeny Antipov Identifying OH-defects in LiFePO_4 cathode materials for Li-ion batteries	31
22.	<u>Xing-Jie Liang</u> Which Size of Nanoparticle is Beneficial to Pharmaceutical Development? Damir Aidarkhanov, Zhiwei Ren, Zhuldyz Yelzhanova, Gaukhar Nigmatova, Gaukhar Taltanova,	32
23.	Askar Maxim, Bakhyzhan Baptyayev, Mannix Balanay, Aleksandra B. Djurišić, Charles Surya, <u>Annie Ng</u> Strategies for High Performance Hysteresis-free Perovskite Solar Cells	33
24.	<u>Jiang Chang</u> Regulation of stem cell fate using bioactive ions for tissue engineering	34
25.	<u>Desmond Adair</u> , Gulnur Kalimuldina & Martin Jaeg Battery Powered System Development for Solar-Powered UAVs	35

26.	Fabian Jeschull, Yuri Surace, Flora Scott, <u>Sigita Trabesinger</u> Silicon as Electrode and as Electrode's Capacity-Enhancing Additive	36
27.	<u>Huaidong Jiang</u> , Jiadong Fan, Jianhua Zhang, Zhibin Sun High-resolution coherent diffraction imaging with synchrotron radiation and XFELs	37
28.	<u>Jinlan Jiang</u> Treatment of rheumatoid arthritis with Fe ₃ O ₄ @PDA magnetic targeting stem cells	38
29.	<u>Zulkhair Mansurov</u> Development of nanoscience and nanotechnologies	39
30.	<u>Andrey Kurbatov</u> , Feodor Malchik, Saule Kokhmetova, Alina Galeyeva The problem of the determining of kinetic parameters of the deintercalation-intercalation process	40
31.	<u>Jongssoon Kim</u> Development of new cathode with high electrochemical performances for Na-ion batteries using first-principles calculation and structural analyses	41
32.	<u>Donghyuk Kim</u> Systems Approaches to Engineer Microorganism to Produce Value-Added Materials	42
33.	<u>Sergey V. Levchenko</u> Global Effects of Doping on Surface and Interface Properties: An Ab Initio Study	43
ORAL PRESENTATIONS		
34.	<u>A.K.Rakhimova</u> , A.K.Galeyeva, A.P.Kurbatov Effects of absorbers on the synthesis of lithium iron phosphate for lithium-ion batteries	44
35.	<u>Saule Kokhmetova</u> , Andrey Kurbatov, Alina Galeyeva Efficient way to create conductive coatings based on various carbon materials	45
36.	<u>Guzal Ismailova</u> , Leonid Mikhailov, SvetlanaMikhailova, RaiymbekYersaiyn, NursultanKenes, OlegLavrishev, Valery Nikulin Using solar energy by a smart window for the needs of urban residents	46
37.	<u>Dauren Batyrbekuly</u> , Barbara Laik, Nicolas Emery, Zhumabay Bakenov, Jean-Pierre Pereira-Ramos, Rita Baddour-Hadjea Nanosized puckered V ₂ O ₅ '-polymorph as cathode material for Li-ion batteries with enhanced electrochemical properties	47
38.	<u>Kanat Amirtayev</u> A Numerical Algorithm for the Analysis of the Thermal Stress-Stain State of a Rod	48
39.	<u>Nurislom Abduganiv</u> , Obid Tursunov A Comprehensive Study on Household Solid Waste Characteristics for Green Energy Recovery in Urta-Chirchik District of the Tashkent Region	49
40.	<u>Anastasiya A. Mashentseva</u> , Aida R. Krekesheva, Vadim V. Krasnov, Tomiris G. Khassen Copper nanostructures loaded PET ion track membranes as a flexible composite material	50
41.	<u>Aigul Shongalova</u> , Madi Aitzhanov, SultanZhantuarov, Kazhmukhan Urazov, Paulo Fernandes, NurlanTokmoldin, Maria Correia Comparisonof antimony selenide thin films obtained by electrochemical deposition and selenization of a metal precursor	51
42.	<u>Zhibek Akasheva</u> , Bakhytzhan Assilbekov, Aziz Kudaikulov Numerical calculationof relative permeability fortwo immisciblefluids flow in the channel	52
43.	<u>Nazym Kassenova</u> , Sandugash Kalybekkyzy, Memet Vezir Kahraman, Zhumabay Bakenov, Almagul Mentbayeva Fabrication and characterization of poly(vinyl alcohol)/maleic anhydride (PVA/MA) based polymer membranes for gel polymer electrolyte by electrospinning for lithium-ion batteries	53
44.	<u>Nazgul Tompakova</u> , Elena Dmitriyeva, Igor Lebedev, Abai Serikkanov, Ekaterina Grushevskaya, Konstantin Mit Influence of Hydrogen Plasma on SnO ₂ Thin Films	54
45.	<u>Bakhytzhan Baptaev</u> , Mannix P. Balanay Binary Transition Metal Sulfide for Pt-free Counter Electrode in Dye-sensitized Solar Cell	55
46.	<u>Nurbek Nurlan</u> , Mannix Balanay, Woojin Lee Enhanced Reduction of Aqueous Bromate by Catalytic Hydrogenation Using Ni-based Metal-organic Framework with NaBH ₄	56
47.	<u>Ainash Akmanova</u> , Dina Kondratyuk, Moulay-Rachid Babaa, Woojin Lee Significant Factors on Reductive Degradation of Aqueous Doxycycline by nZVI	57
48.	<u>Segizbayeva R. U.</u> , Seidildaeva A. K Separability of the generalized Cauchy –Riemann system in space L(E) ²	58

49.	<u>Aishuak Konarov, Zhumabay Bakenov, Seung-Taek Myung</u> Activation of Oxygen Redox in P2-type Na₂/3MnO₂Compound by Incorporation of Zn ion into the Crystal Structure	59
50.	<u>S. Savilov, E. Suslova, N. Osipov, E. Arkhipova, A. Ivanov, V. Lunin</u> Determination of the Thermal Properties of Carbon Nanostructures: Experimental Approaches	60
51.	<u>D.V. Pelegov, A.A. Ryabin, B.N. Slautin, A.R. Makhmutov, D.K. Kuznetsov</u> Towards industrial quality control of LiFePO₄: Raman spectroscopy study of laser-induced decomposition	61
52.	<u>Murat Alibek, Tulay Yildirim</u> Single channel potentiostat for electroanalytical applications	62
53.	<u>Azamat Amanzholov, Aidana Ituzirova, Salimgerev Adilov</u> Synthesis and Photophysical Properties of 5,10,15,20-tetrakis(3-cyanophenyl)porphyrin and Its Metal Derivatives	63
POSTER SESSION		
54.	<u>Berik Uzakbauly, Azat Abdullaev, Almagul Mentbayeva, Aliya Mukanova, Zhandos Utegulov, Zhumabay Bakenov</u> Thermal conductivity of Si thin films through time-domain thermoreflectance measurements	64
55.	<u>Yongguang Zhang</u> Construction of Oxygen-deficient La(OH)₃ Nanorods Wrapped by Reduced Graphene Oxide for Polysulfide Trapping toward High-Performance Lithium/Sulfur Batteries	65
56.	<u>Ulantai Doseke, Yerzhan Mukhametkarimov, Kuanysh Dautkhan, Oleg Prikhodko, Svetlana Mikhailova, Suyumbika Maksimova, Guzal Ismailova</u> Features of the structure and optical properties of thin TiO₂<Ag> nanocomposite coatings	66
57.	<u>Aliya Assembayeva, Aleksandr Ryaguzov, Renata Nemkayeva, Nazim Guseinov, Markizat Myrzabekova</u> Research of the structure of a-C<Pd> films by the Raman spectroscopy method	67
58.	<u>Maxim Yu. Maximov, Yuri Koshtyal, Ilya Mitrofanov, Ilya Ezhov, Aleksander Rymyantsev, Anatoly Popovich</u> Features of the synthesis of lithium-based ternary oxide nanofilms by atomic layer deposition with LHMS for thin-film LIBs	68
59.	<u>Evgeniya Il'ina, Efim Lyalin, Boris Antonov</u> Modified sol-gel synthesis of the solid electrolytes based on Li₇La₃Zr₂O₁₂ doping by Nb and Al	69
60.	<u>A.P. Ryaguzov, F. Bekmurat, R.R. Nemkayeva</u> Structure and properties of a-C <Ir> <Ir>	70
61.	<u>Nazgul Tompakova, Elena Dmitriyeva, Igor Lebedev, Abai Serikkanov, Ekaterina Grushevskaya, Bagila Baitimbetova</u> Influence of Acid Filming Solution on SnO₂ Thin Films	71
62.	<u>Almar Zhumabekov, Niyazbek Ibrayev, Evgeniya Seliverstova</u> Preparation and photoelectric characteristics of nanocomposite based on reduced graphene oxide and TiO₂	72
63.	<u>Elmira Alikhaidarova, Dmitriy Afanasyev, Niyazbek Ibrayev</u> Nanocomposite materials based on Pedot:PSS polymer mixture doped with Ag-TiO₂ and Ag-SiO₂ nanostructures	73
64.	<u>Svetlana Pershina, Evgeniya Il'ina, Konstantin Druzhinin</u> Reducing interfacial resistance between Li_{1.5}Al_{0.5}Ge_{1.5}(PO₄)₃ glass-ceramics and Li-metal anode by Al-coated	74
65.	<u>Alibek Zhakypov, Suyumbika Maksimova, Oleg Prikhodko, Guzal Ismailova, Kundyz Turmanova, Zhandos Tolepov</u> Nanoscaled Ge₂Sb₂Te₅ films structure transformation influenced by laser irradiation	75
66.	<u>Indira Kurmanbayeva, S. Kalybekkyzy, A. Mentbayeva, Z.Bakenov</u> SiO_x anodes for LIB	76
67.	<u>Nurbol Tolganbek, Berik Uzakbauly, Almagul Mentbayeva, Kiyoshi Kanamura, Zhumabay Bakenov</u> NASICON-type electrolyte with transition metal dopants	77
68.	<u>Yerkezhan Yerkinbekova, Sandugash Kalybekkyzy, Orynbay Zhanadilov, Almagul Mentbayeva, Zhumabay Bakenov</u> Sulfur-containing composite cathode materials for Li-Ion batteries obtained by vacuum infiltration method	78
69.	<u>Madina Kudabayeva, Renata Nemkayeva, Nazim Guseinov, Alexander Ryaguzov</u> Research of the structure and electronic properties of silicon containing amorphous diamond-like carbon films	79
70.	<u>M.F. Kadir, B.E. Alpybayeva, M.T. Yskak, M.S. Batalova</u> Porous structures for supercapacitors	80

71.	<u>Ye. Yerlanuly</u> , D.G. Batryshev, T.S. Ramazanov, M.T. Gabdullin, Zh. Ayaganov Obtaining of composite material based on carbon nanowalls and micro- and nanoparticles for a supercapacitor	81
72.	<u>A. Tulegenova</u> , Kh. Abdullin Synthesis and Characterization of Cobalt Oxide Based Electrode for Supercapacitor	82
73.	<u>Zhanibek Ayaganov</u> , Maratbek Gabdullin, Didar Batryshev, Tlekkabul Ramazanov, Synthesis Of Carbon Nanotubes With Ni-Ti Catalyst	83
74.	<u>S.K. Zhumagulov</u> , Kh.A. Abdullin, G.A. Ismailova, Zh.K. Kalkozova Room temperature hydrogen gas sensor based on ZnO-Co₃O₄ nanopowder	84
75.	<u>Nurzhan Baikalov</u> , Nurassyl Serik, Sandugash Kalybekkyzy, Indira Kurmanbayeva, Zhumabay Bakenov, Almagul Mentbayeva High Mass-Loading Sulfur-Composite Cathode for High Performance Lithium-Sulfur Batteries	85
76.	<u>Orynbassar Mukhan</u> , Assel Serikkazyeva, Aliya Mukanova, Zhumabay Bakenov Crystalline Si as an anode for lithium ion batteries	86
77.	<u>Assem Zhanabayeva</u> , Araily M Nalibayeva, Dinara Zhumabayeva, Kuralay Korzhynbayeva, Erlan Abdykhalykov, Zhumabay Bakenov, Gaukhar Bishimbayeva Innovative electrode materials for LIB from lithium battery-grade lithium carbonate based on Kazakhstan's spodumene raw materials	87
78.	<u>Y.U. Kedruk</u> , L.V. Gritsenko, Kh.A. Abdullin Hydrothermal Synthesis of ZnO-CuO Nanocomposites for Photocatalytic Application	88
79.	<u>Y.U. Kedruk</u> , L.V. Gritsenko, Kh.A. Abdullin Effect of Heat Treatment on the Optical Properties of BZO Thin Films	89
80.	<u>Kamshat Umbetova</u> , Rinat Iskakov, Natalya Korobova, Valentina Kravtsova The study of electrical conductivity dependence on temperature of polyimide films	90
81.	<u>Darya Puzikova</u> , Margarita Dergacheva, Gulnur Khussurova Thin films CuBi₂O₄ for photoelectrochemical solar cells	91
82.	<u>Sandugash Kalybekkyzy</u> , Al-Farabi Kopzhasar, Memet Vezir Kahraman, Zhumabay Bakenov, Almagul Mentbayeva UV-crosslinked flexible solid polymer electrolyte for lithium-ion batteries	92
83.	Orynbay Zhanadilov, <u>Zhanna Beisbayeva</u> , Zhumabay Bakenov, Almagul Mentbayeva PAAm hydrogel electrolyte for Zn/LiFePO₄ aqueous rechargeable batteries	93
84.	<u>Raikhan Zakarina</u> , Kuralay Korzhynbayeva, Indira Kurmanbayeva, Zhumabay Bakenov Suppression of dendrite formation on zinc anode of aqueous rechargeable batteries using electrodeposition with organic additives and boric acid in Zn//3M LiCl + 4M ZnCl₂//LiFePO₄	94
85.	<u>Assel Serikkazyeva</u> , Aliya Mukanova, Orynbassar Mukhan, and Zhumabay Bakenov Composition of Si-C thin films as the anodes for lithium-ion batteries	95
86.	<u>Aliya Mukanova</u> , Gerard Colston, Araily M Nurpeissova, Maksym Myronov, Zhumabay Bakenov 3C-SiC thin film as negative electrode for Li-ion batteries	96
87.	<u>A. Abdullaev</u> , A. Mukanova, T. Yakupov, A. Mentbayeva, Z. Bakenov, Z.N. Utegulov Nanoscale thermal transport and elastic properties of lithiated Si anode films for lithium ion batteries	97
88.	<u>Gulnur Kalimuldina</u> , Araily M Nurpeissova Preparation of Metal Sulfides by Electrodeposition as Cathode Materials for Lithium Batteries	98
89.	<u>Araily M Nurpeissova</u> , Dana Abilmazhinova, Zhumabay Bakenov Si incorporated on Ni-foam as anodes for Lithium-ion batteries	99
90.	<u>Meruert Karim</u> , Magdalena Mandl Development and Characterization of Li₄Ti₅O₁₂ as Reference Electrode for Lithium-Ion Batteries in the Three-Electrode Setup	100
91.	<u>Fariza Sabit</u> , Piotr Skrzypacz, Vsevolod V. Andreev, Boris Golman Arise' solutions to non-linear diffusion-reaction problems with power-law kinetics revisited	101

92.	Piotr Skrzypacz, Daulet Nurakhmetov, <u>Almir Aniyarov</u> , Madi Beghzigitov, Dongming Wei Dynamic pull-in in actuated power-law beam	102
93.	<u>Nurlan Seisenbayev</u> , Yerdaulet Abuov, Woojin Lee Development of carbon sequestration technology in hydrocarbon bearing basins of Kazakhstan	103
94.	<u>Toktar Murat</u> , Kozybayeva Farida, Koshen Bauyrzhan The first stage of soil formation processes in technogenically disturbed dumps of kokdzhon phosphorite deposit	104
95.	Zhubatov Zhailaubai, Stepanova Elena, Toktar Murat The study of microbiological methods for cleaning soil contaminated with heptyl	105
96.	<u>Olga Bukina</u> , Ivan Kukushkin, Aleksey Grechanik, Yuliya Baklanova Studies of X-ray structural and physicochemical properties of materials for the uranium-graphite fuel of the IGR reactor	106
97.	<u>Sarvarbek Melikuziev</u> , Shavkat Imomov, Zulfiya Mamadalieva Reliability Criteria of Biogas Installations	107
98.	Ye. Amirgaliyev, <u>M. Kunelbayev</u> , A. Kozbakova, T.Ormanov, T. Sundetov, M.Akhmetzhanov Development and Justification of Parameters of Energy-Saving Flat Solar Collector	108
99.	<u>Kuanysh Samarkhanov</u> , Erlan Batyrbekov, Mendykhan Khasenov, Yuriy Gordienko, Yuriy Ponkratov, Zhanna Zaurbekova, Yevgeniy Tulubayev Study of optical irradiation nature, formed by the products of ${}^6\text{Li}(n, \alpha){}^3\text{H}$ nuclear reaction excitation with vapor-gas He-Kr-Cd mixture	109
100.	Zere Bekzhanova, Sabina Kumarova, Symbat Seitzhan The Application of Piezoelectric Technology for Human Energy Harvesting in Korea and Kazakhstan	110
101.	<u>Darzhan Aitbekova</u> , Murzabek Baikenov, Ma Feng Yun, Bakytzyzy Araigul The use of nanocatalytic systems for hydrogenation of polyaromatic hydrocarbons	111
102.	<u>Ilya Korolkov</u> , Arman Yeszhanov, Yevgeniy Gorin, Maxim Zdorovets Modification of PET track-etched membranes for electrochemical sensing of heavy metal ions	112
103.	Rashesh Naik, <u>Aida Iskaliyeva</u> , Ahmed Qureshi, Didier Talamona Analysis of Dimensional Accuracy of Parts Using SLA Printed Patterns for Investment Casting	113
104.	<u>Ivan Kukushkin</u> , Yuliya Baklanova, Olga Bukina, Roman Barbatenkov The choice of methods for obtaining corium	114
105.	<u>Yevgeniy Tulubayev</u> , Yuriy Ponkratov, Yuriy Gordienko, Kuanysh Samarkhanov, Vadim Bochkov Calculation and Theoretical Estimation of Tritium Release Parameters from Near-Surface Layer of the Li15.7Pb Eutectics under Irradiation at the IVG.1M reactor	115
106.	<u>Olga Lem</u> , Mannix Balanay, Seunghee Han, Woojin Lee Green Synthesis of Zero-Valent Iron Nanoparticles for the Reductive Degradation of Bromate	116
107.	<u>Zhazira Supiveva</u> , Khaisa Avchukir, Azamat Taurbekov, Mukhtar Yeleuov, Gaukhar Smagulova, Kulash Abdushukur, Zulkhair Mansurov The investigation of electroreduction of AuCl_4^- in the case of gold electrosorption using activated carbon	117
108.	<u>Gaukhar Smagulova</u> , Nurmakhlan Yesbolov, Bayan Kaidar, Nataliya Vassilyeva, Nikolay Prikhodko, Nazym Bexary, Zulkhair Mansurov Carbon nanotubes from polyethylene waste	118
109.	<u>Nazgul Zhexembayeva</u> , Yuka Motohashi, Yuta Uetake, Hidehiro Sakurai Size-selective preparation of Au:Chitosan Nanoclusters	119
110.	<u>Anastassiya A. Mashentseva</u> , Vadim A. Krasnov, Tomiris G. Khassen Formation of Cu/CuO-PET composites using low-temperature annealing	120
111.	<u>Dmitriy Khrustalev</u> , Azamat Yedrissov, Yana Levaya, Olga Tyagunova Synthesis of 4,7-dibromo-9H-carbazole and its N-alkylation under microwave irradiation	121
112.	Niyazbek Ibrayev, <u>Evgeniya Seliverstova</u> , Gulden Omarova The influence of plasmons of Ag nanoparticles on photovoltaics of functionalized polymethine dye	122
113.	<u>Niyazbek Ibrayev</u> , Dmitriy Afanasyev, Gulden Omarova, Evgeniya Seliverstova Spin effects in the transformation of electron energy at the interface of porous TiO_2-polymethine dye	123
114.	<u>Elena N. Rodlovskaia</u> , Valerii A. Vasnev Synthesis and Properties of New Thiophene-	124



Containing Polyimides		
115.	<u>Ilya Korolkov</u> , Yevgeniy Gorin, Artem Kozlovskiy, Elena Shumskaya, Marina Anisovich, Lana Lisovskaya, Maxim Zdorovets Immobilization of carboranes on magnetic iron oxide nanoparticles for potential application in boron neutron capture therapy of cancer	125
116.	<u>YuChi Qingxiao</u> , Chen Yao, Zhang Lianbing Accurate Synthesis of Carbon Nanotube Supported Nanozymes by Atomic Layer Deposition for Excellent Biosensing Performance	126
117.	<u>Olzhas Mukashev</u> , Yerkeblan Tazhbayev, Meiram Burkeyev Nanoparticles of albumin, preparation and use for medicine transportation	127
118.	Haiyan Fan, <u>Medina Khamijan</u> Qinglei Sun, Kanat Dukenbayev, Akhrorbek Turdaliyev, Alibek Ysmayil, Yingqiu Xie Carbon dot regulates phosphatase	128
119.	<u>Balnur Bazarbayeva</u> , Madi Tilegen, Haiyan Fan, Yingqiu Xie Nanoscale pearl powder inhibits cancer cells growth with nanozyme activity	129
120.	<u>Yingchun Yang</u> , Qingtian, Lianbing Zhang PEG-ferrihydrate kill cancer cell in blue light system	130
121.	<u>Qing Tian</u> , Ying Chun Yang, Lian Bing Zhang Biofilm control based Photo-Fenton Reaction of Ferrihydrate nanomaterials	131
122.	Shuqi Wu, <u>Yang Li</u> , Lianbing Zhang A Multifunctional Persistent Luminescent Nanocomposite for Multimode Imaging Diagnosis and Photothermal Therapy of cancer	132
123.	Haiyan Fan, Aigerim Kabulova, Nazgul Ibragimova, Zhuldyz Zhanzak, Aizhan Meyerbekova, Qian Wang, Adilet Dautov, <u>Madina Razbekova</u> , Yingqiu Xie Application of Nanoscale Yellow-Jing from Mountain Tai in Chinese Taian Area for Prostate Cancer Cell Engineering	133

The problem of the determining of kinetic parameters of the deintercalation-intercalation process

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The kinetic parameters of the intercalation and deintercalation processes are of great importance for the optimization of the electrode material. Knowing these processes makes it possible to assess the possibilities for improving process performance and the existence of fundamental limitations in moving in this direction. The main methods for determining the kinetic parameters of the deintercalation process are considered on the example of one of the most studied cathode materials, lithium ferrophosphate. The main issue that determines the applicability of a method is the question of the limiting stage of the process and the choice of the model by which the process can be described. The cyclic voltammetry was used as the most independent of the structure and properties of the composite electrode method, by analyzing the peak current, determined by the diffusion of the reagent to the interface. With a sufficiently good description by the theory of experimental data, the question remains open about the correspondence of the process to the physical model underlying it.

The processes of deintercalation were studied using various methods for determining kinetic parameters. It was shown that in the processes of chemical oxidation, the kinetics of deintercalation practically does not depend on the presence of a carbon layer on the surface of lithium ferrophosphate, while in electrochemical measurements its presence radically changes the kinetics. The dependence of the parameters determined by the electrochemical method was shown not only on the structure and properties of the electrode, but also on the composition of the electrolyte, which forces us to consider these data with an understanding of their relativity.

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