Table of Contents

Preface, Conference Committee, Sponsors

Chapter 1: New Functional and Structural Materials and Processing Technologies

Physical-Chemical Properties of Molybdenum Films Prepared with Magnetron Sputtering N. Shaburova, T.D. Ratmanov and A.M. Minkin	3
Optimization of Synthesis Mode for Hydro Silicate-Based Supplements Used for Lime Dry Construction Mixtures	9
V. Loganina and I.S. Pyshkina Current State and Future Prospects for Improvement of Mineral Melt Production	9
Technologies V.I. Matyukhin, V.A. Dudko and N.V. Grebneva	14
The Wear Resistance of Mottled Iron with Stabilized Carbide Phase S.V. Davydov and A.O. Gorlenko	22
Research of Activity of Natural Radionuclides in Construction Raw Materials of the Volgograd Region I.P. Mikhnev, N.A. Salnikova and M.B. Lempert	27
Sulfur Composite Materials Based on Sulfide Containing Industrial Waste A. Yusupova, R.T. Akhmetova and L.N. Shafigullin	33
Environmental and Technical Possibilities of Marble Waste Recycling in Bricks and Sorbents Production	
D.V. Oreshkin and V.A. Perfilov	39
Improvement of Environmental Safety due to Utilization of Industrial Wastes in Refractory Concretes Production	
V.A. Perfilov and D.V. Oreshkin	43
Multi-Layer Wood-Polymer Composite D.V. Tuntsev, Z.G. Sattarova and I.M. Galiev	47
Study of Residual Stresses and Surface Hardening in Tubes for Nuclear Steam Generators M.A. Rozenbaum, A.V. Serebryakov, I. Bazhukov and G.V. Shimov	53
Multifractal Parametrization of Welded Joints Structure as an Instrument of Diagnostics and Detection of Defects	
E.V. Poyarkova and I.R. Kuzeev	60
Assessment of Welded Joints Structure Defectiveness Based on the Presence of Non-Metallic Inclusions	
E.V. Poyarkova, I.R. Kuzeev and K.L. Zabelin	65
Pulse Processing of Molten Metals V.V. Krymsky, V.F. Balakirev and N. Shaburova	70
Choice of Laser Cementation Method of Blade Woodcutting Tools E.A. Marinin, A. Chirkov and G.N. Gavrilov	74
Bolts Manufacturing Technology E.S. Reshetnikova, D.U. Usatiy and T.V. Usataya	79
Strengthening Mini Silo Construction Made of Reinforced Concrete Blocks with Carbon Fiber Lamellae	
I.A. Mayatskaya, A.E. Fedchenko and D.S. Zagutin	86
Strengthening Building Structures with Polymer Composite Materials I.A. Mayatskaya, A.E. Fedchenko and D.B. Demchenko	91
Influence of Concrete Mix Transportation with Inertia Conveyor on Concrete Properties S.G. Osmanov	97
Structure and Properties of Concrete for Injection with Two-Stage Expansion Y. Koryanova	103
On Effect of Superplasticizers and Mineral Additives on Creep Factor of Hardened Cement Paste and Concrete G. Nesvetaev, I.V. Korchagin and Y.Y. Lopatina	109

Phenomenological Model of Low-Carbon Steels Hardening during Multistage Drawing A.V. Grushko, V.V. Kukhar and Y.O. Slobodyanyuk	114
Low Density Cellular Concrete Made of Reftinskaya SDPP Fly Ash A. Vishnevsky and F.L. Kapustin	124
Future-Oriented Technology of Preparing Suspensions of Metals A.N. Belyaev, B.I. Degterev and I.V. Flegentov	129
On Reliability of Stainless Maraging Steel T.M. Makhneva, V.B. Dement'yev and S.S. Makarov	134
Ti-TiN Multilayer Coatings Obtained by ION FLUX Surface Modification S.R. Shekhtman and M.S. Migranov	141
Wood Heat Treatment in Construction Materials Production N.R. Galyavetdinov, R.R. Safin and R.T. Khasanshina	146
Lamb Wave Analysis for Plate of Weak Ferromagnetic YFeO ₃ M.E. Adamova and E.A. Zhukov	152
Evolution of BrOCS 5-5-5 Alloy Microstructure and Mechanical Parameters under Intensive Plastic Deformation Conditions S.Y. Radchenko, D.O. Dorokhov and I.M. Gryadunov	157
Multi-Component Coatings Formation on Polycathode Magnetron Sputtering Systems V.V. Kolesnik, Y.K. Rubanov and Y.E. Tokach	166
Thermal Modification of Wood in Production of Finishing Materials A.R. Shaikhutdinova, R.R. Safin and F.V. Nazipova	171
Behavior of Micro-Alloyed Steel at Thermal Treatment T.V. Shveyova, A.M. Pesin and D.O. Pustovoytov	177
Diffusion Saturation by Titanium from Liquid-Metal Media as Way to Increase Carbide- Tipped Tool Life A.G. Sokolov and E.E. Bobylev	181
Effect of Aggressive Components of the Marine Environment the Protective Properties of the Textile Materials I.V. Cherunova, T. Lesnikova and A. Korinteli	187
Expansion of Concrete Functionality due to Use of New Hydrophobic Additives V.D. Tukhareli, A.V. Tukhareli and T.F. Cherednichenko	192
Fusion Technology Nanopowder Magnetic Fluids S.I. Evdokimov, E.I. Meshkov and T.E. Gerasimenko	198
Integrated Method of Study of Hardened of Details A.D. Mingazhev, N.K. Krioni and V.A. Gafarova	204
Investigation of Heat Resistance of Al-Ni Layered Coating V.G. Shmorgun, A.I. Bogdanov, A.O. Taube and R.E. Novikov	211
Islet Nitriding of Product Surfaces Made from Alloy Steel N.K. Krioni, A.A. Mingazheva, A.Y. Kononova, A.D. Mingazhev and V.A. Gafarova	215
Mechanical Properties and Stress-Strain Behaviour of Binary and Ternary Composites Based on Polyolefins and Vegetable Fillers E.E. Mastalygina and A.A. Popov	221
New Composite Dispersion Reinforcement Materials with Modulated Characteristics S.V. Moskovsky, A.S. Noskov and V.S. Rudnov	227
New Unconventional Additives in Concrete Technology for Expansion its Functionality V.D. Tukhareli, T.F. Cherednichenko and O.Y. Pushkarskaya	231
Physical and Technological Features of Formation of Large Thickness Welded Joints in Electron-Beam Welding V.V. Novokreschenov, R.V. Rodyakina and M.A. Karimbekov	237
Technology of Wood Waste Processing to Obtain Construction Material R.G. Safin, Z.G. Sattarova and E.R. Khairullina	245
Process of Shaped Metal Billets Production from Compositions Based on Iron Powder, Iron Oxide, and Binder	
V.A. Dovydenkov, O.S. Zvereva and S.Y. Alibekov Quality Evaluation of Platinit Wire by Different Producers	250
E.G. Kasatkina, I.Y. Mezin, A.S. Limarev and J.V. Somova	259
Research of Wood Thermal Modification Process in Flue Gases Environment R.R. Safin, P.A. Kaynov and E.A. Beliakova	266

Study of Carbon Fiber Materials Sorption Capacity to Remove Heavy Metal Ions and Oil Products from Wastewater during its Treatment	
A.I. Syutova, S.Y. Alibekov and N.P. Syutov	272
Study of Compression Soft Porous Foam Materials I.V. Cherunova, N. Kornev and M. Paschen	279
Technological Increase of Adhesion Strength between Antifriction Coating and Base in Bimetal Fluid-Film Bearings	
A.Y. Rodichev, A.V. Sytin and V.V. Barabash	284
Technology of Mineral Raw Materials Granulation by Electric Arc for Manufacturing of Welding Fused Flux S.V. Naumov, M.N. Ignatov and M.A. Sheksheev	290
Use of Low-Grade Vegetable Raw Materials in Production of Composites by Preliminary Processing	
S.R. Mukhametzyanov, R.R. Safin and N.R. Galyavetdinov Polymer-Bitumen Binder Based Multifunctional Material	296
S.G. Abramyan and O.V. Oganesyan	303
Properties of Elastomeric Adhesive Composition Based on Chlorinated Isobutylene Isoprene Rubber Obtained by Mechanochemical Halide Modification K.V. Sukhareva, I.A. Mikhailov and E.E. Mastalygina	308
Calculation of Joint Plastic Deformation to Form Metal Compound in Cold Condition A.V. Shaparev and I.A. Savin	313
Carbonic and Mineral Adsorbent, Produced of Slurry Withdrawal of Oil-Extracting Production	
I.V. Starostina, D.V. Stolyarov and M.M. Kosukhin	319
Cold Spray Repairing Corrosively Damaged Areas on Aircraft Constructions V.S. Shikalov, N.S. Ryashin and A.V. Lapaev	325
Colloid-Chemical Bases on Creation of Multifunctional Modifiers of Concrete Mix and Concrete M.M. Kosukhin, N.A. Shapovalov and A.M. Kosukhin	331
Combined Influence of Opoka and Slag on Cement Properties in Presence of	331
Superplasticizer M.O. Korovkin and N.A. Eroshkina	337
Creating Carbon Nanotubes Microenvironment in Surfactant Water Solutions O.S. Zueva, A.O. Makarova and D.A. Faizullin	342
Examining the Microstructure of Industrial Leaded Brass Blanks for Quality Control G.A. Tkachuk, V.V. Shimov and O.A. Chikova	348
Extension of Raw Material Base for Ceramic Building Bricks Production N.S. Lupandina, N.Y. Kiryushina and E.V. Porozhnyuk	352
Improving Masonry and Protective Paints Quality A.V. Vyboishchik and I.L. Kostiunina	359
Improving the Reliability of Shell Structures Made of Composite Nanomaterials T.P. Kasharina	365
Ion Implantation Modification of Surfaces V.N. Zlobin, L.R. Kushch and A.S. Kudashev	369
Nano Additives Influence on Fuel Oil Properties E.R. Zvereva, R.V. Khabibullina and O.S. Zueva	374
Research of Efficient Methods of Superplasticizer Introduction into Cement Materials M.O. Korovkin and D.M. Grintsov	379
Research of Materials for High Temperature Electromechanical Energy Converter F.R. Ismagilov, V.E. Vavilov, A.K. Miniyarov and A.A. Mednov	385
Simple Universal Kelvin Equation Valid in Critical Point Vicinity and its Application to Carbon Dioxide Capillary Condensation in Mesoporous Silica A.A. Valeev and E.V. Morozova	392
Study and Analysis of Aluminate Dry Construction Mixtures Properties V.A. Belyakov and L.A. Bannikova	398
Chemical Aspects of the Obtaining of Iron-Containing Coagulant-Flocculant from Electric Steel Melting Slag for Wastewater Treatment	
T.A. Vasilenko and A.A. Koltun	403

Functional Nanostructured Tribotechnical Materials L.B. Leontiev, N. Shapkin and V.N. Makarov	410
Research on Influence of Technology of Bimetal Fluid-Film Bearing Manufacturing on Microstructure and Microhardness of Antifriction Coating and Steel Base A.Y. Rodichev, A.V. Sytin and V.O. Tyurin	416
Study of Physical and Mechanical Properties of Non-Polar Rubber-Based Sealants Depending on Filler Type and Volume D.V. Cherkasov, Y.V. Yurkin and V.V. Avdonin	422
Study the Effect of Heavy Elements Nanoparticles in the Photons Energy Spectrum in a Tissue-Equivalent Medium V.V. Temchenko, V.N. Kustov and K.S. Lukyanenko	428
The Production and Subsequent Selective Laser Melting of AlSi12 Powder P.A. Lykov, A.O. Shults and K.A. Bromer	434
Theoretical and Experimental Investigation of Vibration Damping Sheet Dynamic Behavior D.V. Cherkasov, Y.V. Yurkin and V.V. Avdonin	439
Using Mathematical Modeling to Develop Electrode Coating Composition for Stable Arcing and Arc Restarting I.Y. Letyagin	445
Combined Extender Pigments Based on Industrial Wastes Z.A. Sapronova, D.V. Sapronov and Y.L. Starostina	450
Influence of Al-Cu-Mn-Fe-Ti Alloy Composition and Production Parameters of Extruded Semi-Finished Products on their Structure and Mechanical Properties P.L. Reznik and M.L. Lobanov	456
Influence of Gas Shielding Method in Welding with Consumable Electrode on Heat Distribution in a Welded Product	
D.A. Chinakhov, E.G. Grigorieva and E.I. Mayorova Influence of Selective Laser Melting Process Parameters on Porosity of TiAl6V4 Alloy Fabricated by 200W CO ₂ Laser	463
R.M. Baitimerov, L.V. Radionova and E.V. Safonov Investigation of Ba-Fe-O System near the BaFe ₁₂ O ₁₉	470
D.A. Vinnik, E.A. Trofimov and D.A. Zherebtsov Synthesis of EP648-TiC Metal Matrix Composite Powder for Selective Laser Melting by	475
Ball Milling P.A. Lykov, D.A. Zherebtsov and S.V. Nerush	481
Effect of Heat Treatment on Change Concentration of Powders in Gradient Material A.N. Anikeev and I.V. Chumanov	486
Electro Physical Hardening of Non Metallic Composite Materials in Additive Technology I.V. Zlobina, N.V. Bekrenev and G.K. Muldasheva	490
Heating and Cooling Impact on Mechanical Properties of RIP Electric Insulator for High Voltage Inputs	
A.N. Ďemidov, M.A. Karimbekov and A.Y. Marchenkov	496
The Use of Ferrovanadium Production Sludge Wastes in Claydite Gravel Technology I.V. Starostina, M.M. Simonov and L.V. Denisova	501
Numerical Analysis of Stress-Strain State and Crack Propagation in Welded Samples M.S. Bisong, P.V. Sivtsev and V.V. Lepov	507
Capillary-Porous Effects in Concrete during Ice Abrasion L.V. Kim and E.E. Shaly	513
Sorption Properties of Nanostructured Calcium Aluminosilicate with Respect to Cesium Ions	
P.S. Gordienko, S.B. Yarusova, I.A. Shabalin and V.A. Dostovalov	518
Temperature and Humidity Dependence on Strength of High Performance Concrete G. Slavcheva and A.T. Bekker	524
Refractory Core-Shell Powders for Additive Industries S.P. Bogdanov and A.P. Garshin	529
Formation Structure and Properties of Parts from Titanium Alloys Produced by Direct Laser Deposition	
M.O. Gushchina, O.G. Klimova-Korsmik and V.V. Cheverikin	535
Hydrofluoride Method of Complex Processing of Titanium-Containing Raw Materials P.S. Gordienko, V.A. Dostovalov and E.V. Pashnina	542

Modified Geomembrane Compositions for Hydraulic Structure Impervious Coatings Y.M. Kosichenko and O.A. Baev	548
New 3D Cross-Linked Copolymers with Variable Mechanical Properties and High Durability	
V.M. Kapralova, D.D. Karov and A.I. Slutsker	553
Research of Processes of Products Fabrication by Self-Propagating High-Temperature Synthesis (SHS) Method	
S.A. Kotov, L.B. Gushchina and M.G. Livintsova	558
Applying the Electron Concentration Calculation Method to Assess the Influence of Hydrogen on the Position of the Variable Solubility Lines in Ti-Cr System A.A. Popov, A.G. Illarionov and S.V. Grib	563
Atomic Structure Design of Rapidly Quenched Amorphous Cobalt-Based Alloys E.V. Pustovalov, E.B. Modin and A.N. Fedorets	569
Beta-Phase Decomposition Sequence during Continuous Cooling of High-Temperature Titanium Alloy	575
D.V. Gadeev, S. Demakov and F.V. Vodolazskiy	575
Comparative Assessment of Resistance of Hardwearing Anodes, Ternary Coated with Iridium, Ruthenium and Titanium L.N. Fesenko, I.V. Pchelnikov and R.V. Fedotov	580
Composite Material for Railroad Tie	
V.V. Stepanov, V.A. Saldaev and V.E. Tsvetkov	587
Designing Metamaterial with Arc-Structure for Wide Broad Vibration Isolating A.R. Valeev	592
Determining Undeformed Chip Thickness Models in Milling and its Verification during	
Wood Processing A.A. Fomin	598
Effect of Pore Architecture of Titanium Implants on Stress-Strain State upon Compression Y.N. Loginov, S.I. Stepanov and E.V. Khanykova	606
Effect of Thermal and Thermal Magnetic Treatment on Damping Properties of Fe-Cr-Al	
Alloys M.A. Melchakov, A.I. Scvortsov and A.A. Scvortsov	611
External Factors Impact on Basic Properties of Hovercraft Skirt Materials A.K. Yakimov, Y.N. Butusova and A.V. Tumanin	615
Features of Zone Thermal Recrystallization of Germaniun Layers Grown on Silicon	
Substrates from a Discrete Source	620
S.N. Chebotarev, A.N. Yatsenko and L.S. Lunin Con Materials Nonestructures Crowth Control in the Enitarial Units	620
GaN Materials Nanostructures Growth Control in the Epitaxial Units A. Zhilenkov	627
Hardening Kinetics of Geopolymer Binder Based on Magmatic Rock with Mineral Additives	
N.A. Eroshkina and M.O. Korovkin	631
Influence of Constant Magnetic Field on Domain Wall Dynamics in YFeO ₃	
O.Y. Komina and E.A. Zhukov	636
Influence of Heat Treatment on Wear Resistance of Alloyed Hadfield Steel and Phase Transformations in it	C40
K.N. Vdovin, N.A. Feoktistov and D.A. Gorlenko	640
Influence of Heating Temperature and Cooling Conditions on Structure and Properties of Two-Phase Titanium Alloy F.V. Vodolazskiy, A.V. Zhloba and A.A. Popov	646
Influence of Oxygen Concentration on Plasma Dynamic Synthesis Product in Fe-O System I. Shanenkov, A. Sivkov and A. Ivashutenko	652
Integral Performance Criterion of Self-Propagating High-Temperature Synthesis Ferrosilid	
for Optimization of Charge Composition L.R. Kharisov, N.N. Safronov and G.N. Safronov	657
Investigation of Phase Composition of Samples Sintered from Tungsten-Containing	
Composite Micro- and Nano-Powders E.V. Ageev, A.Y. Altukhov, S.V. Khardikov and A.V. Kirichek	663
Investigation of Titania Nanotube Arrays Obtained from Glycerol Electrolytes D.I. Dyachenko, A.A. Kravchenko and D.V. Kokorina	667

Limiting Product Surface and its Use in Profile Milling Design Operations A.A. Fomin	672
Mediated Electrosynthesis of Cobalt Nanoparticles from Ionic Liquids A.A. Kravchenko, D.I. Dyachenko and V.T. Fomichev	679
Multicomponent Diffusion in Metallic Systems Exposed to E-Beams A.Y. Leyvi, K.A. Talala and A.P. Yalovets	684
New Material Creation by Phase Separation in Liquid Mixtures Induced by Non-Uniform Electric Field	
T.A. Volkova, R.F. Aletdinov and E.M. Fedosov	690
New Method of Quench Surface Turning N.N. Zubkov, S.G. Vasil'ev and V.V. Poptsov	696
On Deformation Powers of the Explosion Welded and Rolled Titanium-Aluminium Composite D.N. Gurulev, L.V. Palatkina and I.L. Gonik	702
Overall Hardening of Solid-Rolled Wagon Wheels by Volume Quenching and Surface	702
Plasma Processing A.T. Kanayev, A.V. Bogomolov and T. Sarsembayeva	706
Phase Transformations in D6AC Steel during Continuous Cooling M.V. Maisuradze, M.A. Ryzhkov and A.A. Kuklina	712
Phase Transformations in Novel Medium Carbon High Hardenability Steels M.V. Maisuradze, M.A. Ryzhkov and O. Surnaeva	717
Research into the Structure of Aluminum Matrix Composite AK12+2.38%Cu+0.06%SiC with a Scanning Probe Microscope	
S.V. Voronin, K.K. Chaplygin, A.D. Litoshina and S.V. Konovalov	723
Study of Properties of Multicomponent Heterostructures Based on A ^{III} B ^V Compounds M.L. Lunina, A.E. Kazakova and D.A. Arustamyan	728
Sulfoaluminate Cements Composition and Properties F.L. Kapustin, A.A. Ponomarenko and V.N. Oleinik	734
The Method for Producing Copper Nanoparticles and Analysis of their Lubricating Ability S.C. Kim, Y.N. Mansurov and S.H. Li	738
Use of the Superplasticity Phenomenon of Steel for "Internal" Magnetic Correcting a	
Product V.N. Pustovoit, Y.V. Dolgachev and Y.M. Dombrovskii	745
Vacuum Arc Deposition of Carbon and Carbon-Based Coatings A.A. Lisenkov, D.K. Kostrin and M.I. Pikus	750
Evaluation of Influence of Thermal Methods of Metal Separation Cutting on Welding	730
Quality A.K. Tingaev, M.A. Ivanov and A.M. Ulanov	755
Application of the Complete Material Balance Method to Estimate the Composition of Weld	133
Metal in Manual Arc Welding E.B. Votinova and M.P. Shalimov	762
Cu-Ni-Zn 15-20 Alloy - Particular Qualities of Alloying and Crystallization Parameters V.R. Baraz, S.S. Gerasimov and I.A. Gruzdeva	767
Design and Basic Consideration of Electromagnetic Heating Yarns with Foucault Currents	
for Smart Functional Fabrics R.R. Sattarov and E.F. Galiakberova	772
Engineering Analysis Methods for Hydraulic Shell Structures with Infill N.Y. Tsimbelman, T.I. Chernova and T.E. Shalaya	779
Effect of Heat Treatment Temperature-Rate Parameters on Structure and Complex of Physical-Mechanical Properties in VST5553 Titanium Alloy Rod Semi-Finished Goods A.V. Zhelnina, A.G. Illarionov and M.S. Kalienko	785
Influence of Intermetallics on Complex Alloyed Brass Hardness R.K. Mysik, A.V. Sulitsin and S.V. Brusnitsyn	789
Influence of Chemical Composition of Tough-to-Machine Materials on Grinding	
Technologies T.N. Ivanova	793
Improving the Properties and Structure of Magnesium Materials of Sol of Iron Hydroxide V.V. Zimich	800

Impact of Cooling Character on Structure and CTE of Invar Alloy with 0.6%C A.S. Zhilin, S.V. Grachev and S.M. Nikiforova	807
Heat Treatment of Carbon, High-Chromium Steels for Mud Pump Liners of Drill Rigs and Drilling Equipment S.M. Nikiforova, M.A. Filippov and A.S. Zhilin	811
Method for Describing Fatigue Processes in Structural Materials V.I. Mironov, O.A. Lukashuk and D. Vichuzhanin	815
Magnetic and Microstructural Properties of Cobalt Substituted NiZn Ferrite Powders A.V. Knyazev, E. Lähderanta and I.A. Zakharchuk	821
Investigation of the Equilibrium Germanium-Substituted Wustite with Metal and Spinel Solutions in the Fe-Ge-O System S.V. Shtin and A.A. Lykasov	827
Investigation of Barium Hexaferrite BaFe ₁₂ O ₁₉ Electro Physical Parameters Using Open- Ended Coaxial Probe Method K.M. Zeyde, S.A. Gudkova and D.A. Vinnik	834
Optimizing Conditions for Formation of Local Zones for Thermomigration in Silicon B.M. Seredin, V.P. Popov and A.N. Zaichenko	839
Research of Surface Phase Formation in Interaction of Granular Composite Sorbent with Technological Multicomponent Saline Solutions G.G. Mikhailov, A.G. Morozova and T.M. Lonzinger	845
Research of Mechanisms of Copper Ions Removal out of Sewage of Machine-Building Productions by Combined Reagent Based on Industrial Wastes L.A. Porozhnyuk, N.S. Lupandina and E.V. Porozhnyuk	851
Regulation the Properties of Materials on Magnesia Binder V.V. Zimich	856
Thermodynamic Modeling of Phase Equilibrium in Fe-Y-Cr-C-O Liquid Metal System G.G. Mikhailov and L.A. Makrovets	862
Heat Resistance of Certain Structural Steels A.S. Tyusenkov, A.V. Rubtsov and R.R. Tlyasheva	868
Heterogeneity Estimation of Low-Cycled Steel Weld Probes M.S. Bisong, S.N. Makharova and V.V. Lepov	873
Influence of Biologically Active Substances on Wastewater Treatment Process A.I. Khabibrakhmanova, N.A. Yugina and M.V. Shulaev	879
Isothermal Pearlite Formation Kinetics in High-Chromium Cast Irons without Additional Alloying K.Y. Okishev, E.S. Vasyukova, A.G. Grebenshchikova, A.S. Sozykina and D.A. Mirzaev	884
Numerical Analysis of Modes of Induction Weld Deposition of Valve Tappets of Motor Vehicles	
A.M. Osipov, Y.V. Bezgans and D.G. Lodkov Texture of Hot-Rolled Sheet Fe-3% Si Alloy	889
S.V. Danilov, A.A. Redikultsev and M.L. Lobanov Thermodynamic Analysis of Copper Melt Deoxidation with Lanthanum	895
O.V. Samoilova, G.G. Mikhailov and L.A. Makrovets The Thermal Expansion of Solid State BaFe ₁₂ O ₁₉ and Flux Ba _{0.8} Pb _{0.2} Fe ₁₂ O ₁₉ Pellets	900
S.A. Gudkova, A.S. Chernukha and D.A. Vinnik	906
Chapter 2: Innovative Technologies in Metallurgy Industry	
Beneficiation of Vanadium and Titanium Oxides by Using Selective Extraction of Iron in Low-Titanium Magnetite Concentrate Y. Kapelyushin, V.R. Roshchin and A.V. Roshchin	913
Calculation-Experimental Method of Manganese Losses Control in High-Carbon Ferromanganese Slag	010
A.V. Senin, D.L. Zhuravlev and A.V. Ivanov Chemical and Technological Thermally Activated Process Research of Roasting Pellets in Dense Bed of Conveyor Indurating Machine	919
V.I. Bobkov, M.I. Dli and A.S. Fedulov	925

Computer-Aided Modeling of a Screw Firmware of the Workpiece and Adequacy Evaluation of Solution Results	
V. Toporov, O. Panasenko, D.S. Nukhov, A. Bogatov and K. Pyankov	931
Deep Treatment of Copper Plant Waste Water Streams with Water Recycling K.L. Timofeev, A.B. Lebed and A.J. Malyutin	937
Effect of Charge Fractional Composition and the Coke Amount on the Parameters of	
Manganese Ore Agglomeration A.V. Senin, A.G. Ryazanov and D.L. Zhuravlev	945
Effect of Continuous Casting Parameters on Quality of Billets Manufactured by UMMC Steel LLC	
A.N. Kalitaev, V.D. Tutarova and A.N. Shapovalov	952
Effect of Semisolid Metal Casting of Large Forging Ingots on Quality of Large-Sized Forgings Produced	
D.V. Rutskii, N.A. Zyuban and S.B. Gamanyuk	962
Features of Plasma-Electrolytic Coatings Formation on Metalware Surface V.L. Steblyanko, A.P. Ponomarev and Y. Efimova	969
Force Interaction of Technological Tool and Elastic-Plastic Link at Large Diameter Tubes	
Preliminary Forming Y.B. Chechulin, Y.V. Pesin and N.Y. Boklag	975
Heat Treatment of Low-Alloyed Steel up to Grade Q125	,,,
S. Iyengar, A.V. Bogomolov and A. Zhakupov	981
Improvement of Surface Quality of Casting Produced by Casting under Pressure R.V. Gavariev and I.A. Savin	988
Industrial, Ecological and Resource-Efficient Aspects of Vanadium Production and Use of	
Technogenic Vanadium Sources E.S. Makhotkina and M.V. Shubina	994
Influence of Hot Rolling Technological Regimes on 6061 Aluminium Alloy Sheet Texture S.V. Danilov, I.A. Mustaeva and M.A. Golovnin	999
Kinetic Description of (Cr, Fe) ₇ C ₃ Carbide Precipitation from Austenite in High-Carbon	
Fe-Cr-C Ternary Alloys E.S. Vasyukova, K.Y. Okishev, A.S. Sozykina, A.M. Karlikov and D.A. Mirzaev	1005
Layered Composite Materials Designed for Higher Corrosion Resistance of Oil Production	
Equipment	1011
N.A. Bogatov, A. Bogatov and D.R. Salikhyanov Lost Foam Casting with the Use of Recycling and Nanostructured Materials	1011
L.G. Znamenskii, O.V. Ivochkina and A.S. Varlamov	1016
Magnetic Wave Technology of Grinding Slime Separation Y.M. Vernigorov, B.G. Gasanov and S.S. Baev	1020
Mathematical Model of Hot Rolling Temperature Parameters	
M.A. Sosedkova, L.V. Radionova and T.A. Lisovskaya	1026
Minimizing the Dynamic Loads in Pilger Rolling Mill Forholler Y.B. Chechulin and Y.A. Popov	1034
Modern Packaging Materials for Steel Products	
L.G. Kolyada, E.V. Tarasyuk and S.A. Krylova	1040
Modernization of Hot-Rolled Tubes Rolling Method D. Pavlov, A. Bogatov and E.A. Pavlova	1048
Nonwaste Recycling of Nonferrous Metallurgy Slags in Iron Casting S.V. Davydov and O.A. Gorlenko	1053
Physical and Mathematical Foundations Describing Crystallization Process of Melt Cooling on a Moving Wall by Fourier Method and Duhamel Theorem D. A. Boshmelov, D. L. Israphilov and A. T. Gelighberov	1059
D.A. Bashmakov, D.İ. Israphilov and A.T. Galiakbarov Polymetallic Ore Concentration Middlings Nitric Acid Leaching Kinetics	1039
D.A. Rogozhnikov and B.V. Kolmachikhin	1065
Relationship between Dendritic Structure of Grey Cast Iron and Mechanical Properties of	
Castings A.A. Baron, L.V. Palatkina and I.L. Gonik	1071
Research on Metal Forming in Pipe Ends Upsetting Process	
M. Erpalov and A. Bogatov	1076

Resource-Saving Technology of Recycling of Wastes of Secondary Aluminium Production in a Blast Furnace in the Process of Aluminous Slag Smelting	
E.S. Makhotkina, O.S. Ponomareva and L.G. Kolyada	1081
Simulation of Power Efficient Cooling Technology for Continuously Cast Bars L.L. Demidenko	1086
Stressed State of the Shaped Casting under the Impact of Hindered Contraction V.M. Kolokol'tsev, A.S. Savinov and A.S. Tuboltseva	1092
Study of the Hot Top Performance with Various Heat Insulators D.V. Rutskii, N.A. Zyuban and S.B. Gamanyuk	1099
Surfactants Influence on Sphalerite Wetting during Zinc Concentrate Pressure Leaching E.B. Khazieva, V.V. Sviridov, S.S. Naboychenko and V.A. Menshchikov	1104
Systems Analysis of Process Control Capabilities for Forging Accuracy V.G. Shibakov, D.L. Pankratov and R. Khairullin	1110
Increasing of Long Products Rolling Efficiency: Modernization of Stelmor Air Cooling Line to Obtain Sorbitized Wire Rod O.N. Tulupov, A.B. Moller and S.Y. Sarancha	1116
Improving the Rolling Technology at Mill 450 OJSC "MMK" to Reduce the Level of Alloying of 09G2S Steel Designed for Strength Class up to 440 MPa A.B. Moller, D.I. Kinzin and S.A. Levandovskiy	1123
Simulation of Thermal Conditions during Rolling of I-Beams at Modern Rail and Structural Steel Mill S.O. Nepryakhin	1130
Analysis of Efficiency of Roll Pass Design Options for Roughing Stands of Section Rolling Mill	1150
D.I. Kinzin, S.A. Levandovskiy and O.N. Tulupov	1136
Simulation of Centrifugal Casting and Structure of Fe-Ni-Co Super-Invar Alloy O.M. Ogorodnikova, V.I. Chermensky and I.V. Konchakovsky	1142
Influence of Structural Components on Strength Properties of Silicate Stone Casting Materials during Controlled Crystallization A.O. Artemov, M.N. Ignatov and A.M. Ignatova	1148
Determination of Frictional Forces during Wire Rod Drawing Process by Reverse Method S.I. Platov, V.A. Nekit and N.N. Ogarkov	1152