

PLENARY TALKS:

1. D. Shechtman. Quasi-Periodic Materials – a Paradigm Shift in Crystallography

Technion, Haifa, Israel and ; ISU, Ames, Iowa, USA

2. G.Tavadze SUCCESSES AND WAYS OF DEVELOPMENT OF SHS IN GEORGIA

Ferdinand Tavadze Metallurgy and Materials science Institute

3. M.I. Alymov. ISMAN: Present state and Perspectives.

Institute of Structural Macrokinetics and Materials Science, Russian Academy of Sciences, Chernogolovka, Moscow, 142432 Russia

4. I.P. Borovinskaya¹, A.S. Mukasyan². Fifty years of Discovery: History and Future.

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5. Orest Ivasishin

G.V. Kurdyumov Institute for Metal Physics

Hydrogen Approach in Powder Metallurgy of Ti and Zr Based Alloys.

ORAL PRESENTATIONS

1. Development of the technology SHS-metallurgy in Georgia

G.Zakharov, G.Oniashvili, G.Tavadze, Z.Asalmazashvili, G.Mikaberidze, M.Chikhradze, G. Urushadze Ferdinand Tavadze Metallurgy and Materials Science Institute ,10 E.Mindelistr, Tbilisi 0111, Georgia

2. Microstructure Peculiarities of some Metal-ceramic Materials of Ti-Cr-C system obtained by SHS-Compaction

Z.Asalmazashvili, G.Oniashvili, G.Tavadze, G.Zakharov, G.Mikaberidze, G.Urushadze Ferdinand Tavadze Metallurgy and Materials Science Institute ,10 E.Mindelistr, Tbilisi 0111, Georgia

3. Microstructures Peculiarities of Ceramic Materials obtained in Ti-B-C-N by SHS-Compaction

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4. Synthesis and Adiabatic Explosive Compaction of Ti-Al-B-C Powders

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5. Modeling of thermal field during SHS-Electric Rolling

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6. Shock-assisted liquid-phase consolidation of SHS-processed Ta-Al based composites.

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7. INTERACTION OF MOLTEN METALS WITH POROUS SKELETON OF Ti₃SiC₂ MAX-PHASE IN SHS CONDITIONS

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8. SHS OF ULTRAFINE AND NANOSIZED POWDER OF ALUMINUM NITRIDE USING SODIUM AZIDE AND HALIDE SALT (NH₄)₃AlF₆

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9. SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS IN THE Ni-Al-Nb TERNARY SYSTEM

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10. High Temperature Kinetics In Mechanically Activated Systems: Electro-Thermal Analysis And High Speed Temperature Scanning

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11. COMBUSTION SYNTHESIS OF GRAPHENE-RELATED COMPOSITE NANOMATERIALS

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12. PROCESSING TECHNOLOGY OF LASER WELDING OF COMBUSTION CHAMBER ELEMENTS RECEIVED BY METHOD OF SELECTIVE LASER MELTING

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13. THE MECHANISM OF WO₃(MoO₃) & CuO COREDUCTION BY COMBINED Mg/C REDUCER AT NON ISOTHERMAL CONDITIONS

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14. QUANTITATIVE 3-D RECONSTRUCTION OF REACTIVE NANOCOMPOSITES: EFFECT OF NANOSTRUCTURE ON ACTIVATION ENERGY

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16. MANIFESTATION OF INSTABILITY ARISING DURING SHS SURFACING ON TITO-SUBSTRATE. NUMERICAL MODEL AND EXPERIMENT

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17. TIME RESOLVED X-RAY DIFFRACTION FOR DIAGNOSTICS OF SHS

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18. CONSOLIDATION/SYNTHESIS OF CERAMIC MATERIALS BY SPARK PLASMA SINTERING

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19. SYNTHESIS OF TUNGSTEN AND TUNGSTEN ALLOYS NANOPARTICLES FOR TOKAMAKS

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20. DENSE IN SITU CERAMIC AND INTERMETALLIC MATRIX COMPOSITES VIA PRESSURE ASSISTED THERMAL EXPLOSION MODE OF SHS: from basic research to fabrication of structural parts

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21. Peculiarities of Synthesizing Single-Phase Solid Solutions Based on Tantalum Carbide

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22. HYBRID SHS-BASED TECHNOLOGIES FOR DESIGN OF HIGH-TEMPERATURE MATERIALS

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23. SHS in NiAl nanofibers: an atomistic-scale description

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24. REGULARITIES AND MECHANISM OF FORMATION OF ALUMINIDES IN TiH₂-ZrH₂-AL SYSTEM

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25. PREPARATION OF ADVANCED ZrB₂ BASED CERAMICS BY SHS, HOT PRESSING AND SPARK PLASMA SINTERING METHODS

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26. SHOCK-WAVE COMPACTION OF METAL/FLUOROPOLYMER POWDER MIXTURES

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27. Metathetical Reaction Mechanisms in the Ti-B-N System

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28. PARTICLE SIZE DEPENDENT PRESSURE DISCHARGE PROPERTIES OF AL-BI(OH)₃ NANO-ENERGETIC GAS GENERATORS

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29. EFFECT OF ADDITION OF EXCESS SILICON ON SHS SYNTHESIS OF Ti₃SiC₂ MAX PHASES POWDERS

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30. ON THE VERSATILITY OF MICROWAVE IGNITION IN SOLUTION COMBUSTION SYNTHESIS: THE CASE OF NICKEL NITRATE – GLYCINE SYSTEM

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31. SYNTHESIS OF INORGANIC RADICALS

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33. PECULIARITIES OF ALUMINOTHERMIC COMBUSTION OF OXIDE SYSTEMS UNDER HIGH NITROGENPRESSURE

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34. COMBUSTION SYNTHESIS OF Ni-W COMPOSITE NANOPOWDERS FROMOXIDEPRECURSORS

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35. METALLIC GLASSES Cu50Ti50 BY MECHANICAL ALLOYING AND THEIR HEAT-INDUCED STRUCTURALTRANSFORMATIONS

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36. SHS SURFACING OF Ti and TaSUBSTRATES

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37. SHS AND RELATED TECHNOLOGIES APPLIED TO DEVELOPMENTS INUNDERWATER ENVIRONMENT

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38. SHS OF MULTICOMPONENT TARGETS AND THEIR APPLICATION IN MAGNETRON SPUTTERING OF FUNCTIONALCOATINGS

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39. A COMPREHENSIVE OVERVIEW OF THE RECENT ADVANCEMENTS AND THE MOST PROMISINGPERSPECTIVES OF MICROWAVE ENERGY APPLICATIONS TO COMBUSTION SYNTHESIS

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40. SELF-PROPAGATING HIGH TEMPERATURE SYNTHESIS OF BORONCONTAINING COMPOSITION MATERIALS

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41. EXPERIENCE IN TESTING OF HIGH-TEMPERATURE MATERIALS FORVARIOUS COMPONENTS OF METALLURGICAL UNITS AT ENTERPRISES OF KAZAKHSTAN

(Doctor of Technical Sciences Satbayev B.N., Doctor of Technical Sciences Koketayev A.I., Shalabayev N.T., Satbayev A.B.)

42. NEW PHASES BY SOLUTION COMBUSTIONSYNTHESIS

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45. SHS IN SURFACEENGINEERING

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46. Combustion Synthesis of h-BN and its Applications in High Thermal Conductivity Polymer Composites

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47. SELECTIVE LASER MELTING OF COMBUSTION SYNTHESIZED 2Mo-Cu AND3Cu-Mo COMPOSITES

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48. DEVELOPMENT OF SOLUTION COMBUSTION SYNTHESIS TECHNOLOGY FOR NICKEL-BASED HYDROGENATION CATALYSTS

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49. A NOVEL PREPARATION TECHNIQUE OF METAL AND METAL OXIDE HOLLOW MICROSPHERES BY SPRAY SOLUTION COMBUSTION SYNTHESIS

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50. New Horizon to Production of Narrow-Fraction Powders and Granules of Intermetallides

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51. 70Cu–30Fe ALLOY BY SHS METALLURGY AND THERMOMECHANICAL PROCESSING

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52. SHS OF CAST REFRACTORY ALLOYS FOR REPROCESSING INTO MICRO GRANULES USED IN 3D ADDITIVE TECHNOLOGIES

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53. QUASI-STEADY MODES OF FILTRATION COMBUSTION WITH HEAT LOSSES

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54. SYNTHESIS AND DECOMPOSITION OF MAX PHASE Ti₂AIN IN THE MODE OF FILTRATION COMBUSTION

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55. SHS METALLURGY OF COMPOSITE MATERIALS: BASIC PRINCIPLES AND MEANS OF CONTROL

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56. Density Functional Theory (DFT) modeling and experimental investigation of the properties of SHS-materials: the case of solid solutions in Ta-Zr-C system

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57. Ni-BASED CATALYTIC COATINGS SYNTHESIZED BY IN-FLIGHT SCS DURING FLAMESPRAYING

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58. SINGLE STEP PREPARATION OF Cu-Cr-O AND Ni-Cr-O NANO CATALYSTS FOR CO OXIDATION BY SOLUTION COMBUSTION SYNTHESIS

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59. COMPARISON OF THE ACTIVITY OF SHS, SCS AND IMPREGNATED CATALYSTS IN THE REACTION OF CARBON DIOXIDE CONVERSION AND OXIDATIVE CONVERSION OF METHANE WITH CONNECTION TO COMBUSTION SYNTHESIS PARAMETERS

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60. SELF-PROPAGATING THERMAL WAVES IN THIN FILMS: NEW KINDS OF SHS PROCESSES A.S.Rogachev

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61. COMPREHENSIVE CHEMICAL AND STRUCTURAL CHARACTERIZATION OF COMPOSITE MATERIALS PRODUCED BY SHS WITH THE HELP OF MODERN MICROSCOPY TECHNIQUES

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62. PRODUCTION OF TiB₂-B₄C-TiC COMPOSITE POWDER

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63. STUDYING HARDNESS WITH SUB-MICRON LATERAL RESOLUTION OF COMPOSITE MATERIALS PRODUCED BY SHS WITH THE HELP OF PICOINDENTOR BUILT IN A HIGH RESOLUTION SCANNING ELECTRON MICROSCOPE

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64. THERMODYNAMIC MODELLING OF MAGNESIUM, STRONTIUM AND CALCIUM VIA VACUUM METALLOTHERMIC PROCESSES

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65. SOLUTION COMBUSTION SYNTHESIS OF VANADIUM OXIDE BY GLISIN AND CITRIC ACID

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66. SOLUTION COMBUSTION SYNTHESIS OF TUNGSTENTRIOXIDE

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67. METALLOTHERMIC PRODUCTION OF ANTIMONY

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68. INVESTIGATION OF Ni-B MASTER ALLOY PRODUCTION VIA SHS METHOD

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69. PRODUCTION OF FERRO-MOLYBDENUM FROM DOMESTIC RESOURCES VIA METALLOTHERMIC PROCESS

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71. COMPLEX HIERARCHICAL NANO- AND MICROCRYSTALS OF AlN GROWN IN THE COMBUSTION WAVE: MICROSTRUCTURAL CHARACTERISATION AND GROWTH MECHANISM

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72. COMBUSTION SYNTHESIS OF NOVEL NANOCARBONS VIA PROCESSING OF MAGNESIUM- CONTAINING COMPOSITIONS

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73. CAPILLARY MELT FLOW AND SPIN REGIMES OF GASLESS SYSTEMS

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POSTER PRESENTATIONS LIST

1. SHS Ferro boron Ligature

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2. STUDY OF INTRODUCTION OF ALN NANOPOWDER OF SHS-AZ BRAND INTO ALUMINUM MELT FOR EX-SITU PREPARATION OF COMPOSITES AL-(1-10%)ALN

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3. MECHANOCHEMICAL TREATMENT OF METALLIC POWDERS AND PECULIARITIES OF SH-SYNTHESIS OF COMPOSITION SYSTEMS WITH THEIR PARTICIPATION

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4. MORPHOLOGICAL AND METALLOGRAPHIC ANALYSIS OF METALLIC POWDERS PRODUCED BY THE METHOD OF HYDRO-VACUUM DISPERSION OF MELTS

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5. INVESTIGATION OF COATING FROM POWDER PARTICLES RECEIVED AFTER HIGH-SPEED IMPACT

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6. NANOSIZED MOLYBDENUM CARBIDE SYNTHESIZED BY SOLUTION COMBUSTION SYNTHESIS WITH SUBSEQUENT THERMAL TREATMENT

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7. STRUCTURE FORMATION AT CONSECUTIVE LAYER-BY-LAYER PACKING OF MONODISPersed GRANULES

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8. SHS PROCESSING OF COPPER WASTE INTO COPPER POWDER

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9. POLYFUNCTIONAL POWDER SHS-MATERIALS BASED ON OXIDE BRONZES

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10. SELF PROPAGATING HIGH -TEMPERATURE SYNTHESIS OF MULTICOMPONENT CARBOHYDRIDES IN THE Ti-Nb-V-C-H SYSTEM

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11. FUNCTIONAL METAL-KETAMIC COATINGS: STRUCTURE AND OPERATING PROPERTIES

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12. MA SHS OF ADVANCED BIOCOMPATIBLE AND BIOACTIVE MATERIALS IN Ti-C-Co/Fe-Ca₃(PO₄)₂-Ag-Mg SYSTEM

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13. THE FEATURES OF MgB₂ THERMAL EXPLOSION SYNTHESIS AND INFLUENCE OF DOPING AGENTS

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14. SUPERCONDUCTING CHARACTERISTICS OF SWCNT DOPED MgB₂ OBTAINED BY COMBUSTION SYNTHESIS

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15. SYNTHESIS OF NANOSTRUCTURED COMPOSITE MATERIALS BASED ON ZIRCONIUM BORIDES

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16. NUMERICAL MODELLING OF FLAME TEMPERATURE OF GEL SOLUTION COMBUSTION SYNTHESIS OF NANOCRYSTALLINE NICKEL-BASED CATALYST AND COMPARISON WITH EXPERIMENTAL DATA

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17. PREPARATION OF HIGHLY POROUS METAL MATERIAL BASED ON NICKEL HOLLOW MICROSPHERES BY SPARK PLASMA SINTERING

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18. COMPOSITE MATERIALS PREPARED BY SELF-PROPAGATING COMBUSTION SYNTHESIS FOR CATALYTIC METHANE REFORMING

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19. COLD ROLLING OF SHS-PRODUCED CAST HIGH-ENTROPY ALLOYS Co-Cr-Fe-N-Mn-Al-C: EVOLUTION IN MICROSTRUCTURE AND MECHANICAL PROPERTIES

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20. SHS- METALLURGY OF ALUMINUM OXINITRIDES FOR TRANSPARENT CERAMICS PRODUCTION

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21. SOOT OXIDATION USING CHROMIUM-BASED SCS CATALYSTS APPLIED ON A MAGNESIA-SPINEL CARRIER BY FLAME SPRAYING

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22. MULTI-WAVE SCS REGIME IN THE SYSTEM Mn-Zn-Na-Si-O

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23. EFFECT OF ALUMINUM NANOPOWDERS ELECTRON BEAM IRRADIATION ON SHS WITHIN THE SILICON OXIDE - ALUMINUM SYSTEM

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24. INFLUENCE OF OXYGEN IMPURITY ON α -PHASE CONTENT AT SHS OF Si₃N₄

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25. SHS JOINING OF W WITH NiAl: TRANSITION ZONE STRUCTURE

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26. INTERACTION OF Ta WITH Ni-Al INTERMETALLICS IN A SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS

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27. SHS-PRODUCED CAST Ni–Cr–W ALLOY: STRUCTURAL CHARACTERIZATION AND MECHANICAL PROPERTIES

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28. SYNTHESIS OF A NEW MAX PHASE (Ti_{0.5}Zr_{0.5})₃AlC₂.

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29. MAX COMPOUNDS BY SHS IN Ti–Al–C–B SYSTEM

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30. SHS IN Ti–B AND Ti–Al–B STRUCTURED SYSTEMS AT PRELIMINARY WARMING-UP

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31. STUDY OF THE EFFECT OF DISPERSION POWDERS OF NICKEL AND TITANIUM CARBIDE ON THE STRUCTURE AND PROPERTIES OF DIAMOND TOOLS

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