CURICULUM VITAE

NAME	POSITION TITLE
Sytschev Alexander Eugen'evich	Materials Science Laboratory, Head

Education/Training

INSTITUTION(S) AND LOCATION	DEGREE(S)	YEAR(S)	FIELD(S) OF STUDY
Moscow Physical-Engineering Institute, Moscow, Russia	Master of Sci.	1983	Chemical Engineering
Merzhanov Institute of Structural Macrokinetics and Materials Science, Russian Academy of Sciences, Chernogolovka, Moscow Region, Russia	Ph.D	1991	Chemical Physics

Employments

- Junior Researcher, Institute of Chemical Physics, Russian Academy of Sciences, Chernogolovka, Moscow region, 1983-1989;
- Researcher, Institute of Structural Macrokinetics, Russian Academy of Sciences, Chernogolovka, Moscow region, 1989-1993;
- Senior Researcher, Institute of Structural Macrokinetics and Materials Science, Russian Academy of Sciences, Chernogolovka, Moscow region, 1993-1999;
- Deputy Director, Merzhanov Institute of Structural Macrokinetics and Materials Science, Russian Academy of Sciences, Chernogolovka, 1999-2018;
- Materials Science Laboratory, Head, Merzhanov Institute of Structural Macrokinetics and Materials Science, Russian Academy of Sciences, Chernogolovka, 2009-present.

Research Areas

- Combustion of heterogeneous systems
- Self-propagating High-Temperature Synthesis (SHS) of advanced materials
- Structure and phase formation
- SHS under microgravity
- SHS of intermetallic
- MAX-phases
- Nanolaminate materials, multilayered graphite

Memberships

- Scientific Council of the Institute of Structural Macrokinetics and Materials Science (ISMAN), Member, 1999-present;
- International Journal of SHS, Executive Secretary, 1992 – present
- Coordinator-International Symposia on SHS (Moscow Russia, Aug. 1999; Haifa, Israel, Oct. 2001; Cracow, Poland, Jul. 2003; Cagliari, Italy, Jun. 2005; Dijon, France, Jun. 2007; Anavyssos, Greece, Sept. 2011; South Padre Island, TX, USA Oct. 2013)
- Coordinator-French-Russian Workshops on SHS, Chernogolovka, Russia, Oct. 2003; Vilantanesse, France, Aug. 2006
- Member of the Program Committee of the International Conference " Synthesis and Consolidation of Powder Materials (SCPM-2018)", October 23 – 26, 2018, Chernogolovka, Russia

- Member of the Organizing Committee of the International Symposium on the Explosion of New Materials: Science, Technology, Business and Innovation (EPNM-2018), May 14-18, 2018, St. Petersburg, Russia
- Chairman of the Local Organizing Committee of the International Conference "SHS-50", dedicated to the 50th anniversary of the scientific discovery " The phenomenon of wave localization of self-braking solid-phase reactions", November 20-21, 2017, Chernogolovka, Russia
- Chairman of the Local Organizing Committee of the International Conference "Non-Isothermal Phenomena and Processes: from the theory of thermal explosion to Structural Macrokinetics", November 28 – 30, 2016, Chernogolovka, Russia
- Member of the Organizing Committee of the International Symposium on the Explosion of New Materials: Science, Technology, Business and Innovation (EPNM-2016), 20 – 24 June, 2016, Coimbra, Portugal
- Member of the Organizing Committee of the Japanese-Russian Workshop on SHS, Karlovy Vary, 1998; 1st First Sino-Russian Workshop on SHS, Sep. 20-23, 2000 Beijing.
- Member of the Program Committee of the Third International Conference on Combustion and Detonation " Zel'dovich Memorial", dedicated to the 100th anniversary of the birth of Academician Ya. B. Zel'dovich, 27-31 October 2014, Moscow, Russia
- Member of the Organizing Committee of the XII International Symposium on Explosive New Materials: Science, Technology, Business and Innovation (EPNM-2014), 25 – 30 May, 2014, Krakow, Poland
- Member of the Organizing Committee of the Italian-Russian Seminar "New achievements and problems in the field of self-propagating high-temperature synthesis", April 16-17, 2012, Cagliari, Italy
- Chairman of the Local Organizing Committee of the International Conference "Non-Isothermal Phenomena and Processes: from the theory of thermal explosion to structural Macrokinetics", November 27-30, 2011, Chernogolovka, Russia
- Chairman of the Coordination Subcommittee International Meeting "Obtaining new materials using combustion and explosion ", May 2-8, 2011, Svetlogorsk, Kaliningrad region, Russia
- Coordinator of the IX International Symposium "Using Explosion Energy to produce Materials with New Properties: Science, Technology, Business and Innovation" (EPNM-2008), 6-9 May 2008, Lisse, the Netherlands
- Coordinator of the International Conference "Non-Isothermal Phenomena and Processes", dedicated to the 75th anniversary of Academician of the Russian Academy of Sciences and foreign member of the National Academy of Sciences of the Republic of Armenia A. G. Merzhanov, November 27 – December 1, 2006, Yerevan, Republic of Armenia
- Member of the Local Organizing Committee of the "International Symposium on Explosive Production of New Materials: Science, Technology, Business and Innovations (EPNM-2006)", September 11 – 14, 2006, Moscow, Russia
- Member, Council on space of the Russian Academy of Sciences, Expert section "Fundamental problems of physics in microgravity", 2016-present
- etc.

Some Awards

- Award of the William and Mary Greve Foundation, Inc., 1994
- Diploma of the President of Russian Academy of Sciences, 1999
- Diploma of the Federal Agency for Scientific Organizations (FASO Russia), 2017
- Gratitude of the Governor of the Moscow region, for many years of fruitful activity, 2020
- Medal "For contribution to the implementation of state policy in the field of scientific and technological development", departmental award of the Ministry of Science and Higher Education of the Russian Federation, 2021

Current Research Projects

My research interests are in fundamental studies of mechanisms for rapid high temperature heterogeneous reaction and in developing of novel approaches for materials synthesis, self-propagating high-temperature synthesis (SHS), SHS of intermetallic, SHS joining (welding), MAX-phases, diffusion processes.

Publication activity

WoS Researcher ID AAF-2871-2020
Scopus Author ID 6507794642
ORCID https://orcid.org/0000-0002-6774-2071

Selected publications

2024

1. М.Л. Бусурина, П.А. Лазарев, Ю.Г. Морозов, А.Е. Сычев. Самораспространяющийся высокотемпературный синтез сплава Ti($Mn_{0,755}Al_{1,246}$): структура, магнитные и электрические свойства. Материаловедение, 2024, №4, с. 34-40. DOI: 10.31044/1684-579X-2024-0-4-34-40
2. Лазарев П.А., Сычёв А.Е., Богатов Ю.В., Боярченко О.Д. Самораспространяющийся высокотемпературный синтез, совмещенный с прессованием металл-интерметаллидного материала на основе (Ti-Al-Mg)/Ti: структура и свойства. Перспективные материалы. 2024, № 1, с. 67-76. DOI: 10.30791/1028-978X-2024-1-67-76.
3. Lazarev, P.A., Sytschev, A.E., Bogatov, Y.V. et al. A Study of the Structure and Properties of a Ti–Al–Mg/Ti-Based Metal–Intermetallic Material Produced by Self-Propagating High-Temperature Synthesis Combined with Pressing. Inorg. Mater. Appl. Res. 15, 1421-1428 (2024). https://doi.org/10.1134/S2075113324701089
4. Karpov, A.V., Sytschev, A.E., Sivakova, A.O. Device for measurement the Seebeck coefficient of thermoelectric materials in the temperature range 300–800 K. Thermophysics measurements, Published: 26 January 2024, Volume 66, pages 628-635, (2023). https://doi.org/10.1007/s11018-023-02275-w
5. А.Е. Сычев, О.Д. Боярченко, С.Г. Вадченко, М.Л. Бусурина. Микроструктура зоны контакта при высокотемпературном взаимодействии углеродного волокна и расплава Fe-Al. Физика и химия обработки материалов. 2024, №4. в печати.
6. М.Л. Бусурина, А.Е. Сычёв, С.Г. Вадченко, А.В. Карпов. Особенности горения в системе 2Co-Ti-Al и свойства полуметаллического ферромагнитного сплава Гейслера Co_2TiAl. Химическая физика, 2024, в печати.
7. Busurina, M.L., Sytschev, A.E., Vadchenko, S.G. et al. Combustion Peculiarities in the 2Co–Ti–Al System and Properties of the Half-Metallic Ferromagnetic Heusler Alloy Co2TiAl. Russ. J. Phys. Chem. B 18, 1002-1008 (2024). https://doi.org/10.1134/S1990793124700544
8. Busurina, M.L., Sytschev, A.E., & Boyarchenko, O.D. Combustion-synthesized TiAl/NiAl layered intermetallic composite: synthesis, phase composition, and microstructure. Advances in Materials and Processing Technologies, (2024). P. 1-12. https://doi.org/10.1080/2374068X.2024.2307085
9. Sivakova, A.O., Karpov, A.V., Busurina, M.L. et al. Self-Propagating High-Temperature Synthesis of Cu–Mn–Al Alloys: Thermoelectric and Magnetic Properties. Int. J Self-Propag. High-Temp. Synth. 33, 237-244 (2024). https://doi.org/10.3103/S1061386224700201
10. Бусурина М.Л., Карпов А.В., Андреев Д.Е., Боярченко О.Д., Морозов Ю.Г., Икорников Д.М., Сычев А.Е. Термоэлектрические свойства сплава Гейслера Co_2TiAl, полученного методом СВС. ФММ, 2024, №10, в печати.

11. M.L. Busurina, A.V. Karpov, D.E. Andreev, O.D. Boyarchenko, Yu.G. Morozov, D.M. Ikornikov, A.E. Sytschev. Electrical Resistance, Magnetic and Thermoelectric Properties of the Heusler Alloy Co_2TiAl Obtained by Self-Propagating High-Temperature Synthesis. Physics of Metals and Metallography, 2024, Vol. 125, No. 10, pp. 1060–1065. DOI: 10.1134/S0031918X24601355
12. P.A. Lazarev, A.S. Raznoschikov, M.L. Busurina, O.D. Boyarchenko, I.D. Kovalev, and A.E. Sytschev. Features of Selective Laser Melting of SHS-Prepared Intermetallic Alloy $Ti_{20}Al_3Si_9$. Int. J Self-Propag. High-Temp. Synth., Volume 33, Number 4, 2024, в печати.
13. Сивакова А.О., Семенчук И.Е., Карпов А.В., Сычев А.Е. Термоэлектрические свойства сплава на основе системы Al-Mn-Si полученного методом самораспространяющегося высокотемпературного синтеза совмещенного с прессованием. Вопросы материаловедения, 2024, в печати.
14. А.Е. Сычев, М.Л. Бусурина, П.А. Лазарев, О.Д. Боярченко, О.В. Белоусова, И.Д. Ковалев. Особенности взаимодействия в системе Ti-Al-SiO_2 в процессе самораспространяющегося высокотемпературного синтеза: рост гексагональных кристаллов $Ti_5(Al,Si)_3$. Материаловедение, 2024, в печати.
15. P.A. Lazarev, V.Yu. Barinov, and A.E. Sytschev. Thermal Ionization during SHS of Ti–Al–Mg System. Int. J Self-Propag. High-Temp. Synth. Volume 33, Number 4, 2024, в печати.
16. Busurina, M.L., Gorshkov, V.A., Sychev, A.E. et al. Polymorphism of High-Temperature Aluminothermic Synthesis Products in the Ni-Al-Co System. Inorg Mater, Published: 10 March 2024, 59, 1069–1074 (2023). https://doi.org/10.1134/S0020168523100023

2023

1. A.V. Karpov, A.E. Sychev, O.D. Boyarchenko, I.D. Kovalev, O.V. Belousova, V.E. Loryan. Dielectric properties of BN–ZrB_2 and BN–ZrO_2 based ceramics produced by self-propagating high-temperature synthesis. Glass Ceram 79, 457–461 (2023). https://doi.org/10.1007/s10717-023-00532-6
2. Sychev A.E., Busurina M.L., Vadchenko S. Features of compaction during combustion of a system based on (Ni–Al)/(SiO_2, Al_2O_3, $3Al_2O_3{\cdot}2SiO_2$). Refract Ind Ceram 63, 546–551 (2023). https://doi.org/10.1007/s11148-023-00766-5
3. Лазарев П.А., Бусурина М.Л., Грядунов А.Н., Сычев А.Е., А.Ф. Беликова. Получение слоевого (Ti–Al–Si)/(Ti–C)/Ti сплава методом СВС-прессования. Известия вузов. Порошковая металлургия и функциональные покрытия. 2023; 17(1):21–27. https://doi.org/10.17073/1997-308X-2023-1-21-27
4. Lazarev P.A., Busurina M.L., Gryadunov A.N., Sytschev A.E., Belikova A.F. Fabrication of (Ti-Al-Si)/(Ti-C)/Ti – layered alloy by SHS pressing. Powder Metallurgy and Functional Coatings. 2023; 17(1):21-27. https://doi.org/10.17073/1997-308X-2023-1-21-27
5. П.А. Лазарев, М.Л. Бусурина, А.Е. Сычев. Самораспространяющийся высокотемпературный синтез в системе Ti-Al-Mn. Физика горения и взрыва, 2023, Т. 59, № 1, Стр.: 85-91, DOI 10.15372/FGV20230109
6. P.A. Lazarev, M.L. Busurina, A.E. Sychev. Self-Propagating High-Temperature Synthesis in Ti-Al-Mn System. Combust Explos Shock Waves 59, 78–84 (2023). https://doi.org/10.1134/S0010508223010094
7. П.А. Лазарев, М.Л. Бусурина, О.Д. Боярченко, Д.Ю. Ковалев, А.Е. Сычев. Самораспространяющийся высокотемпературный синтез сплава в системе Ti-Al-Mn. Неорганические материалы, 2023, Т. 59, № 6, стр. 705-711 DOI: 10.31857/S0002337X23060118
8. A.E. Sytschev, M.L. Busurina, O.D. Boyarchenko, and S.G.Vadchenko. Welding in Ti-Al and Ni-Al Systems by Self-Propagating High-Temperature Synthesis. Int. J Self-

Propag. High-Temp. Synth. 32, 36–40 (2023). https://doi.org/10.3103/S1061386223010077
9. А.В. Карпов, А.Е. Сычев, А.О. Сивакова. Устройство для измерения коэффициента Зеебека термоэлектрических материалов в диапазоне температур 300÷800 К. Измерительная техника. 2023;(8):67-72. https://doi.org/10.32446/0368-1025it.2023-8-67-72
10. M.L. Busurina, A.E. Sytschev, P.A. Lazarev, O.D. Boyarchenko, A.O. Sivakova, and Yu. G. Morozov. SHS of $Al_{70}Co_{15}Ni_{15}$ and $Al_{65}Cu_{20}Co_{15}$ Quasicrystals. Int. J Self-Propag. High-Temp. Synth. 32, 215–220 (2023). https://doi.org/10.3103/S1061386223030056
11. Сычев А.Е., Бусурина М.Л., Боярченко О.Д., Лазарев П.А., Морозов Ю.Г., Сивакова А.О. Особенности структуро- и фазообразования в системе Ni-Al-Co в процессе СВС. Неорганические материалы. 2023. Т. 59. № 7. С. 1-7. DOI: 10.31857/S0002337X23070151

2022

1. А.Е. Сычев, С.Г. Вадченко, А.С. Щукин, А.В. Аборкин, А.В. Карпов, П.А. Лазарев, О.Д. Боярченко. Высокотемпературное взаимодействие углеродных волокон с расплавом Ni. Химическая физика, 2022, том 41, № 1, с. 69–76. DOI: 10.31857/s0207401x22010150

2. A.E. Sytschev, S.G. Vadchenko, A.S. Shchukin, A.V. Aborkin, A.V. Karpov, P.A. Lazarev, and O.D. Boyarchenko. High-temperature interaction of carbon fibers with a nickel melt. Russian Journal of Physical Chemistry B, 2022, Vol. 16, No. 1, pp. 167–174. DOI: 10.1134/S1990793122010158. Russ. J. Phys. Chem. B 16, 167–174 (2022). https://doi.org/10.1134/S1990793122010158

3. А.В. Карпов, А.Е. Сычёв, Е.Г. Григорьев, А.Р. Качин Влияние непрерывного нагружения и уплотнения на электрическое сопротивление порошковых материалов. Заводская лаборатория. Диагностика материалов, 2022, том. 88, №3, сс. 29-34, https://doi.org/10.26896/1028-6861-2022-88-3-29-34

4. A.E. Sytschev, S.G. Vadchenko, A.S. Shchukin, M.L. Busurina. Interaction of Cu Melt with Graphite Fibers International Journal of Self-Propagating High-Temperature Synthesis, 2022, Vol. 31, No. 1, pp. 51–53, https://doi.org/10.3103/S1061386222010113

5. A.E. Sytschev, M.L. Busurina, P.A. Lazarev. Combustion synthesis and phase formation in the Ti-Al-Mn alloy International Journal of Self-Propagating High-Temperature Synthesis, 2022, Vol. 31, No. 2, pp. 80–84. DOI: 10.3103/S1061386222020108

6. A.E. Sytschev, N.A. Kochetov, P.A. Lazarev, Yu.G. Morozov, S.G. Vadchenko, I.D. Kovalev, M.L. Busurina. Combustion synthesis and magnetic properties of Ni-Al-Mn based alloy. International Journal of Self-Propagating High-Temperature Synthesis, 2022, Vol. 31, No. 2, pp. 95–103. DOI: 10.3103/S106138622202011X
7. Alexander E Sytschev, Sergey G. Vadchenko. Growth of graphene film on the Cu-Ag eutectic alloy surface under conditions of high-temperature interaction with carbon wires, April 2022, DOI: 10.13140/RG.2.2.17716.53123
8. П.А. Лазарев, М.Л. Бусурина, А.Н. Грядунов, А.Е. Сычев, О.Д. Боярченко, А.В. Карпов. Получение сплава на основе Ti-Al-Si методом СВС-компактирования. Неорганические материалы, 2022, Т. 58, № 9, стр. 1039-1044. DOI: 10.31857/S0002337X22090093
9. Лазарев П. А., Сычев А.Е., Бусурина М.Л., Грядунов А.Н. SHS Pressing of (Ti–Al–Mn)/Ti Metal–Intermetallic Layered Material. International Journal of Self-Propagating

High-Temperature Synthesis, 2022, Vol. 31, No. 4, pp. 163–167. DOI: 10.3103/S1061386222040057
10. А.Е. Сычев, С.Г. Вадченко, М.Л. Бусурина, О.Д. Боярченко, А.В. Карпов. High-Temperature interaction between carbon fibers and Cu-Ag eutectic alloy. International Journal of Self-Propagating High-Temperature Synthesis, 2022, Vol. 31, No. 4, pp. 187–193. DOI: 10.3103/S1061386222040112.
11. Карпов А. В., Сычев А. Е., Боярченко О. Д., Ковалев И. Д., Белоусова О. В., Лорян В. Э. Диэлектрические свойства керамики на основе BN–ZrB_2 и BN–ZrO_2, полученной методом самораспространяю¬щегося высокотемпературного синтеза // Стекло и керамика. 2022. Т. 95, № 11. С. 30 – 36. DOI: 10.14489/ glc.2022.11.pp.030-036

2021

1. Aborkin, A.V., Elkin, A.I., Reshetniak, V.V., Ob'edkov, A.M., Sytschev, A.E., Leontiev, V.G., Titov, D.D., Alymov, M.I.
Thermal expansion of aluminum matrix composites reinforced by carbon nanotubes with in-situ and ex-situ designed interfaces ceramics layers
(2021) Journal of Alloys and Compounds, 872, 159593.
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2. Kochetov, N.A., Sytschev, A.E.
Effects of magnesium on initial temperature and mechanical activation on combustion synthesis in Ti–Al–Mg system
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3. Busurina, M.L., Sytschev, A.E., Karpov, A.V., Sachkova, N.V., Kovalev, I.D.
Synthesis of an Intermetallic Alloy Based on 2Cu–Ti–Al: Structure Analysis and Electrophysical Properties
(2021) Russian Journal of Non-Ferrous Metals, 62 (1), pp. 82-88.
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2020

4. Busurina, M.L., Sytschev, A.E., Karpov, A.V., Sachkova, N.V., Kovalev, I.D.
Peculiarities of the Structure and Phase Formation of the Fe_2TiAl Heusler Alloy during Self-Propagating High-Temperature Synthesis (SHS)
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5. Shchukin, A.S., Konovalikhin, S.V., Kovalev, D.Y., Sytschev, A.E.
Composition and Crystalline Structure of Ternary Phases in the Ta–Ni–Al System
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6. Aborkin, A.V., Elkin, A.I., Sytschev, A.E., Alymov, M.I.
Wear under Conditions of Dry Friction of a Composite Material Based on an Aluminum Alloy Reinforced with Nanocrystalline Graphite
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7. Shchukin, A.S., Sytschev, A.E.
SHS Joining of Ta with NiAl: Structure of Transition Zone
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8. Kondakov, A.A., Karpov, A.V., Grachev, V.V., Sytschev, A.E.
Temperature Dependence of Electrical Resistivity of the TiN/$TiAl_3$/Ti_2AlN Composite Material
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Formation of New Intermetallic Phases in the Ta–Ni–Al System
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10. Aborkin, A.V., Saikov, I.V., Berbentsev, V.D., Ob"edkov, A.M., Sytschev, A.E., Alymov, M.I.
The Use of Gas Extrusion for the Synthesis of a High-Strength Composite Based on a 5xxx Series Aluminum Alloy Strengthened with Carbon Nanostructures
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