Alexandra FEDOSEEVA:

1. Nationality: Russian

2. Date of Birth: January 07, 1990

3. Family Status: Married

4. Present Address:

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Belgorod State University

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5. Education:

2007/09 – 2012/06	Belgorod State University, Belgorod , Russia	Engineer Diploma (Nanomaterials) *Diploma thesis*: Structure changes in 9Cr-2W- 3Co steel during heat treatment and creep at 650°C
2012/09 – 2016/09	Belgorod State University, Belgorod , Russia	Ph.D. course with R. Kaibyshev *PhD thesis*: Effect of W on structure and creep resistance of 9%Cr-3%Co steels

6. Professional Carrier:

2010 – 2012	Laboratory of mechanical properties of nanoscale materials and superalloys Belgorod State University, Belgorod, Russia	Laboratore assistant
2012/07 – 2016/12	Laboratory of mechanical properties of nanoscale materials and superalloys Belgorod State University, Belgorod, Russia	Engineer
2017/01 – 2017/04	Laboratory of mechanical properties of nanoscale materials and superalloys Belgorod State University, Belgorod, Russia	Junior researcher
2012/10-2016/10	Belgorod State University, Belgorod, Russia	Post-graduate student
2013/10-2014/08	Chair for Metals and Alloys, University Bayreuth, Bayreuth, Germany	Junior researcher
2017/03	Belgorod State University, Belgorod, Russia	PhD
2017/04-2021/09	Laboratory of mechanical properties of nanoscale materials and superalloys Belgorod State University, Belgorod, Russia	Associate researcher
2021/09-at present time	Laboratory of mechanical properties of nanoscale materials and superalloys Belgorod State University, Belgorod, Russia	Senior Researcher

7. Appendixes:

Job Objective: Materials of my research are heat-resistant high-chromium martensitic steels. Scientific expertise incorporates preparation of specimens, heat

treatment, examination of hardness, static mechanical properties, creep resistance, impact toughness. Specific experimental skill is in structural characterization by optical metallography, SEM (misorientation analysis using electron-back scattering technique) and TEM (including local chemical analysis, identification of secondary phase by electron microdiffraction method, grain boundary misorientation by Kikuchi-line technique).

Technical Proficiencies:

Expertise in materials science laboratory equipment and research techniques: modelling, mechanical testing, heat treatment, metallography, electron microscopy.

- operating
  - ◊ mechanical testing: *Instron* IMP460,Wolpert 3000BLD.
  - ◊ transmission electron microscopy: *Jeol* JEM-2010
  - ◊ scanning electron microscopy: Quanta 600 with TSL EBSD
- computer skills
  - ◊ operating systems: Windows
  - ◊ software: Microsoft Office (Word, Excel, PowerPoint, Internet Explorer, etc.), Corel Draw, Photoshop, statistical graph package
- modeling skills
  - ◊ Thermo-Calc software
  - ◊ Prisma software

Fellowships and Awards

2011	Young Researcher Award in Nanomaterials and nanotechnologies,**:** "Pokolenie" fund, Russia
2011	Young Researcher Award,Belgorod State University, Russia
2012	Government scholarship, Government of Russian Federation, Russia
2014	Certificate of course Completeation "ThermoCalc 4.0", ThermoCalc AB and MISIS, Denmark and Russia
2016-2019	The diplomas for best oral and poster presentations on different conferences and seminars
2017	The Gold Medal of the Russian Academy of Sciences with a prize for young scientists of Russia and for students of higher educational institutions of Russia for the best scientific work in the nomination "Physical and technical problems of energy"
2019	The diploma for best poster presentation, Joint EPRI-123HiMAT International Conference on Advances in High Temperature Materials "2019 BEST POSTER AWARD", 2019.
2021	Diploma of the 1st degree laureate of the Annual Prize named after V.G. Shukhov, Government of the Belgorod Region
2022	Diploma of II degree (with a silver medal) in the Competition "The best innovative project and the best scientific and technical development of the year" within the framework of the international exhibition HI-TECH (St. Petersburg, Russia) for the development "Development of heat-resistant Ta-containing 9-12% Cr steels, additionally hardened with nanoparticles,

for elements of thermal power plants" in the field of mechanical engineering and metallurgy, metalworking, power engineering, turbines, boilers, boiler plants, diesel engines and diesel generators, electric generators, heat exchangers, compressors

Participating in research projects

Grant No. 02.740.11.5050 - Ministry of Education and Science, Russia ("Effect of size, morphology and distribution of nanoparticles on the polygonization and recrystallization processes in bcc metallic materials under creep")

Grant No. 02.740.11.0119 - Ministry of Education and Science, Russia ("Nanostructured engineering materials")

Grant No. P1188 - Ministry of Education and Science, Russia ("Optimization of boron content in martensitic heat-resistant steels")

Grant No. 16.740.11.0323 - Ministry of Education and Science, Russia ("Static recrystallization of nanostructural Ni-20%Cr alloy developed by severe plastic deformation")

Grant No. A/12/86596 – German Academic Exchange Service (DAAD), Germany ("Effect of tungsten on tempering and creep behavior of 9%Cr–3%Co martensitic steels")

Grant No. 14-29-00173 – Russian Science Foundation, Russia ("Development of creep-resistant martensitic steels for fossil power plants")

Grant No. 15-11 № 8535ГУ/2015 - Innovation Fund, Russia ("Development of new heat-resistant steels")

Grant No. 17-73-10380 - Russian Science Foundation, Russia ("Effect of Re on the structural changes and creep strength of 10%Cr-3%Co steel")

Grant No. 18-38-00002 - Russian Foundation for Basic Research, Russia ("The investigaion of evolution of nanoscale M(C,N) particles in a 9% Cr steel during creep and long-term ageing")

President Grant for PhD – young scientists No. 075-15-2019-1165 - Ministry for Scientific Research and Higher Education in Russian Federation, Russia ("Investigation of degradation reasons of microstructure in the new prospective 12%Cr steels with Ta, Co and Cu additivies for steam blades under creep testing at different conditions")

Grant No. 19-73-10089 - Russian Science Foundation, Russia ("Improvement of microstructural design of Re-containing 10%Cr-3%Co martesitis steel for fossil power plants")

Grant of the Ministry of Science and Higher Education in the field of science in the form of subsidies from the federal budget to ensure the conduct of scientific research by Russian scientific organizations and (or) educational organizations of higher education together with organizations of the Nordic countries, as part of the implementation of the program of bilateral and multilateral scientific and technological Interaction No. 075-15-2021-984 "Effect of heat treatment on the mechanical properties of high-chromium steels with low nitrogen content" (2021)

Grant No. 22-49-04401 "Formation of the microstructure at the interface of aluminum and titanium alloys in non-equilibrium conditions of solid-phase processing" - Russian Science Foundation, Russia (2021-2023)

Megagrant - Ministry of Science and Higher Education - "Perspective

high-strength steels with high ductility and toughness for earthmoving and agricultural machinery" (2021-2023).

Grant No. 19-73-10089-П - Russian Science Foundation, Russia ("Improvement of microstructural design of Re-containing 10%Cr-3%Co martesitis steel for fossil power plants")

Participation in educational process

1. Reading courses "Deformation-thermal and chemical-thermal processing", "Structural steels and alloys", "Theory of thermal, chemical-thermal and deformation-thermal processing" at the Department of Materials Science and Nanotechnology, Institute of Engineering and Digital Technologies, Belgorod National Research University.

2. Consultations of research work of bachelors and masters in preparing diploma works at the Department of Materials Science and Nanotechnology, Institute of Engineering and Digital Technologies, Belgorod National Research University.

3. Scientific supervisor for bachelors and masters.

Languages: Russian. Familiar with English and German.

Main publications:

1. N. Dudova, A. Plotnikova, D. Molodov, A. Belyakov, R. Kaibyshev Structural changes of tempered martensitic 9%Cr-2%W-3%Co steel during creep at 650°C // Materials Science and Engineering A 534 (2012) 632-639. **DOI**: 10.1016/j.msea.2011.12.020.
2. A.E. Fedoseeva, P.A. Kozlov, V.A. Dudko, V.N. Skorobogatykh, I.A. Shchenkova, R.O. Kaibyshev, Microstructural changes in steel 10Kh9V2MFBR during creep for 40000 hours at 600°C, Physics of Metals and Metallography, Volume 116, Issue 10, 1 October 2015, Pages 1047-1056. **DOI:** 10.7868/S0015323015080045.
3. V.A. Dudko, A.E. Fedoseeva, A.N. Belyakov, R.O. Kaibyshev, Influence of the carbon content on the phase composition and mechanical properties of P92-type steel, Physics of Metals and Metallography, Volume 116, Issue 11, 1 November 2015, Pages 1165-1174, **DOI**: 10.7868/S0015323015110054.
4. A. Fedoseeva, N. Dudova, R. Kaibyshev Creep strength breakdown and microstructure evolution in a 3%Co modified P92 steel // Materials Science and Engineering A 654 (2016) 1-12. **DOI**: 10.1016/j.msea.2015.12.027.
5. A. Fedoseeva, N. Dudova, R. Kaibyshev Effect of Tungsten on a Dispersion of M(C,N) Carbonitrides in 9 % Cr Steels Under Creep Conditions // Trans Indian Inst Met (2016) V. 69, P. 211-215. **DOI**: 10.1007/s12666-015-0767-6
6. A. Fedoseeva, N. Dudova, R. Kaibyshev, Effect of Tungsten on the Temper Brittleness in Steels with 9% Cr // Metal Science and Heat Treatment, Volume 59, Issue 9-10, 1 January 2018, Pages 564-568. **DOI:** 10.1007/s11041-018-0190-9.
7. A.Fedoseeva, N. Dudova, U. Glatzel, R. Kaibyshev, Effect of W on tempering behaviour of a 3%Co modified P92 steel, Journal of Materials Science (2016) V. 51. No. 20, Pp. 9424-9439. **DOI**: 10.1007/s10853-016-0188-x.
8. R. Mishnev, N. Dudova, A. Fedoseeva, R. Kaibyshev, Microstructural aspects of superior creep resistance of a 10%Cr martensitic steel // Materials Science and Engineering A 678 (2016) 178-189. **DOI:** 10.1016/j.msea.2016.09.096
9. A. Fedoseeva, N. Dudova, R. Kaibyshev, Effect of stresses on the structural changes in high-chromium steel upon creep // Physics of Metals and Metallography, Volume 118, Issue 6, 1 June 2017, Pages 591-600. **DOI:** 10.1134/S0031918X17040032.
10. Valeriy Dudko, Alexandra Fedoseeva, Rustam Kaibyshev Ductile-Brittle transition in a 9% Cr heat-resistant steel // Materials Science and Engineering A 682 (2017) 73-84. **DOI:** 10.1016/j.msea.2016.11.035.

11. A. Fedoseeva, N. Dudova, R. Kaibyshev Creep behavior and microstructure of a 9Cr-3Co-3W martensitic steel // Journal of Materials Science (2016) V. 52. No. 5, Pp. 2974-2988. **DOI:** 10.1007/s10853-016-0595-z.
12. A. Fedoseeva, N. Dudova, R. Kaibyshev Role of Tungsten in the Tempered Martensite Embrittlement of a Modified 9%Cr Steel // Metallurgical and Materials Transactions A 48 (3) (2017) pp. 982-998. **DOI:** 10.1007/s11661-016-3926-4.
13. A. Fedoseeva, E. Tkachev, V. Dudko, N. Dudova, R. Kaibyshev Effect of Alloying on Interfacial Energy of Precipitation/Matrix in High-chromium Martensitic Steels // Journal of Materials Science (2017) V. 52. No. 8, Pp. 4197-4209. **DOI:** 10.1007/s10853-016-0654-5
14. Alexandra Fedoseeva, Nadezhda Dudova, Rustam Kaibyshev and Andrey Belyakov Effect of Tungsten on Creep Behavior of 9%Cr–3%Co Martensitic Steels, Metals 2017, 7(12), 573; **doi**:10.3390/met7120573.
15. A. Fedoseeva, I. Nikitin, N. Dudova, R. Kaibyshev, Strain-induced Z-phase formation in a 9% Cr-3% Co martensitic steel during creep at elevated temperature, Materials Science and Engineering A (2018) V. 724, pp. 29-36. **DOI:** 10.1016/j.msea.2018.03.081.
16. A. Fedoseeva, I. Nikitin, N. Dudova, R. Kaibyshev, On effect of rhenium on mechanical properties of a high-Cr creep resistant steel, Materials Letters (2019) V. 269, pp. 81-84. **DOI:** 10.1016/j.matlet.2018.10.081.
17. A Fedoseeva, I Nikitin, N Dudova, R. Kaibyshev Superior creep resistance of a high-Cr steel with Re additives // Materials Letters (2020) V. 262, 127183. **DOI:** 10.1016/j.matlet.2019.127183.
18. Nikitin I., Fedoseeva, A., Kaibyshev, R. Strengthening mechanisms of creep-resistant 12%Cr–3%Co steel with low N and high B contents // Journal of Materials Science (2020) V. 55 (17) 7530-7545. **DOI:** 10.1007/s10853-020-04508-7.
19. A.E. Fedoseeva, I. S. Nikitin, N. R. Dudova, R. O. Kaibyshev The Effect of Creep and Long Annealing Conditions on the Formation of the Z-Phase Particles // Physics of Metals and Metallography, 2020, Vol. 121, No. 6, pp. 561–567. **DOI**: 10.1134/S0031918X20060058.
20. A. Fedoseeva, I. Nikitin, E. Tkachev, R. Mishnev, N. Dudova, R. Kaibyshev, Effect of alloying on the nucleation and growth of Laves phase in the 9–10%Cr-3%Co martensitic steels during creep // Metals 11 (2021) 60.
21. A. Fedoseeva, I. Nikitin, N. Dudova, R. Kaibyshev, Coarsening of Laves phase and creep behaviour of a Re-containing 10% Cr-3% Co-3% W steel // Materials Science and Engineering A 812 (2021) 141137.
22. A. Fedoseeva, I. Nikitin, N. Dudova, R. Kaibyshev, Strain and temperature contributions to structural evolution in a Re-containing 10% Cr-3% Co-3% W steel during creep // Materials at High Temperatures, 38(4) (2021) 237-246.
23. A. Fedoseeva, V. Dudko, N. Dudova, R. Kaibyshev Effect of Co on the strengthening mechanisms of the creep-resistant 9% Cr-2%W-MoVNb steel // Journal of Materials Science 57 (2022) 21491-21501.
24. A. Fedoseeva, E. Tkachev, R. Kaibyshev Advanced heat-resistant martensitic steels: long-term creep deformation and fracture mechanisms // Materials Science and Engineering: A 862 (2023) 144438.