

Elena Filonova

Subjects: Chemistry, Physical

Contributor: Elena Filonova

Keywords: solid oxide fuel cells ; cathodes ; anodes ; solid electrolytes ; crystal structure ; thermal expansion ; phase relations ; scientometrics

Basic Information



Name: Elena Filonova
(Oct 1972–)

Birth	Yekaterinburg
Location:	
Title:	Dr.
Affiliations:	Ural Federal University Institute of Natural Sciences and Mathematics Department of Physical and Inorganic Chemistry
Honor:	Unknown

1. Webpages

<https://urfu.ru/ru/about/personal-pages/personal/person/elena.filonova/>

[https://science.urfu.ru/portal/ru/persons/--\(effc56a3-2f6c-4140-8dc6-8797bdd43528\).html](https://science.urfu.ru/portal/ru/persons/--(effc56a3-2f6c-4140-8dc6-8797bdd43528).html)

<https://www.scopus.com/authid/detail.uri?authorId=6602857032>

<https://scholar.google.com/citations?user=1LlaseoAAAAJ&hl=ru>

<https://www.researchgate.net/profile/E-Filonova>

<https://orcid.org/0000-0002-7273-7525>

<https://www.webofscience.com/wos/author/record/K-9536-2017>

<https://sciprofiles.com/profile/1510396>

https://elibrary.ru/author_items.asp?authorid=50966&pubrole=100&show_refs=1&show_option=0

2. Scientometrics Data

h-index= 17 (Scopus); 69 documents from the Scopus Database; Scopus ID: 6602857032

<https://www.scopus.com/authid/detail.uri?authorId=6602857032>

h-index= 16 (WoS); 59 Publications from the Web of Science Core Collection; Web of Science Researcher IDK-9536-2017

<https://www.webofscience.com/wos/author/record/K-9536-2017>

3. Education

Specialist, Chemistry - Chemical Department, Ural State University (1990-1995), Yekaterinburg, Russian Federation

Candidate of Chemical Sciences, Physical Chemistry 02.00.04 - Ural State University (1998), Yekaterinburg, Russian Federation

Russ. Academic Title: Associated Professor (2008)

Elsevier Expert Club: Expert-Consultant (2021)

4. Professional Experience

Jan. 2020 –Aug. 2022 – Senior Scientific Researcher, Laboratory of Chemical Design of New MultiFunctional Materials, Institute of Natural Sciences and Mathematics, Ural Federal University, Yekaterinburg, Russian Federation

Sept. 2016 - Now - Associated Professor, Department of Physical and Inorganic Chemistry, Institute of Natural Sciences and Mathematics, Ural Federal University, Yekaterinburg, Russian Federation

Sept. 2001 –Sept. 2016 Associated Professor, Department of Physical Chemistry, Ural State University, Yekaterinburg, Russian Federation

Jan. 1999 – Sept. 2001 Assistant, Department of Physical Chemistry, Ural State University, Yekaterinburg, Russian Federation

Jan. 1997 – Jan.1999 Laboratory Assistant, Department of Physical Chemistry, Ural State University, Yekaterinburg, Russian Federation

Oct. 1995 – Oct.1998 Post-Graduate Student, Department of Physical Chemistry, Ural State University, Yekaterinburg, Russian Federation

5. Editorial Experience

Jun. 2021 – Now Editorial Board Member "Sustainable Energy Technologies & Assessments", Elsevier, IF=8, Q1

<https://www.journals.elsevier.com/sustainable-energy-technologies-and-assessments/editorial-board>

Febr. 2022 - Jul. 2023. Guest Editor "Materials". MDPI, IF=3.4, Q2

https://www.mdpi.com/journal/materials/special_issues/semicon_electro

Aug. 2023 – Now Editorial Board Member "Applied Chemical Engineering", EnPress

<https://systems.enpress-publisher.com/index.php/ACE/about/editorialBoard>

6. Research Interest

The main scientific work concerns the complex oxides materials design. Research interests include development of optimal synthesis of complex oxides, their phase, micro- and crystal structure characterization and investigation of functional properties (such as thermal expansion, electroconductivity, chemical compatibility, electrochemical activity) of complex oxide and composite materials for various construction parts (anodes, cathodes and electrolytes) of solid oxide fuel cells (SOFCs). Specialist in the crystal structure refinement of materials via Rietveld Method.

Scientometrics and Research Evaluation.

7. Leading Lector of Chemical Department:

Statistical Thermodynamics – Educational Program of Bachelor, Specialist. Information Sources in Chemistry - Educational Program of Magistr.

8. Research Supervisor

During 2016-2023: 3 Magister Dissertations, 11 Bachelors Qualified Works

9. Recent Publications (2020-2023)

1. Naumov S.V., Vlasov M.I., Pikalova E.Y., Tsvinkinberg V.A., Reznitskikh O.G., Filonova E.A. Effect of Ni non-stoichiometry on the structural, thermal and conductivity properties of $\text{Nd}_2\text{Ni}_{1-x}\text{O}_{4+\delta}$ // *Solid State Ionics*. V. 389. № 116082. <https://doi.org/10.1016/j.ssi.2022.116082>
2. Pikalova E., Kolchugin A., Tsvinkinberg V., Sereda V., Khrustov A., Filonova E. Comprehensive study of functional properties and electrochemical performance of layered lanthanum nickelate substituted with rare-earth elements // *Journal of Power Sources*. 2023. V. 581, № 233505. <https://doi.org/10.1016/j.jpowsour.2023.233505>
3. Sadykov V., Pikalova E., Sadovskaya E., Shlyakhtina A., Filonova E., Ereemeev N. Design of Mixed Ionic-Electronic Materials for Permselective Membranes and Solid Oxide Fuel Cells Based on Their Oxygen and Hydrogen Mobility // *Membranes*. 2023. V. 13 (8), № 698. <https://doi.org/10.3390/membranes13080698>
4. Urusova A., Bryuzgina A., Solomakhina E., Kolchugin A., Malyshev D., Pikalova E., Filonova E. Assessment of the Y-doped $\text{Ca}_3\text{Co}_4\text{O}_{9+\delta}$ as cathode material for proton-conducting fuel cells // *International Journal of Hydrogen Energy*. 2023. V. 48 (59), pp. 22656-22670. <https://doi.org/10.1016/j.ijhydene.2023.02.098>
5. Filonova E., Pikalova E. Overview of Approaches to Increase the Electrochemical Activity of Conventional Perovskite Air Electrodes // *Materials*. 2023. V. 16 (14), № 4967. <https://doi.org/10.3390/ma16144967>
6. Tarutin A.P., Filonova E.A., Ricote S., Medvedev D.A., Shao Z. Chemical design of oxygen electrodes for solid oxide electrochemical cells: A guide // *Sustainable Energy Technologies and Assessments*. 2023. V. 57, № 103185. <https://doi.org/10.1016/j.seta.2023.103185>
7. Sadykov V.A., Sadovskaya E.M., Ereemeev N.F., Maksimchuk T.Y., Pikalov S.M., Filonova E.A., Pikalova N.S., Gilev A.R., Pikalova E.Y. Structure, Oxygen Mobility, and Electrochemical Characteristics of $\text{La}_{1.7}\text{Ca}_{0.3}\text{Ni}_{1-x}\text{Cu}_x\text{O}_{4+\delta}$ Materials. *Russian Journal of Electrochemistry*. 2023. V. 59(1), pp. 37-48. <https://doi.org/10.1134/S1023193523010068>
8. Mishchenko D., Vinokurov Z., Gerasimov E., Filonova E., Shmakov A., Pikalova E. Unusual lattice parameters behavior for $\text{La}_9\text{Ca}_{0.1}\text{NiO}_{4+\delta}$ at the temperatures below oxygen loss. // *Crystals*. 2022. V. 12 (3), № 344. <https://doi.org/10.3390/cryst12030344>
9. Maksimchuk T., Filonova E., Mishchenko D., Ereemeev N., Sadovskaya E., Bobrikov I., Fetisov A., Pikalova N., Kolchugin A., Shmakov A., Sadykov V., Pikalova E. // High-Temperature behavior, oxygen transport properties, and electrochemical performance of Cu-Substituted $\text{Nd}_6\text{Ca}_{0.4}\text{NiO}_{4+\delta}$ electrode materials. *Applied Sciences*. 2022. V. 12(8). № 3747. <https://doi.org/10.3390/app12083747>
10. Pikalova E., Ereemeev N., Sadovskaya E., Sadykov V., Tsvinkinberg V., Pikalova N., Kolchugin A., Vylkov A., Baynov I., Filonova E. Influence of the substitution with rare earth elements on the properties of layered lanthanum nickelate – Part 1: Structure, oxygen transport and electrochemistry evaluation. // *Solid State Ionics*. 2022. V. 379. № 115903. <https://doi.org/10.1016/j.ssi.2022.115903>
11. Filonova E., Medvedev D. Recent Progress in the design, characterisation and application of LaAlO_3 - and LaGaO_3 -based solid oxide fuel cell electrolytes. 2022. V. 12(12). № 1991. <https://doi.org/10.3390/nano12121991>
12. Filonova E., Gilev A., Maksimchuk T., Pikalova N., Zakharchuk K., Pikalov S., Yaremchenko A., Pikalova E. Development of $\text{La}_{7-x}\text{Ca}_{0.3}\text{Ni}_{1-y}\text{Cu}_y\text{O}_{4+\delta}$ materials for oxygen permeation membranes and cathodes for intermediate-temperature solid oxide fuel cells. *Membranes*. 2022. V. 12(12). № 1222. <https://doi.org/10.3390/membranes12121222>
13. Pikalova E.Y., Kalina E.G., Pikalova, N.S., Filonova E.A. High-entropy materials in SOFC technology: theoretical foundations for their creation, features of synthesis, and recent achievements. *Materials*. 2022. V. 15(24). № 8783. <https://doi.org/10.3390/ma15248783>
14. Filonova E.A., Russkikh O.V., Skutina L.S., Vylkov A.I., Maksimchuk T.Y., Ostroushko A.A. $\text{Sr}_2\text{Ni}_7\text{Mg}_{0.3}\text{MoO}_{6-\delta}$: Correlation between synthesis conditions and functional properties as anode material for intermediate-temperature SOFC. *International Journal of Hydrogen Energy*. 2021. V. 46(72). P. 35910-35922. <https://doi.org/10.1016/j.ijhydene.2021.02.008>
15. Pikalova E., Kolchugin A., Zakharchuk K., Boiba D., Tsvinkinberg V., Filonova E., Khrustov A., Yaremchenko A. Mixed ionic-electronic conductivity, phase stability and electrochemical activity of Gd-substituted $\text{La}_2\text{NiO}_{4+\delta}$ as oxygen electrode material for solid oxide fuel/electrolysis cells. *International Journal of Hydrogen Energy*. 2021. V. 46(32). P. 16932-16946. <https://doi.org/10.1016/j.ijhydene.2021.03.007>
16. Pikalova E., Bogdanovich N., Kolchugin A., Shubin K., Ermakova L., Ereemeev N., Farlenkov A., Khrustov A., Filonova E., Sadykov V. Development of composite $\text{LaNi}_6\text{Fe}_{0.4}\text{O}_{3-\delta}$ -based air electrodes for solid oxide fuel cells with a thin-film bilayer electrolyte. *International Journal of Hydrogen Energy*. 2021. V. 46(32). P. 16947-16964. <https://doi.org/10.1016/j.ijhydene.2021.02.217>
17. Filonova E.A., Pikalova E.Y., Maksimchuk T.Y., Vylkov A.I., Pikalov S.M., Maignan A. Crystal structure and functional properties of $\text{Nd}_6\text{Ca}_{0.4}\text{Ni}_{1-y}\text{Cu}_y\text{O}_{4+\delta}$ as prospective cathode materials for intermediate temperature solid oxide fuel cells. *International Journal of Hydrogen Energy*. 2021. V. 46(32). P. 17037-17050. <https://doi.org/10.1016/j.ijhydene.2020.10.243>

18. Skutina, L, Filonova E., Medvedev D., Maignan A. Undoped Sr_2MMoO_6 double perovskite molybdates ($M = \text{Ni, Mg, Fe}$) as promising anode materials for solid oxide fuel cells. *Materials*. 2021. V. 14(7). № 1715. <https://doi.org/10.3390/ma14071715>
19. Pikalova E., Sadykov V., Sadovskaya E., Yermeev N., Kolchugin A., Shmakov A., Vinokurov Z., Mishchenko D., Filonova E., Belyaev V. Correlation between structural and transport properties of Ca-doped La nickelates and their electrochemical performance. *Crystals*. 2021. V.11(3). № 297. <https://doi.org/10.3390/cryst11030297>
20. Tsvinkinberg V.A., Tolkacheva A.S., Filonova E.A., Gyrdasova O.I., Pikalov S.M., Vorotnikov, V.A., Vylkov A.I., Moskalenko N.I., Pikalova E.Y. Structure, thermal expansion and electrical conductivity of $\text{La}_{2-x}\text{Gd}_x\text{NiO}_{4+\delta}$ ($0.0 \leq x \leq 0.6$) cathode materials for SOFC applications. *Journal of Alloys and Compounds*. 2021. V. 853. № 156728. <https://doi.org/10.1016/j.jallcom.2020.156728>
21. Urusova N., Kumar M.R., Semkin M., Filonova E. A., Kratochvilova M., Neznakhin D., Grzhegorzhevskii, K., Ostroushko A., Park J.-G., Pirogov A. Crystal structure and magnetic properties of $\text{Sr}_2\text{Ni}_{1-x}\text{Mg}_x\text{MoO}_6$ ($x = 0, 0.25, 0.5$, and 0.75) polycrystals // *Solid State Sciences*. 2020. V. 99. № 106008. <https://doi.org/10.1016/j.solidstatesciences.2019.106008>

Further Reading

<https://doi.org/10.1016/j.ssi.2022.116082>
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<https://doi.org/10.1016/j.ijhydene.2021.02.217>
<https://doi.org/10.1016/j.ijhydene.2020.10.243>
<https://doi.org/10.3390/ma14071715>
<https://doi.org/10.3390/cryst11030297>
<https://doi.org/10.1016/j.jallcom.2020.156728>

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