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**Муханова Елизавета Андреевна**
Международная исследовательская лаборатория функциональных наноматериалов

**Должность**: Заведующий научной лабораторией
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**Email**: kand@sfedu.ru

**Дата рождения:** 06.05.1983 г., г.Ростов-на-Дону, Россия

**Должности:**
2022 г. – н. в.:заведующий научной лабораторией, МИИ ИМ Южного федерального университета;
2020 – 2022 гг.: старший научный сотрудник, МИИ ИМ Южного федерального университета;
2019 – 2023 гг.:доцент , Химический факультет Южного федерального университета;
2010 – 2019 гг.:старший преподаватель, Химический факультет Южного федерального университета;
2008 – 2010 гг.: ассистент, Химический факультет Южного федерального университета.

**Образование:**
2010 г.: К.х.н., Кубанский государственный университет;
2005 г.: химик, Химический факультет Ростовского государственного университет.

**Ученая степень:**
Кандидат хмических наук

**Направления исследований (ключевые слова):**
Биовдохновленная химия, пористые биоматериалы, хемоинформатика.

**Исследовательская активность:**

2020 г.– н.в.: МИИ ИМ Южного федерального университета;
2005 – 2020 гг.: Химический факультет Южного федерального университета.

**Область научных интересов:**

- Математическое моделирование фазовых диаграмм для расчета условий синтеза и свойств новых материалов.
- Системы диагностики и доставки лекарственных средств на основе неорганических веществ. Разработка композиций материалов и современных методов синтеза.
- Биовдохновленная химия: разработка новых методов экстракции, методов синтеза функциональных материалов, биомикрожидкостных чипов.

**Методы:**

- Современные методы синтеза (микрофлюидный, микроволновый, сонохимия).
- Рентгеновская дифракция.
- Спектроскопия импеданса.
- CALPHAD.
- Машинное обучение для анализа изображений биоматериалов.

**Преподавательская деятельность за рубежом:**
2018 г.: визит-профессор, университет Авейро, Португалия.

**Научные публикации в реферируемых журналах:**
1 глава в книге, 13 статей (по данным Scopus).

**Научное руководство аспирантами**:
Под руководством на данный момент 4 аспиранта.

**Международные гранты:**
2021-2022 гг.: Future-Oriented Chemistry (FOREST), ERASMUS+ Programme;
2022 г.: Innovative bio-inspired materials for sustainable applications (IBISA), ERASMUS+ Programme.

**10 наиболее цитируемых публикаций:**

1. Hossain, A., Meera, M. S., Mukhanova, E. A., Soldatov, A. V., Henaish, A. M. A., Ahmed, J., ... & Shibli, S. M. A. (2023). Influences of Partial Destruction of Ti‐MOFs on Photo (electro) catalytic H2 Evolution by Dominating Role of Charge Carrier Trapping over Surface Area. *Small*, 2300492.
2. Gadzhimagomedova, Z., Polyakov, V., Pankin, I., Butova, V., Kirsanova, D., Soldatov, M., ... & Soldatov, A. (2021). BaGdF5 Nanophosphors Doped with Different Concentrations of Eu3+ for Application in X-ray Photodynamic Therapy. *International Journal of Molecular Sciences*, *22*(23), 13040.
3. Mukhanova, E. A., Vetokhin, V. G., Butova, V. V., Nikonorov, V. A., Skorynina, A. A., Aboraia, A. M., ... & Soldatov, A. V. (2022). Influence of synthesis on the grain size distribution of Ca5GeP2O12. *Solid State Sciences*, *133*, 107023.

4. Uflyand, I. E., Zhinzhilo, V. A., Mukhanova, E. A., Karyukov, E. V., Tautieva, M. A., Ostapenko, D. A., ... & Dzhardimalieva, G. I. (2019). Metal Chelate Monomers Based on Nickel Maleate and Chelating N‐Heterocycles as Precursors of Core‐shell Nanomaterials with Advanced Tribological Properties. *Zeitschrift für anorganische und allgemeine Chemie*, *645*(11), 758-767.
5. Mukhanova, E. A., Kisel, O. Y., Butova, V. V., Aboraia, A. M., Yahia, I. S., Zahran, H. Y., ... & Soldatov, A. V. (2022). Topological analysis of possible conductivity pathways in LiRW2O8 (R= M3+-lanthanides and d-metals). *Journal of Solid State Chemistry*, *309*, 122954.
6. Shukaev, I. L., Mukhanova, E. A., & Lupeiko, T. G. (2016). Conductivity pathways and ionic transport in Na5YW4O16. *Solid State Ionics*, *298*, 51-56.
7. Mukhanova, E. A., Pankin, I. A., Polozhentsev, O. E., Kuznetsova, P. D., Polyakov, V. A., & Soldatov, A. V. (2022). Influence of the methods of synthesis and grain size distribution on XEOL spectra of CaWO4: xTb3+. *Inorganic Chemistry Communications*, *140*, 109407.
8. Kartashov, O., Savvas, I., Mukhanova, E., Polyanichenko, D., Chernov, A., & Butakova, M. (2022, October). Data Mining Approach to Characterization of Bioactive Inorganic Scaffold Properties Using Synthetic Images. In *Proceedings of the Sixth International Scientific Conference “Intelligent Information Technologies for Industry”(IITI’22)* (pp. 261-269). Cham: Springer International Publishing.
9. Mukhanova, E. A., Ivanyutina, E. S., Stupko, M. Y., & Rybal’chenko, I. V. (2020). In Vitro Degradation Test of Gd-, Si-Substituted Hydroxyapatite. *Modeling, Synthesis and Fracture of Advanced Materials for Industrial and Medical Applications*, 125-136.
10. Mukhanova, E. A., Suprunova, I. A., Suprunova, Y. A., & Zabiyaka, I. Y. (2018). Effect of the molecular weight of polyvinylpyrrolidone on the structure and morphology of materials based on substituted hydroxyapatite for bone implants. In *MATEC Web of Conferences* (Vol. 226, p. 03012). EDP Sciences.

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**Elizaveta A. Mukhanova**
**Born:** Rostov-on-Don (Russia) 06.05.83
**Email :** kand@sfedu.ru
**Website** : **http://nano.sfedu.ru**

**Academic positions:**
2022 – today Head of scientific laboratory, Smart materials international research center, Southern federal university.
2020 – 2022 Senior scientist, Smart materials international research center, Southern federal university.
2019 – 2023 Associate professor, Faculty of Chemistry, Southern federal university.
2010 – 2019 Senior Lecturer, Faculty of Chemistry, Southern federal university.
2008 – 2010 Assistant, Faculty of Chemistry, Southern federal university.

**Education and Degrees:**
2010-Ph.D in Chemistry, Kuban State University (Russia).
2005-Graduated in Chemistry from Rostov State University (Russia).

**Research sectors:**
Bioinspired chemistry, porosity biomaterials, chemoinformatics.

**Research activity:**
2020 – today Smart materials international research center, Southern federal university.
2005 – 2020 Faculty of Chemistry, Southern federal university.

**Fields of interest:**
- Mathematical modeling of phase diagrams for calculating synthesis conditions and properties of new materials
- Diagnostics and drug delivery systems based on inorganic substances. Development of compositions of materials and modern methods of synthesis
- Bio-inspired chemistry: development of new extraction methods, methods of synthesis of functional materials, biomicrofluid chips

**Methods:**
- Microfluidic, microwave and ultrasound synthesis.
- X-ray diffraction.
- Impedance spectroscopy (for biological objects).

- CALPHAD.
- Machine learning for bioimage analysis (implants, protein's crystal).

**Short teaching activity abroad:**
2018 Visiting professor at Aveiro University (Portugal).

**Scientific publications in referred journals:**
Published **1** book chapters, **13** papers in refereed journals (in *Scopus*).

**Top of 10 most citated publications:**

**1.** Hossain, A., Meera, M. S., Mukhanova, E. A., Soldatov, A. V., Henaish, A. M. A., Ahmed, J., ... & Shibli, S. M. A. (2023). Influences of Partial Destruction of Ti‐MOFs on Photo (electro) catalytic H2 Evolution by Dominating Role of Charge Carrier Trapping over Surface Area. *Small*, 2300492.

**2.** Gadzhimagomedova, Z., Polyakov, V., Pankin, I., Butova, V., Kirsanova, D., Soldatov, M., ... & Soldatov, A. (2021). BaGdF5 Nanophosphors Doped with Different Concentrations of Eu3+ for Application in X-ray Photodynamic Therapy. *International Journal of Molecular Sciences*, *22*(23), 13040.

**3.** Mukhanova, E. A., Vetokhin, V. G., Butova, V. V., Nikonorov, V. A., Skorynina, A. A., Aboraia, A. M., ... & Soldatov, A. V. (2022). Influence of synthesis on the grain size distribution of Ca5GeP2O12. *Solid State Sciences*, *133*, 107023.

**4.** Uflyand, I. E., Zhinzhilo, V. A., Mukhanova, E. A., Karyukov, E. V., Tautieva, M. A., Ostapenko, D. A., ... & Dzhardimalieva, G. I. (2019). Metal Chelate Monomers Based on Nickel Maleate and Chelating N‐Heterocycles as Precursors of Core‐shell Nanomaterials with Advanced Tribological Properties. *Zeitschrift für anorganische und allgemeine Chemie*, *645*(11), 758-767.

**5.** Mukhanova, E. A., Kisel, O. Y., Butova, V. V., Aboraia, A. M., Yahia, I. S., Zahran, H. Y., ... & Soldatov, A. V. (2022). Topological analysis of possible conductivity pathways in LiRW2O8 (R= M3+-lanthanides and d-metals). *Journal of Solid State Chemistry*, *309*, 122954.

**6.** Shukaev, I. L., Mukhanova, E. A., & Lupeiko, T. G. (2016). Conductivity pathways and ionic transport in Na5YW4O16. *Solid State Ionics*, *298*, 51-56.

**7.** Mukhanova, E. A., Pankin, I. A., Polozhentsev, O. E., Kuznetsova, P. D., Polyakov, V. A., & Soldatov, A. V. (2022). Influence of the methods of synthesis and grain size distribution on XEOL spectra of CaWO4: xTb3+. *Inorganic Chemistry Communications*, *140*, 109407.

**8.** Kartashov, O., Savvas, I., Mukhanova, E., Polyanichenko, D., Chernov, A., & Butakova, M. (2022, October). Data Mining Approach to Characterization of Bioactive Inorganic Scaffold Properties Using Synthetic Images. In *Proceedings of the Sixth International Scientific Conference "Intelligent Information Technologies for Industry"(IITI'22)* (pp. 261-269). Cham: Springer International Publishing.

**9.** Mukhanova, E. A., Ivanyutina, E. S., Stupko, M. Y., & Rybal'chenko, I. V. (2020). In Vitro Degradation Test of Gd-, Si-Substituted Hydroxyapatite. *Modeling, Synthesis and Fracture of Advanced Materials for Industrial and Medical Applications*, 125-136.

**10.** Mukhanova, E. A., Suprunova, I. A., Suprunova, Y. A., & Zabiyaka, I. Y. (2018). Effect of the molecular weight of polyvinylpyrrolidone on the structure and morphology of materials based on substituted hydroxyapatite for bone implants. In *MATEC Web of Conferences* (Vol. 226, p. 03012). EDP Sciences.

**Supervising of Ph.D. students** :
Under supervision now 4.

**International grants**
2021-2022 Future-Oriented Chemistry (FOREST), ERASMUS+ Programme.
2022 Innovative bio-inspired materials for sustainable applications (IBISA), ERASMUS+ Programme.