Natalia Ruban

Personal information

Date of birth: 14.07.1995

Residence: Russian Federation

Email: natavruban@gmail.com

Languages:
- Russian (native)
- English (fluent)

Education

Novosibirsk State University — **Specialist degree**
Natural science department
Fundamental and applied chemistry program
Inorganic chemistry section, GPA 4.94 out of 5
2013 – 2018

Novosibirsk State University — **PhD degree**
Natural science department
PhD program in Chemistry
Catalysis section
2018 – 2022

Experience in Academia

Boreskov institute of catalysis SB RAS — **Junior researcher**
Novosibirsk, Russia

Laboratory of chemical processes in fuel cells
2018 – present time

Projects:
- Hydrogen production for fuel cells feeding by methane, propane and gasoline reforming (PhD project);
- Autothermal reforming of diesel fuel for fuel cells feeding;
- CO_2 methanation over Ru-based catalysts.

Key skills and competences: composite catalysts preparation; analysis of the catalysts structure by XRD, XPS, TEM and SEM methods; catalytic studies in continuous-flow reactor; and calculating the optimal reaction conditions.

Publication activity: SC 57193643828
- Author of 10 scientific articles in the period of 2018-2022;
- Oral presentations at HYPOTHESIS XV (May 3-6, 2020, Cape Town, South Africa) and HYPOTHESIS XVII (September 26-29, 2022, Taipei, Taiwan) conferences;
- Awarded Diploma of the 2nd degree for poster presentation at the Fifth International Conference “Catalysis for Renewable Sources: fuel, energy, chemicals” (September 2-7, 2019, Agios-Nikolaos, Greece).

Natalia Ruban

Experience in Academia

Nikolaev institute of inorganic chemistry SB RAS **Intern**
Novosibirsk, Russia

Laboratory of metal organic frameworks 2013 – 2018

Key skills and competences:
- Investigation of photocatalytic properties of modified metal organic frameworks;
- Synthesis of chiral metal organic frameworks;
- Investigation of metal organic frameworks' structure by X-Ray powder and crystal diffraction analysis;
- BET surface area measurements.

Publication activity: SC **57193643828**
- Author of 2 scientific articles in the period of 2017-2018.
- Poster presentation at 2nd EuroMOF conference (October 29-November 1, 2017, Delft, Netherlands).

Experience in industry

Medical Biological Union, LLC **Project manager**
Leader of the educational projects 2018 – present time

MEL Science, LLC **Intern**
Developer of kits and instructions for practical lessons on chemistry for home schooling in the USA. 2017

Other skills and achivements

- Chemistry teacher at Biotechnological lyceum #21 (2014 – 2020);
- Author of tasks for olympiads on chemistry (2014 – present time);
- Winner of the British Petroleum scholarship for students in 2016-2017 and 2017-2018;
- Winner of the team and personal awards of International Natural Scientific Tournaments in 2016 and 2017;
- Advanced user of MS Power Point (creating presentations) and Corel Draw (design of graphical abstracts, flyers, presentations).

Hobbies

Jogging (half-marathones, marathon)

Natalia Ruban

List of the publications

1. **N. Ruban**, V. Rogozhnikov, S. Zazhigalov, A. Zagoruiko, V. Emelyanov, P. Snytnikov, V. Sobyanin, D. Potemkin. Composite Structured M/Ce0.75Zr0.25O2/Al2O3/FeCrAl (M = Pt, Rh, and Ru) Catalysts for Propane and n-Butane Reforming to Syngas. Materials 2022, 15, 7336. https://doi.org/10.3390/ma15207336
2. **N. V. Ruban**, D. I. Potemkin, V. N. Rogozhnikov, K. I. Shefer, P. V. Snytnikov, V. A. Sobyanin. Rh- and Rh–Ni–MgO-based structured catalysts for on-board syngas production via gasoline processing. International Journal of Hydrogen Energy, 2021, 46(72), p. 35840–35852. https://doi.org/10.1016/j.ijhydene.2021.01.183
3. V. A. Shilov, V. N. Rogozhnikov, **N. V. Ruban**, D. I. Potemkin, P. A. Simonov, M. V. Shashkov, V. A. Sobyanin, P. V. Snytnikov. Biodiesel and hydrodeoxygenated biodiesel autothermal reforming over Rh-containing structured catalyst. Catalysis Today, 2021, 379, p. 42–49. https://doi.org/10.1016/j.cattod.2020.06.080
4. D. I. Potemkin, P. V. Snytnikov, S. D. Badmaev, S. I. Uskov, A. M. Gorlova, V. N. Rogozhnikov, A. A. Pechenkin, A. V. Kulikov, V. A. Shilov, **N. V. Ruban**, V. D. Belyaev, V. A. Sobyanin. Design of Catalytic Polyfunctional Nanomaterials for the Hydrogen Production Processes. Nanotechnologies in Russia, 2020, 15(3-6), p. 308–313. https://doi.org/10.1134/S1992722320030103
5. S. V. Zazhigalov, V. N. Rogozhnikov, P. V. Snytnikov, D. I. Potemkin, P. A. Simonov, V. A. Shilov, **N. V. Ruban**, A. V. Kulikov, A. N. Zagoruiko, V. A. Sobyanin. Simulation of diesel autothermal reforming over Rh/Ce0.75Zr0.25O2-δ-η-Al2O3/FeCrAl wire mesh honeycomb catalytic module. Chemical Engineering and Processing - Process Intensification, 2020, 150, 107876. https://doi.org/10.1016/j.cep.2020.107876
6. D. I. Potemkin, V. N. Rogozhnikov, **N. V. Ruban**, V. A. Shilov, P. A. Simonov, M. V. Shashkov, V. A. Sobyanin, P. V.S nytnikov. Comparative study of gasoline, diesel and biodiesel autothermal reforming over Rh-based FeCrAl-supported composite catalyst. International Journal of Hydrogen Energy, 2020, 45(49), p. 26197–26205. https://doi.org/10.1016/j.ijhydene.2020.01.076
7. V. N. Rogozhnikov, D. I .Potemkin, **N. V. Ruban**, V. A. Shilov, A. N. Salanov, A. V. Kulikov, P. A. Simonov, E. Y. Gerasimov, V. A. Sobyanin, P. V. Snytnikov. Post-mortem characterization of Rh/Ce0.75Zr0.25O2/Al2O3/FeCrAl wire mesh composite catalyst for diesel autothermal reforming. Materials Letters, 2019, 257, 126715. https://doi.org/10.1016/j.matlet.2019.126715
8. V. N. Rogozhnikov , N. A. Kuzin, P. V. Snytnikov, D. I. Potemkin, T. B. Shoynkhorova, P. A. Simonov, V. A. Shilov, **N. V. Ruban**, A. V. Kulikov, V. A. Sobyanin. Design, scale-up, and operation of a Rh/Ce0.75Zr0.25O2-δ- -Al2O3/Fecralloy wire mesh honeycomb catalytic module in a diesel autothermal reforming. Chemical Engineering Journal, 2019, 374, p. 511–519. https://doi.org/10.1016/j.cej.2019.05.205

Natalia Ruban

List of the publications

9. Shoynkhorova T. B., Rogozhnikov V. N., **Ruban N. V.**, Shilov V.A., Potemkin D. I., Simonov P. A., Belyaev V. D., Snytnikov P. V., Sobyanin V. A. Composite $Rh/Zr_{0.25}Ce_{0.75}O_{2-\delta}$-$Al_2O_3$/Fecralloy Wire Mesh Honeycomb Module for Natural Gas, LPG and Diesel Catalytic Conversion to Syngas. International Journal of Hydrogen Energy, 2019, 44 (20), p. 9941-9948. https://doi.org/10.1016/j.ijhydene.2018.12.148
10. Rogozhnikov V.N. , Snytnikov P.V. , Salanov A.N. , Kulikov A.V. , **Ruban N.V.** , Potemkin D.I. , Sobyanin V.A. , Kharton V.V. Rh/θ-Al2O3/FeCrAlloy Wire Mesh Composite Catalyst for Partial Oxidation of Natural Gas. Materials Letters, 2019, 236, p. 316-319. https://doi.org/ 10.1016/j.matlet.2018.10.133
11. Glebov Evgeni, **Ruban Natalia**, Pozdnyakov Ivan, Grivin Vjacheslav, Plyusnin Victor, Lvov Andrey, Zakharov Alexey, Shirinian Valerii. Mechanistic Aspects of Photoinduced Rearrangement of 2,3-Diarylcyclopentenone Bearing Benzene and Oxazole Moieties. The Journal of Physical Chemistry A, 2018, 122, 36, 7107–7117. https://doi.org/10.1021/acs.jpca.8b05212
12. Konstantin A. Kovalenko, **Natalia V. Ruban**, Sergey A. Adonin, Denis V. Korneev, Simon B. Erenburg, Svetlana V. Trubina, Kristina Kvashnina, Maxim N. Sokolov, and Vladimir P. Fedin. Bi(III) immobilization inside MIL-101: enhanced photocatalytic performance. New Journal of Chemistry, 2017, 41, p. 2255-2260. https://doi.org/10.1039/C6NJ03482A