TATYANA V. RESHETENKO, PHD

PROFESSIONAL INTERESTS

My research interests are in the field of fuel cell development, catalysis, electrocatalysis, and material science. In the field of fuel cell research, my interest lies in the in-situ analysis of fuel cell performance by the application of a segmented cell setup, the manufacturing and design of membrane electrode assemblies (MEAs) for direct methanol fuel cells (DMFCs) and proton exchange membrane fuel cells (PEMFCs). My experience and interests also include synthesis and characterization of high-loaded metal catalysts as well as supported catalysts and carbon nanomaterials.

EDUCATION

1999-2003: **Ph.D. in Chemistry (Catalysis)**
Novosibirsk State University, Boreskov Institute of Catalysis, Russia

Thesis title: *Development of bimetallic catalysts (Ni-Cu, Fe-Co, Fe-Ni) for production of new carbon mesoporous materials from methane decomposition*

Boreskov Institute of Catalysis is the world's largest specialized institute in the field of catalysis. The Institute carries out fundamental and applied studies in all fields of catalysis. The institute is comprised of ~1000 people, has 34 research laboratories and 17 research groups.

Scientific advisors: Dr. Lyudmila B. Avdeeva, Dr. Zinfer R. Ismagilov

1996-1998: **Master of Science in Chemistry and Ecology (Catalysis and Adsorption)**
Novosibirsk State University, Russia

Thesis title: *Investigation of high-temperature H_2S decomposition reaction on metal oxides (Al_2O_3, α-Fe_2O_3, V_2O_5) by kinetic and optical methods*

Scientific advisor: Dr. Dmitrii A. Arendarskii

1992-1996: **Bachelor of Science in Chemistry, Ecology, and Nature Management**
Novosibirsk State University, Russia

Thesis title: *Investigation of chemical and ecological state of a snow blanket in Novosibirsk region during winter of 1996*

Scientific advisors: Dr. Olga V. Shuvaeva, Dr. Vasilii V. Kokovkin

Languages: English, Russian, Korean (basic), Japanese (basic).

RESEARCH AND PROFESSIONAL EXPERIENCE

02.2015-present: Assistant Researcher (rank equivalent to Assistant Professor with research track)

Hawaii Natural Energy Institute, University of Hawaii at Manoa
Honolulu, Hawaii, USA

- Conducting a study of spatial phenomena in proton exchange membrane fuel cells (PEMFCs) with a segmented cell system, which allows in-situ measurement of the cell's current distribution to be recorded. The method provides simultaneous electrochemical impedance spectroscopy (EIS), cyclic voltammetry (CV), and linear sweep voltammetry (LSV) measurements at all segments and ensures unique and highly valuable information about the PEMFC performance.

- Developing and verifying physical models for PEMFC EIS and studying variation of fuel cell parameters (Tafel slope, proton conductivity, double layer capacity, oxygen diffusivity) with current and other operating conditions.

- Investigating new non-Pt oxygen reduction catalysts based on Fe-N-C systems as an alternative to Pt cathode in PEMFC.

- Validating a novel method for the determination of the oxygen mass transport coefficient in gas and ionomer phases applicable to the PEMFC air electrode. The work was performed under Army Research Office funding project "Determination of Oxygen and Hydrogen Mass Transfer Coefficients in PEMFC GDE and Their Separation into Gas and Electrolyte Contributions", award number: W911NF-15-1-0188.

- Characterizing Li-ion cells in a battery pack using multi-channel impedance spectroscopy (MIST) and study impacts of linear charging/discharging at low and high temperatures on state of health, charge capacity and efficiency of lithium battery pack.

- Design research plans for experiments, perform experimental work, generate reports and publish papers.

02.2011-02.2015: Junior Researcher

Hawaii Natural Energy Institute, University of Hawaii at Manoa
Honolulu, Hawaii, USA

- Examined the impacts of air contaminants (acetylene, propene, methyl methacrylate, 2-propanol, bromomethane, naphthalene, and acetonitrile) on the spatial performance of PEMFCs. The work was done in the framework of the Department of Energy (DOE) project "The effect of airborne contaminants on fuel cell performance and durability", award number: DE-EE0000467.

- Developed a method for the determination of the oxygen mass transport coefficient in gas and ionomer phases applicable to the PEMFC air electrode. Established an improved empirical correlation between the overall oxygen mass transport coefficient and the gas diluent molecular weight. The work was performed under Army Research Office funding project "Separation method for oxygen mass transport coefficient in two phase porous air

electrodes - Transport in gas and solid polymer or liquid electrolyte phases", award number: W911NF-12-1-0549.

- Studied the effects of polytetrafluoroethylene (PTFE) variations in the gas diffusion layer (GDL) on PEMFC performance. The work was done in the framework of the DOE project "Applying segmented cell hardware and methods to study the effects of defects in PEMFC membrane electrode assembly (MEA) components", Phase 2.
- Designed research plans for experiments, performed all experimental work, generated reports, and published papers.

12.2007-02.2011: **Post-Doctoral Fellow Researcher**
University of Hawaii at Manoa, Hawaii Natural Energy Institute
Honolulu, Hawaii, USA

- Investigated the impact of variations in operating parameters on the distribution of PEMFC performance along a flow field as well as the distributions of voltage losses (activation, ohmic, concentration, and mass transfer) by applying the segmented cell system.
- Studied the effects of local variations of fuel cell materials' properties (defects) on PEMFC performance and durability. The work was done in the framework of the DOE project "A feasibility study for the use of segmented cell hardware and methods to study the effects of defects in PEMFC membrane electrode assembly (MEA) components", Phase 1.
- Examined the impact of fuel contaminant (carbon monoxide) on the spatial performance of PEMFC. The work was done in the framework of the DOE project "Hydrogen fuel contaminant testing and analysis for PEM fuel cells".
- Investigated the effects of flow fields design on spatial PEMFC performance to improve the fuel cell performance as well as the bipolar plate design.
- Prepared research plans, performed experimental tests, wrote reports, and published papers.

02.2005-12.2007: **Senior Researcher**
Samsung SDI, Corporate R&D Center, Energy Lab, Fuel Cell Project
Suwon, South Korea

- Designed a membrane electrode assembly (MEA) for direct methanol fuel cells (DMFCs).
- Developed an optimal structure and composition of electrodes as well as conducted a study of the fuel cell performance by electrochemical methods (EIS, VI curves, and CV).
- Investigated new materials (catalysts, membranes, and diffusion media) for DMFCs and PEMFCs.
- Generated experiments plans, wrote reports and patents, and published papers.

01.2004-02.2005: **Scientific Researcher**
Boreskov Institute of Catalysis, Russia

- Studied the evolution of copper-containing catalysts (Cu/SiO_2, Cu/ZnO, $Cu/ZnO/SiO_2$) for methanol synthesis during their preparation (calcination and reduction).
- Investigated the mechanism of methanol synthesis on copper containing catalysts (Cu/SiO_2, Cu/ZnO, $Cu/ZnO/SiO_2$) by FTIR.
- Designed experiments, prepared reports, and publishing papers.

10.1999-12.2003: **Scientific Researcher, Post-graduate Student**
Novosibirsk State University, Boreskov Institute of Catalysis, Russia

- Investigated the coprecipitated high-loading $Fe-Al_2O_3$, $Fe-Co-Al_2O_3$, $Fe-Ni-Al_2O_3$, $Ni-Cu-Al_2O_3$ metal catalysts for methane decomposition. Studied the genesis of a composition and structure of active component of the catalysts during drying, calcination, reduction, and reaction by XRD, EXAFS, radial electron density distribution (REDD), TEM, FTIR and Mössbauer spectroscopy.
- Conducted a study of the activity of these catalysts in a process of methane decomposition, which resulted in carbon deposition and hydrogen production at moderate temperatures (600-675°C). Established high efficiency of the catalysts in methane decomposition.
- Developed a new carbon mesoporous material. Investigated the carbon material by TEM, SEM, Raman spectroscopy, XRD, and adsorption techniques. The formed carbon was shown to deposit in a shape of filaments or fibers. For this reason, it was called catalytic filamentous carbon, which is a new family of mesoporous carbon materials possessing the unique structural and textural properties.
- Designed experiments, wrote reports, and published papers.

08.1998-10.1999: **Senior Specialist**
State Committee on Environmental Protection of Koryak Region,
Palana, Russia

09.1996-06.1998: **Research Assistant**
Novosibirsk State University, Boreskov Institute of Catalysis, Russia

- Studied heterogeneous decomposition of H_2S on bulk oxides: γ-Al_2O_3, α-Fe_2O_3, and V_2O_5, by kinetic and optical (FTIR, ESDR) methods.

TEACHING EXPERIENCE

2002: **Teaching Assistant**
Novosibirsk State University, Novosibirsk, Russia
- Instructed "Physical chemistry practical training"

1998-1999: **Lecturer**
Public school, Palana, Russia
- Instructed chemistry courses for 8 and 9 grades

HONORS AND AWARDS

1. **Post-Doctoral Fellowship** 2007-2011
   Hawaii Natural Energy Institute, USA
2. **Travel grant for 13th International Congress of Catalysis** 2004
   Russian Foundation for Basic Research, Russia
3. **3rd place, Young Scientist's competition** 2004
   Boreskov Institute of Catalysis, Russia
4. **3rd place, Annual Competition of the Research Projects** 2002
   Boreskov Institute of Catalysis, Russia
5. **NWO-2001** 2001-2003
   Netherlands Organization for Scientific Research
   Boreskov Institute of Catalysis, Russia
6. **REC-008** 2000-2003
   U.S. Civilian Research and Development Foundation
   for the Independent States of the Former Soviet Union (CRDF)
   Novosibirsk State University, Russia
7. **B.S. degree with honors (GPA 4.85/5.00)** 1996
   Novosibirsk State University, Russia
8. **M.S. degree with honors (GPA 4.90/5.00)** 1998
   Novosibirsk State University, Russia

AWARDED PROPOSALS

Tatyana V. Reshetenko, "Active and Durable PGM-free Cathodic Electrocatalysts for Fuel Cell Application", DE-FOA-0001874: Topic 1a – Energy Materials Network (EMN) – ElectroCat. US$250,000; 2018-2020.

Tatyana V. Reshetenko (PI), "Determination of oxygen and hydrogen mass transfer coefficients in PEMFC GDE and their separation into gas and electrolyte contributions" Grant No. W911NF-15-1-0188, awarded by ARO (Basic and Applied Scientific Research Program, Research Area 7.2. Electrochemistry), US$ 366,519; 1 June 2015 – 30 November, 2018.

Tatyana V. Reshetenko (PI), "Separation method for oxygen mass transport coefficient in two phase porous air electrodes - Transport in gas and solid polymer or liquid electrolyte phases," Grant No. W911NF-12-1-0549, awarded by ARO, US$ 50,000; 15 September 2012 – 14 May, 2013.

Jean St-Pierre (PI), **Tatyana V. Reshetenko (co-PI)**, "Applying segmented cell hardware and methods to study the effects of defects in PEMFC membrane electrode assembly (MEA)

components", Sub-contract award NEE-0-40577-01 under prime contract DE-AC36-08-GO28308, awarded by DOE; US$ 200,000; 3 May, 2010 - 2 July, 2011.

Guido Bender (PI), **Tatyana V. Reshetenko (co-PI)**, "A feasibility study for the use of segmented cell hardware and methods to study the effects of defects in PEMFC membrane electrode assembly (MEA) components", Sub-contract award ZFH-8-88547-01 under prime contract DE-AC36-99GO10337, awarded by Department of Energy; US$ 60,000; 1 July, 2008 – 31 January, 2009.

SUBMITTED PROPOSALS

Tatyana V. Reshetenko, "Next Generation MEA for DMFC application", DE-FOA-0001874: Topic 3b – Innovative Reversible and Liquid Fuel Cell Component R&D. HNEI is a subcontractor for this project led by EEWI (Dr. Madeleine Odgaard). US$225,000; 2018-2021.

Tatyana V. Reshetenko, "Development of Durable Active Supports for Low Platinum Group Metal Catalysts" DOE-EERE SBIR Phase II DE-FOA-0001794. HNEI is a subcontractor for this project led by Pajarito Powder LLC (Dr. Barr Zulevi). US$100,000; 2018-2020.

Tatyana V. Reshetenko (PI), "Collaborative University of Hawaii and University of New Mexico: Mass-transport phenomena inside of PGM-free cathodic catalyst layers in alkaline exchange membrane fuel cells", National Science Foundation, PD-16-1403, Process Systems, Reaction Engineering and Molecular Thermodynamics. US$ 294,661; July 2017 – June 2020.

SUBMITTED CONCEPT PAPERS

"Development of new generation low temperature PEMFCs operated on reformed liquid fuels for automobile application", ARPA-E, Funding Opportunity Announcement No. DE-FOA-0001858, Technical category 2; Subcategory D (Fuel Cell – Transportation), 2018.

"Active and Durable PGM-free Cathodic Electrocatalysts for Fuel Cell Application" DOE Office of Energy Efficiency and Renewable Energy, Funding Opportunity Announcement No. DE-FOA-0001874, Topic 1 – Energy Materials Network (EMN) – ElectroCat, 2018.

"Durable Platinum Group Metal-free Electrocatalysts" DOE Office of Energy Efficiency and Renewable Energy, Funding Opportunity Announcement No. DE-FOA-0001874, Topic 1 – Energy Materials Network (EMN) – ElectroCat, 2018.

"PGM-Free Structured Multilayer Architecture Cathode Layers for Fuel Cell Application" DOE Office of Energy Efficiency and Renewable Energy, Funding Opportunity Announcement No. DE-FOA-0001874, Topic 1 – Energy Materials Network (EMN) – ElectroCat, 2018.

"Next Generation MEA for DMFC application" DOE Office of Energy Efficiency and Renewable Energy, Funding Opportunity Announcement No. DE-FOA-0001874, Topic 3b – Innovative Reversible and Liquid Fuel Cell Component R&D, 2018.

"Unconventional carbonaceous catalyst supports for improved performance and durability" DOE Office of Energy Efficiency and Renewable Energy, Funding Opportunity Announcement Number - DE-FOA-0001224, Subtopic 1b.2, 2015.

PROFESSIONAL SOCIETIES

Member:
The electrochemical society, San Francisco, CA, USA Since 2008

PROFESSIONAL ACTIVITIES AND SERVICE

Reviewer:
Journal of Power Sources, Applied Catalysis A, International Journal of Hydrogen Energy, Fuel Processing Technology, The Journal of Physical Chemistry, Applied Surface Science, Journal of Chemistry, Journal of Energy Chemistry, Electrochemistry Communications, Catalysts, Ionics, Journal of the American Society, Journal of the Electrochemical Society.

CITATION

Web of Knowledge: 1210 citations, "h-index" is 18 (October 11, 2018).
Google Scholar: 1618 citations, "h-index" is 22 (October 11, 2018).

TATYANA V. RESHETENKO, PHD

EXTENDED BIBLIOGRAPHY

1. C.T. Love, M. Dubarry, **T. Reshetenko**, A. Devie, N. Spinner, K.E. Swider-Lyons, R. Rocheleau, *"Lithium-ion cell fault detection by single-point impedance diagnostic and degradation mechanism validation for series-wired batteries cycled at 0℃"*, Energies 11 (2018) 834.

2. **T. Reshetenko**, A. Kulikovsky, *"Two states of the cathode catalyst layer operation in a PEM fuel cell"*, J. Electrochem. Soc. 165 (2018) F821-F826.

3. **T. Reshetenko**, A. Kulikovsky, *"A model for extraction of spatially resolved data from impedance spectrum of a PEM fuel cell"*, J. Electrochem. Soc. 165 (2018) F291-F296.

4. **T.V. Reshetenko**, J. St-Pierre, *"Effects of propylene, methyl methacrylate and isopropanol poisoning on spatial performance of a proton exchange membrane fuel cell"*, J. Power Sources 378 (2018) 216-224.

5. **T. Reshetenko**, M. Odgaard, D. Schlueter, A. Serov, *"Analysis of alkaline exchange membrane fuel cells performance at different operating conditions using DC and AC methods"*, J. Power Sources 375 (2018) 185-190.

6. **T. Reshetenko**, A. Kulikovsky, *"Impedance spectroscopy characterization of oxygen transport in low- and high-Pt loaded PEM fuel cells"*, J. Electrochem. Soc. 164 (2017) F1633-F1640.

7. **T.V. Reshetenko**, K. Artyushkova, J. St-Pierre, *"Spatial proton exchange membrane fuel cell performance under bromomethane poisoning"*, J. Power Sources 342 (2017) 135-147.

8. **T. Reshetenko**, A. Kulikovsky, *"Impedance spectroscopy studies of the PEM fuel cell cathode with nonuniform ionomer loading"*, J. Electrochem. Soc. 164 (2017) E3016-E3021.

9. **T.V. Reshetenko**, J. St-Pierre, *"Study of the aromatic hydrocarbons poisoning of platinum cathodes on proton exchange membrane fuel cell spatial performance using a segmented cell system"*, J. Power Sources 333 (2016) 237-246.

10. J. St-Pierre, **T.V. Reshetenko**, *"PEMFC reactant mass transfer coefficient measurement and separation – method extension to the mixed kinetic and mass transfer control regime"*, ECS Trans. 75 (2016) 63-76.

11. **T.V. Reshetenko**, A. Serov, K. Artyushkova, I. Matanovic, S. Stariha, P. Atanassov, *"Tolerance of non-platinum group metals cathodes proton exchange membrane fuel cells to air contaminants"*, J. Power Sources 324 (2016) 556-571.

12. **T. Reshetenko**, A. Kulikovsky, *"Variation of PEM fuel cell physical parameters with Current: Impedance spectroscopy study",* J. Electrochem. Soc. 163 (2016) F1100-F1106.

13. **T. Reshetenko**, A. Kulikovsky, *"Comparison of two physical models for fitting PEM fuel cell impedance spectra measured at low air flow stoichiometry"*, J. Electrochem. Soc. 163 (2016) F238-F246.

14. **T.V. Reshetenko**, J. St-Pierre, *"Study of the acetonitrile poisoning of platinum cathodes on proton exchange membrane fuel cell spatial performance using a segmented cell system"*, J. Power Sources 293 (2015) 929-940.

15. **T. Reshetenko**, A. Kulikovsky, *"PEM fuel fell characterization by means of the physical model for impedance spectra"*, J. Electrochem. Soc. 162 (2015) F627-F633.

16. **T.V. Reshetenko**, J. St-Pierre, *"Study of acetylene poisoning of Pt cathode on proton exchange membrane fuel cell spatial performance using a segmented cell system"*, J. Power Sources 287 (2015) 401-415.

17. **T.V. Reshetenko**, K. Bethune, M.A. Rubio, R. Rocheleau, *"Study of low concentration CO poisoning of Pt anode in a proton exchange membrane fuel cell using spatial electrochemical impedance spectroscopy"*, J. Power Sources 269 (2014) 344-362.

18. **T.V. Reshetenko**, J. St-Pierre, *"Separation method for oxygen mass transport coefficient in gas and ionomer phases in PEMFC GDE"*, J. Electrochem. Soc. 161 (2014) F1089-F1100.

19. J. St-Pierre, M. Angelo, K. Bethune, J. Ge, S. Higgins, **T. Reshetenko**, M. Virji, Y. Zhai, *"PEMFC contamination – fundamentals and outlook"*, ECS Trans. 61 (2014) 1-14.

20. **T.V. Reshetenko**, J. St-Pierre, K. Artyushkova, R. Rocheleau, P. Atanassov, G. Bender, M. Ulsh, *"Multianalytical study of the PTFE content local variation of the PEMFC gas diffusion layer"*, J. Electrochem. Soc. 160 (2013) F1305-F1315.

21. J. St-Pierre, J. Ge, Y. Zhai, **T.V. Reshetenko**, M. Angelo, *"PEMFC cathode contamination mechanisms for several VOCs - acetonitrile, acetylene, bromomethane, iso-propanol, methyl methacrylate, naphthalene and propene"*, ECS Trans. 58 (1) (2013) 519-528.

22. **T.V. Reshetenko**, J. St-Pierre, R. Rocheleau, *"Effects of local gas diffusion layer gas permeability variations on spatial proton exchange membrane fuel cells performance"*, J. Power Sources 241 (2013) 597-607.

23. **T.V. Reshetenko**, G. Bender, K. Bethune, R. Rocheleau, *"A segmented cell approach for studying the effects of serpentine flow field parameters on PEMFC current distribution"*, Electrochim. Acta 88 (2013) 571-579.

24. **T.V. Reshetenko**, K. Bethune, R. Rocheleau, *"Spatial proton exchange membrane fuel cell performance under carbon monoxide poisoning at a low concentration using a segmented cell system"*, J. Power Sources 218 (2012) 412-423.

25. **T.V. Reshetenko**, G. Bender, K. Bethune, R. Rocheleau, *"Effects of local variations of the gas diffusion layer properties on PEMFC performance using a segmented cell system"*, Electrochim. Acta 80 (2012) 368-376.

26. **T.V. Reshetenko**, G. Bender, K. Bethune, R. Rocheleau, *"Application of a segmented cell setup to detect pinhole and catalyst loading defects in proton exchange membrane fuel cells"*, Electrochim. Acta 76 (2012) 16-25.

27. **T.V. Reshetenko**, G. Bender, K. Bethune, R. Rocheleau, "*Systematic studies of the gas humidification effects on spatial PEMFC performance distributions"*, Electrochim. Acta 69 (2012) 220-229.

28. **T.V. Reshetenko**, J. St-Pierre, *"PEMFC GDE oxygen mass transport coefficient separation with different gas diluents"*, ECS Trans. 50 (2) (2012) 549-555.

29. K. Artyushkova, P. Atanassov, **T. Reshetenko**, J. St-Pierre, *"Multi-analytical study of gas diffusion layers PTFE content variation",* ECS Trans. 50 (2) (2012) 591-599.

30. **T.V. Reshetenko**, G. Bender, K. Bethune, R. Rocheleau, *"Systematic study of back pressure and anode stoichiometry effects on spatial PEMFC performance distribution"*, Electrochim. Acta 56 (2011) 8700-8711.

31. **T.V. Reshetenko**, J. St-Pierre, K. Bethune, R. Rocheleau, *"Identification of gas diffusion layer PTFE content local anomalies using a segmented cell system"*, ECS Trans. 41 (1) (2011) 539-548.

32. H.-T. Kim, K.-Y. Song, **T.V. Reshetenko**, S.-I. Han, T.-Y. Kim, S.-Y. Cho, M.-K. Min, G.-S. Chai, S.-Ch. Shin, *"Electrochemical analysis of polymer electrolyte membrane fuel cell operated with dry-air feed",* J. Power Sources 193 (2009) 515-522.

33. **T.V. Reshetenko**, H.-T. Kim, H.-J. Kweon, *"Modification of cathode structure by introduction of CNT for air-breathing DMFC"*, Electrochim. Acta 53 (2008) 3043–3049.

34. H.-T. Kim, **T.V. Reshentenko**, H.-J. Kweon, *"Microstructured Membrane Electrode Assembly for Direct Methanol Fuel Cell",* J. Electrochem. Soc., 154 (2007) B1034-B1040.

35. **T.V. Reshetenko**, H.-T. Kim, H.-J. Kweon, *"Cathode structure optimization for air-breathing DMFC by application of pore-forming agents",* J. Power Source 171 (2007) 433-440.

36. **T.V. Reshetenko**, H.-T. Kim, U. Krewer, H.-J. Kweon, *"The effects of the anode loadings and method of MEA fabrication on DMFC performance",* Fuel Cells 7 (2007) 238-245.

37. **T.V. Reshetenko**, H.-T. Kim, H.-K. Lee, M.-Y. Jang, H.-J. Kweon, *"Performance of a direct methanol fuel cell (DMFC) at low temperature: Cathode optimization",* J. Power Source 160 (2006) 925-932.

38. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, A.L. Chuvilin, V.B. Fenelonov, *"Catalytic filamentous carbon-supported Ni for low-temperature methane decomposition",* Catalysis Today 102-103 (2005) 115-120.

39. K.V. Romanenko, J.-B. d'Espinose de la Caillerie, J. Fraissard, **T.V. Reshetenko**, O.B. Lapina, *"^{129}Xe NMR investigation of catalytic filamentous carbon",* Microporous and Mesoporous Materials 81 (2005) 41-48.

40. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, A.L. Chuvilin, *"Catalytic filamentous carbon as support for nickel catalysts",* Carbon 42 (2004) 139-144.

41. M.N. Timofeeva, M.M. Matrosova, **T.V. Reshetenko**, L.B. Avdeeva, A.A. Budneva, A.B. Ayupov, E.A. Paukshtis, A.L. Chuvilin, A.V. Volodin, V.A. Likholobov, *"Filamentous carbon as a support for heteropoly acid",* J. Molec. Catal. A 211 (2004) 131-137.

42. **T.V. Reshetenko**, L.B. Avdeeva, A.A. Khassin, G.N. Kustova, V.A. Ushakov, E.M. Moroz, A.N. Shmakov, V.V. Kriventsov, D.I. Kochubey, Yu.T. Pavlyukhin, A.L. Chuvilin, Z.R. Ismagilov, *"Coprecipitated iron-containing catalysts (Fe-Al_2O_3, Fe-Co-Al_2O_3, Fe-Ni-Al_2O_3) for methane decomposition at moderate temperatures. I. Genesis of calcined and reduced catalysts",* Appl. Catal. A 268 (2004) 127-138.

43. **T.V. Reshetenko**, L.B. Avdeeva, V.A. Ushakov, E.M. Moroz, A.N. Shmakov, V.V. Kriventsov, D.I. Kochubey, Yu.T. Pavlyuhin, A.L. Chuvilin, Z.R. Ismagilov, *"Coprecipitated iron-containing catalysts (Fe-Al_2O_3, Fe-Co-Al_2O_3, Fe-Ni-Al_2O_3) for methane decomposition at moderate temperatures. II. Evolution of the catalysts in reaction",* Appl. Catal. A 270 (2004) 87-99.

44. L.B. Avdeeva, **T.V. Reshetenko**, V.B. Fenelonov, A.L. Chuvilin, Z.R. Ismagilov, *"Gasification behavior of catalytic filamentous carbon",* Carbon 42 (2004) 2501-2507.

45. S.M. Yunusov, E.S. Kalyuzhnaya, B.L. Moroz, A.S. Ivanova, **T.V. Reshetenko**, L.B. Avdeeva, V.A. Likholobov, V.B. Shur, *"New ammonia synthesis catalysts based on supported potassium carbonyl ruthenates as precursors of catalytically active ruthenium particles and potassium promoter",* J. Molec. Catal. A 219 (2004) 149-153.

46. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, A.L. Chuvilin, V.A. Ushakov, *"Carbon capacious Ni-Cu-Al_2O_3 catalysts for high-temperature methane decomposition",* Appl. Catal. A 247 (2003) 51-63.

47. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, V.V. Pushkarev, S.V. Cherepanova, A.L. Chuvilin, V.A. Likholobov, *"Catalytic Filamentous Carbon. Structural and Textural Properties",* Carbon 41 (2003) 1605-1615.

48. M.N. Timofeeva, M.M. Matrosova, G.N. Il'inich, **T.V. Reshetenko**, L.B. Avdeeva, R.I. Kvon, A.L. Chuvilin, A.A. Budneva, E.A. Paukshtis, V.A. Likholobov, *"Esterification of n-*

butanol with acetic acid in the presence of $H_3PW_{12}O_{40}$ supported onto mesoporous carbon materials", Kinetics and Catalysis 44 (2003) 778-788.

49. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, V.A. Ushakov, A.L. Chuvilin, Yu.T. Pavlyukhin, *"Promoted iron catalysts of low-temperature methane decomposition",* Chemistry for Sustainable Development 11 (2003) 239-247.

50. Z.R. Ismagilov, V.B. Fenelonov, A.V. Krechetova, A.Yu. Derevyankin, L.B. Avdeeva, T**.V. Reshetenko**, Ch.N. Barnakov, A.P. Kozlov, S.K. Seit-Ablaeva, V.V. Chesnokov, V.N. Parmon, *"Adsorption methods of hydrogen and methane storage for the fuel cell application",* Eurasian ChemTech Journal 5 (2003) 19-27.

51. L.B. Avdeeva, **T.V. Reshetenko**, Z.R. Ismagilov, V.A. Likholobov, *"Iron containing catalysts of methane decomposition: accumulation of filamentous carbon",* Appl. Catal. A 228 (2002) 53-63.

52. **T.V. Reshetenko**, S.R. Khairulin, Z.R. Ismagilov, V.V. Kuznetsov, *"Study of the reaction of high-temperature H_2S decomposition on metal oxides (γ-Al_2O_3, α-Fe_2O_3, V_2O_5) by kinetic and optical methods",* Int. J. Hydrogen Energy 27 (2002) 387-394.

53. M.N. Timofeeva, M.M. Matrosova, **T.V. Reshetenko**, L.B. Avdeeva, E.A. Paukshtis, A.A. Budneva, A.L. Chuvilin, V.A. Likholobov, *"Adsorption of $H_3PW_{12}O_{40}$ by porous carbon materials",* Russ. Chem. Bull. 51 (2002) 243-248.

54. **T.V. Reshetenko**, L.B. Avdeeva, Z.R. Ismagilov, A.L. Chuvilin, V.A. Likholobov, *"Microdesign of nickel-copper alloy catalysts for production of new carbon materials",* Eurasian ChemTech Journal 2 (2000) 237-244.

BOOK CHAPTERS

1. J. St-Pierre, M. Angelo, K. Bethune, J. Huizingh, **T. Reshetenko**, M. Virji, Y. Zhai, "*Modern Fuel Cell Testing Laboratory"*, in '*Handbook of Electrochemistry*', Edited by C. Breitkopf, K. Swider Lyons, Springer.

2. O.A. Baturina, B. Dyatkin, **T.V. Reshetenko**, *"Influence of air impurities on the performance of nanostructured PEMFC catalysts"*, in *"Nanostructured materials for next generation of energy storage and conversion"* vol.2., Edited by J. Liu, S. Bashir and F. Li.

PATENTS

1. **T. Reshetenko**, H.-T. Kim, H.-J. Kwon, *"Membrane electrode assembly for fuel cell, and fuel cell system including the same"*, US 8,278,012 B2, Oct. 2, 2012.

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DEPARTMENTAL SEMINARS

1. **T.V. Reshetenko**, *"Understanding spatial PEMFCs performance under different environmental and operating conditions using a segmented cell approach"*, Electrochemical Energy Device Laboratory, Korean Advanced Institute of Science and Technology, December 3, 2015, Daejeon, South Korea.

2. **T.V. Reshetenko**, *"Understanding spatial PEMFCs performance under different environmental and operating conditions using a segmented cell approach"*, Research and Development Division, Hyundai Motor Group, December 8, 2015, Yongin, South Korea.

3. **T. Reshetenko**, *"Comparative and comprehensive studies of tolerance to airborne contaminants of PEMFC with Pt and non-Pt cathodes using segmented cell approach and spatial EIS",* Center for Micro-Engineered Materials, University of New Mexico, October 7, 2015, Albuquerque, USA.

4. **T.V. Reshetenko**, *"Identification of gas diffusion layer PTFE content local anomalies using segmented cell system"*, University of New Mexico, February 6, 2012, Albuquerque, USA.

5. **T.V. Reshetenko,** *"The effect of local variations in the gas diffusion layer properties on spatial PEMFC performance"*, University of Hawaii at Manoa, October 20, 2009, Honolulu, USA.

6. **T.V. Reshetenko,** *"Catalysts for hydrogen production from methane; design and optimization of an MEA for a direct methanol fuel cell"*, University of Hawaii at Manoa, February 26, 2008, Honolulu, USA.

7. **T.V. Reshetenko**, *"Development of bimetallic catalysts (Ni-Cu, Fe-Co, Fe-Ni) for production of new carbon mesoporous materials from methane decomposition"*, Boreskov Institute of Catalysis, September 12, 2003, Novosibirsk, Russia.

CONFERENCES PRESENTATIONS

1. **T. Reshetenko**, B.L. Ben, "*Effects of structural and textural properties of GDL on oxygen mass transport coefficient in PEMFC*",Gordon Research Conference-2018 (Fuel Cells), July 29- August 3, 2018, Bryant University, Smithfield, RI, USA.

2. **T. Reshetenko**, B.L. Ben, *"Effect of NO_2 as air pollution on spatial performance of high- and low-Pt loaded PEM fuel cells"*, 69th Annual Meeting of the International Society of Electrochemistry, September 2-7, 2018, Bologna, Italy, ise181180.

3. J. St-Pierre, **T. Reshetenko**, *"O_2 mass transfer coefficient in PEMFCs – cell voltage and MEA effects"*, ECS-CSE Joint Symposium on Electrochemistry of Energy & Environment, Shanghai, China, December 2-4, 2017, Paper # EC-16.

4. **T.V. Reshetenko**, V. Laue, U. Krewer, K. Artyushkova, *"Effect of reduced Pt loading on spatial PEMFC performance under SO_2 poisoning"*, 68th Annual Meeting of the International Society of Electrochemistry, August 27 – September 1, 2017, Providence, RI, USA.

5. **T.V. Reshetenko**, "*Comprehensive understanding of electrode processes in PEMFCs exposed to various pollutants using spatial AC-impedance spectroscopy"*, 232nd ECS Meeting, October 1-6, 2017, National Harbor, MD, I01B-1455.

6. **T.V. Reshetenko**, J. St-Pierre, A. Kulikovsky, *"Determination and separation of PEMFC reagents mass transport coefficients by localized limiting current approach"*, Gordon Research Conference-2016 (Fuel cell), August 7-12, 2016, Easton, MA, Invited speaker.

7. C.T. Love, **T. Reshetenko**, D. Mase, *"Frequency-based Probes and Charging Methods for Li-ion Battery Safety"*, 47th Power Source Conference, June 13-16, 2016, Orlando, Florida, paper No. 22.1.

8. C.T. Love, K.E. Swider-Lyons, **T. Reshetenko**, M. Dubarry, A. Devie, R. Rocheleau *"Single-point probes for lithium-ion battery fault detection and temperature monitoring"* 33rd Annual International Battery Seminar and Exhibit: Advanced Battery Technologies for Consumer, Automotive and Military Applications, March 21-24, 2016, Fort Lauderdale, Florida, paper 66.

9. J. St-Pierre, **T.V. Reshetenko**, *"PEMFC reactant mass transfer coefficient measurement and separation – method extension to the mixed kinetic and mass transfer control regime"*, 230th ECS Meeting, October 2-7, 2016, Honolulu, HI, I01-2356.

10. **T.V. Reshetenko**, K. Artyushkova, J. St-Pierre, *"Comprehensive studies of spatial PEMFC performance under CH_3Br poisoning of cathode"*, 230th ECS Meeting, October 2-7, 2016, Honolulu, HI, I01-2701.

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12. C.T. Love, K.E. Swider-Lyons, **T. Reshetenko**, M. Dubarry, A. Devie, R. Rocheleau, *"Observation of Lithium Dendrites at Room Temperature and Below"*, ONR Undersea Power & Energy Review, 22 April 2016.

13. **T.V. Reshetenko**, K. Bethune, G. Randolf, J. St-Pierre, *"Understanding spatial PEMFCs performance under different environmental and operating conditions using a segmented cell approach"* (keynote speaker), International workshop on EEWS-2015 at KAIST, December 4, 2015, Daejeon, South Korea.

14. **T. Reshetenko**, A. Serov, S. Stariha, I. Matanovic, K. Artyushkova, J. St-Pierre, P. Atanassov, *"Effects of major air contaminants on the performance of fuel cells with non-platinum group metal cathode catalysts"*, PacificChem-2015, December 15-20, 2015, Honolulu, HI.

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18. J. St-Pierre, M. Angelo, K. Bethune, J. Ge, S. Higgins, **T.V. Reshetenko**, M.B.V. Virji, Y. Zhai, *"PEMFC contamination - fundamentals and outlook"*, 225 Electrochemical Society Meeting, May 11-15, 2014, Orlando, USA, F6-0796.

19. **T. Reshetenko**, J. St-Pierre, *"Oxygen mass transfer coefficient separation into gas and electrolyte contributions in PEMFC GDEs"*, 224 Electrochemical Society Meeting, October 27- November 2, 2013, San Francisco, USA, B11 – 1466.

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