

Kateryna Vyshniakova, PhD

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WILLING TO CONSIDER MOVING TO DIFFERENT AREAS FOR PROFESSIONAL REASONS

Education		
1997	Taras Shevchenko University of Kiev, The Chemistry Department	Kiev, Ukraine
BS/MS in Chemistry, Analytical Chemistry		
M.S. Thesis: Synthesis of complex compounds in the system “alkali metal salt – crown ether” and physical properties of their melts		
2006	Frantsevich Institute of Materials Science, National Academy of Sciences	Kiev, Ukraine
PhD Physical Chemistry		
PhD Thesis: Mechanism of multistage pyrolysis of hydrate cellulose impregnated with silica, and β -SiC fiber formation		
2017	Japanese Language School “SAMU”	Tokyo, Japan
Skills and competencies		
Materials Synthesis	Ceramic materials, Non-oxide ceramics, Electrochemical Synthesis of Polymers, Carbothermal synthesis. Carbon nanoparticles (nanographites) and ceramic fibers and nanoparticles (SiC fibers, whiskers, nano-whiskers) synthesis from lignocellulosic precursors	
Materials Characterization	Chemical Analysis Methods (Wet Chemistry and Spectral Methods (Atomic Absorption Spectroscopy (AAS), Atomic Emission Spectroscopy (AES), X-Ray Fluorescence Spectrometry (XRF), Gas Liquid Chromatography (GLC), Electron Microscopy (SEM, TEM); X-Ray Diffraction (XRD); Fourier Transform Infra-Red Spectroscopy (FTIR), Differential Scanning Calorimetry (DSC), Thermal Gravimetry Analyses (TGA), Differential Thermal Analysis (DTA), Raman Spectroscopy	
Knowledge of GOST (Russian State Standards) for analytical techniques and reagents		
Work Experience		
2013-2015	University of Nova Gorica Nova Gorica, Slovenia	SUNGREEN Project Expert on Chemistry and Nanotechnology, supervising young scientists
Research Fellow		Electrochemical Synthesis and Characterization of SiC polymer precursors, coatings on glass development and characterization
2012-2013	Frantsevich Institute of Materials Science, NAS, Kiev, Ukraine Senior Scientist	Fundamental study of synthesis and characterization of carbon nanomaterials (nanographites, graphene), ceramic nanoparticles (SiC whiskers, nanowires, nanofibers, etc.) and their application aspects in composites materials. Design and characterization of polymer matrix composites reinforced with nanoparticles for biomedical and aerospace materials application.

2010-2012	University Carlos III de Madrid, Leganes, Madrid, Spain Postdoctoral Researcher and Teaching Assistant	Research: Carbon Nanoparticles Synthesis, Polymer Matrix Composites, Synthesis and Characterization (DSC, TGA, DTA, SEM, TEM, FTIR, XRD, Raman microspectrometry), Mixing methods development (HEBM), thin films manufacturing(hot pressing) Teaching: Theory and Labs on Chemistry , Chemical Basis of Engineering, Materials Science, Materials Characterization (XRD, DSC, FTIR) Participation in Board of European Students of Technology (BEST) teaching
2008-2010	Frantsevich Institute of Materials Science, NAS, Kiev, Ukraine Senior Scientist	Synthesis of various types carbon nanoparticles (graphene, nano-graphites) from vegetable precursors, characterization by XRD, TEM, SEM, FTIR, Raman
2006-2008	Frantsevich Institute of Materials Science, NAS, Kiev, Ukraine Research Associate	Synthesis and characterization of various types carbon nanoparticles (graphene, nano-graphites, onion-like carbon) from vegetable precursors. Qualitative and quantitative analyses of different kinds of materials (steels, metal alloys, ceramic powders) by AES, AAS, wet chemistry methods, GLC
2000-2006	Frantsevich Institute of Materials Science, NAS, Kiev, Ukraine Junior Research Associate	Synthesis and characterization of silicon carbide fibers and whiskers from hydrate cellulose fibers. Electrochemical study of SiC powders

Journal Papers

- M. Valant; U. Luin; M. Fanetti; A. Mavric; **K. Vyshniakova**; Z. Siketic; M. Kalin, Fully transparent nanocomposite coating with an amorphous alumina matrix and exceptional wear and scratch resistance, *Advanced Functional Materials* 2016, DOI: 10.1002/adfm.201600213
- Oleinik G.S., **Vyshniakova K.**, Pereselentseva L.N., Vyshniakov L. Structural transformations during ordering of the carbon obtained in the pyrolysis of pine wood, *Materials Science of Nanostructures*, 2012, 3, p. 19-27
- Oleinik G.S., **Vyshniakova K.**, Pereselentseva L.N., Kotko A.V. Microstructure features of carbon ordering obtained at the pyrolysis of pine chips, *Technical Physical Letters* 2011, 37, 5, p. 86-95
- K.Vyshniakova**, L.N.Pereselentseva, V.P. Red'ko, T.V.Tomila. Mechanisms of pyrolysis of the pine wood impregnated with silica and nano-structure SiC formation, *Composites and Nanostructures*, 2010, V.2, p. 28-37
- G.N. Yushin, Z.G. Cambaz, Y.Gogotsi, **K. Vyshniakova**, L. Pereselentseva, Carbothermal Synthesis of α -SiC Micro-ribbons, *J. American Ceramic Society*, 2008, [91], 1, p. 83-87
- K. Vyshnyakova**, G. Yushin, L. Pereselentseva, Y. Gogotsi, Formation of porous SiC ceramics by pyrolysis of wood impregnated with silica, *International Journal of Applied Ceramic Technology*, 2006, 3 [6], p. 485-490
- T.V Tomila, M.V. Vlasova, M.G. Kakazey, **K. Vyshniakova**, A.V. Ragulya, L.N. Pereselentseva, Fine Defective Structure of Silicon Carbide Powders Obtained From Different Starting Materials, *Science of Sintering*, 2006, 38,- p. 177-181

- Vyshnyakova, K.**, Lavrenko, V.A., Composition and structure of silicon oxycarbide fibers, *Powder Metallurgy*, 2006 #7-8, p. 7-9
- Cambaz, Z.G., Yushin, G.N., Gogotsi, Y., **Vyshniakova, K.**, Pereselentseva, L.N., Formation of carbide derived carbon on beta-silicon carbide whiskers, *J. American Ceramic Society*. 2006, 89 [2], p. 509-514
- Lavrenko, V.A., **Vyshniakova, K.**, Yeremenko, B.V., Kuznetsova, L.I. Comparative study of chemical stability of coarse and nanocrystalline α -SiC powders in aggressive electrolytes, *Materials Science of Nanostructures*. 2005. # 1. P. 14-19
- Vyshniakova, K.**, Pereselentseva L.N., Cambaz, Z.G., Yushin, G.N., Gogotsi, Y., Whiskerization of Polycrystalline SiC Fibers during Synthesis, *British Ceramic Transactions*. 2004. Vol. 103, #5, P. 193-196
- Vyshniakova, K.**, Pereselentseva, L., Structure and properties of silicon carbide fibers as function of their synthesis conditions, in *Nanoengineered Nanofibrous Materials, NATO Science Series Volume NATO-ASI (PST 979397)*, Ed. S. Guceri, Y. Gogotsi, V.L. Kuznetsov, Kluwer, Dordrecht, Netherlands. 2004. P. 121-129
- Lavrenko, V.A., Vyshniakova, K., Shvets, V.A. Electrochemical properties of sintered polycrystalline α -SiC, *Powder Metallurgy*. 2004, #9-10. P. 60-68
- Vyshniakova, K.**, Pereselentseva, L.M. Synthesis mechanisms of fibrous SiC from hydrate cellulose fibers, *Ukrainian Chemical Journal*, 2004, v.70. P. 83-87
- Vyshniakova, K.**, Tomila, T.V. Studying of hydrate cellulose carbonization in the presence of silica by IR-spectroscopy, *Ukrainian Chemical Journal*, 2003, V.69, p. 85-90

Conference Presentations

1. Production of graphite and graphene nanoparticles by pine chips carbonisation, E-MRS 2015 Fall Meeting September 15-18, **2015** Warsaw, Poland
2. Synthesis of nanostructured silicon carbide from bamboo chips impregnated with silicon acid using carbonization method, E-MRS **2015** Fall Meeting September 15-18, **2015** Warsaw, Poland
3. Synthesis of nanostructured silicon carbide from pine wood and hydrate cellulose, 4th International Conference of Engineering Against Failure ICEAF IV, 24-26 June **2015**, Skiathos, Greece
4. Knitted soldered copper meshes and nano-structured carbon particles for lightning protection of composite materials for wind turbine blades, E-MRS 2012 Fall Meeting September 17-21, **2012** Warsaw, Poland
5. Synthesis of nanographite and its application for polyethylene matrix composites. Materials and Coatings for Extreme Performances, Big Yalta Zhukovka, Crimea, Ukraine, September 24-28, **2012**
6. Carbon particles – onions for modifying polymer matrix composites, 29th Int. Conf. “Composite Materials in the Industry”, Yalta, Crimea, Ukraine, June 1-5, **2009**
7. Synthesis of carbon particles with the structure of onions and their application for modifying polymeric composites, The 6th Moscow Int. Conf. “Theory and Practice of Technologies of Manufacturing Composite Materials and New Metal alloys Products”, Lomonosov Moscow State University, Moscow, Russia, April 21-24, **2009**
8. Fullerene-like carbon formation during hydrate cellulose fibers carbonization, II Int. Conf. on Modern Achievements of Science and Education, Netanya, Israel, 25 Sep – 2 Oct **2008**
9. Aluminium Matrix Composites Reinforced with SiC synthesized from wood, 28th Int. Conf. “Composite Materials in the Industry”, Yalta, Crimea, Ukraine, 26-30 May, **2008**
10. SiC Ceramics from Wood for Metal Matrix Composites, High Mat Tech 2007, Kiev, Ukraine, 15-19 October, **2007**
11. Silicon Oxycarbide Synthesis during Hydrate Cellulose Pyrolysis, IV Int. Conf. “Materials and Coatings for Extreme Performance: Investigations, Applications, Ecologically Safe Technologies for Their Production and Utilization”, Big Yalta, Crimea, Ukraine, 18-22 September, **2006**
12. Carbon-containing materials obtained from cellulose fibrous waste, Carbon: Fundamental Problems of Science, Materials Science, Technology. Int. Conf. Moscow, Russia, 16-19 October **2005**
13. Fine defective silicon carbide powders, IV National Conference “Physics and Technology of Materials “FITEM-2005” Cačak, Serbia & Montenegro, 1-4 August **2005**
14. Formation of SiC Ribbons, ACerS Annual Meeting Ceramographic Exhibit Baltimore, Maryland, USA, April **2005**
15. Carbide derived carbon coatings on SiC nano-whiskers, 29th Int. Cocoa Beach Conf. and Exposition on Advanced Ceramic and Composites, Cocoa Beach, FL, 22-26 January **2005**
16. SiC fibers synthesis accompanied with nanocrystalline carbon formation, Fourth Int. Conf. on Inorganic Materials, University of Antwerp, Belgium, 19-21 September 2004

Curriculum Vitae * Kateryna Vyshniakova

17. Synthesis of nanopowders of ZrO₂-Y₂O₃-Sm₂O₃ system, European Conference Junior Euromat 2004, Lausanne, Switzerland, 6-9 September 2004
18. Conservation of shape during transformation of β -SiC to carbon, 2004 Annual Meeting of the American Ceramic Society, Indianapolis, IN, 17-21 April 2004
19. Structure and properties of silicon carbide fibers depending on their synthesis condition, NATO-ASI on Nanoengineered Nanofibrous Materials, Antalya, Turkey, 1-12 September 2003
20. Physical chemical processes of hydrate cellulose carbonization fibers in the presence of silica, Carbon: Fundamental Problems of Science, Materials Science, Technology. Int. Conf. Moscow, Russia, 17-21 October 2002
21. Synthesis of nanostructured SiC fibers from hydrate cellulose, Nanostructured Materials and Coatings for Biomedical and Sensor Applications, NATO Advanced Research Workshop, Kiev, Ukraine, 4-8 August 2002
22. Studying of physicochemical process of obtaining of whiskerized silicon carbide fibers, European Conference Junior Euromat 2000, Lausanne, Switzerland, 28 August – 1 September 2000

Fellowships and Awards:

- 2008** **Universidad Carlos III de Madrid**, Spain, Fellowship for short stay
“Convocatoria de ayudas para estancias breves de investigadores extranjeros
- 2006-2008** **President of Ukraine Fellowship** for young scientists
- 2005** 1st Place, **ACerS Annual Meeting Ceramographic Exhibit**, Scanning
Electron Microscopy Category, “Formation of SiC Ribbons”, Baltimore,
Maryland, April 2005
- 2004** 1st Place, **ACerS Annual Meeting Ceramographic Exhibit**, “Conservation
of shape during transformation of β -SiC to carbon”, Indianapolis, IN, April
2004
- 2000-2001** **President of Ukraine Fellowship** for young scientists
- 1995-1996** Taras Shevchenko University grant for student researchers

Languages

- English** fluent
- Spanish** fluent
- Italian** fluent
- Russian** native ability
- Ukrainian** native ability
- Slovenian** intermediate
- Japanese** intermediate

**REFERENCES AND PROOF OF DEGREE AVAILABLE UPON
REQUEST**