



CURRICULUM VITAE

CONTACT INFORMATION

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PERSONAL INFORMATION

Date of Birth	July, 31, 1960
Place of Birth	Brest Region, Belarus
Citizenship	Russian Federation
Sex	male

EDUCATION

1967-1974	Primary and Secondary Scholl in Brest Region, Belarus
1974-1977	A.N.Kolmogorov Physico-mathematical Scholl # 18 affiliated with Lomonosov Moscow State University
1977-1982	Lomonosov Moscow State University, Faculty for Mechanics and Mathematics, Major – Mechanics
1982-1985	(Post)graduate course of Lomonosov Moscow State University, Faculty for Mechanics and Mathematics, Major – Mechanics of Solid Deformable Body

SCIENTIFIC DEGREES

Candidate of Physico-Mathematical Sciences in Mechanics of Solid Deformable Body (1985, Lomonosov Moscow State University)

Doctor of Physico-Mathematical Sciences in Colloid Chemistry (1999, A.N.Frumkin Institute of Physical Chemistry and Electrochemistry of RAS)

SCIENTIFIC TITLE

Professor, Department of Higher and Applied Mathematics

CURRENT POSITION

Professor of Higher Mathematics Department at Gubkin Russian State University of Oil and Gas

EMPLOYMENT HISTORY

1985-1987	Junior Researcher, Institute of Mechanics of Lomonosov Moscow State University
1987-2000	Assistant Professor, Associate Professor and Full Professor of Moscow State University of Food Production
2000-2010	Head of Higher and Applied Mathematical Department of Moscow State University of Food Production (MSUFP)
2008-2010	Founder and Scientific Head of Etalons Nanolaboratory of Moscow State University of Food Production
2010-present	Professor of Higher Mathematics Department of Gubkin Russian State University of Oil and Gas

RESEARCH INTERESTS

Physico-chemical Mechanics

Surface and Colloid Chemistry, Membrane Electrochemistry

Membrane Processes (reverse osmosis, nano-, ultra-, microfiltration, electro dialysis)

Hydrodynamics of fluids under low Reynolds numbers

Nanotechnologies and Nanomaterials

KEY WORDS

Mathematical modeling of reverse osmosis, nano-, ultra-, microfiltration and electro dialysis

Interaction between colloidal particles and charged membrane surface

Asymmetry of transport characteristics of bi-layer membranes, nanocomposites membranes

Ion-exchange membranes, modeling of complex porous media using the cell model

Hollow vortex propagation in liquids, magnetic field action on non-Newtonian fluids

Food nanotechnology

AWARDS

1995-1997	Grant of RFBR (Russian Foundation For Basic Research), № 95-01-00300a “Flow of electrolyte solutions through dense suspension of porous conducting particles”, Principal Investigator
1997-1999	Grant of RFBR № 97-01-00127a “The study of the process of cavitation vortex formation and motion”, Principal Investigator
1999-2001	Grant of INCO-COPERNICUS, Contract ERB 3512 CT980911 “Emulsions in Food Industry and as Contaminant of the Environment: Hydrodynamics of Filtration and Turbulence Enhanced Coalescence”, Principal Investigator, since September 1999 – Coordinator from the Russian side
2001-2003	Grant of RFBR № 01-01-00276a “Physico-chemical and hydrodynamical

	interactions of colloidal particles inside long channels”, Head of the Project
2000	Soros Associate Professor
2001	Soros Professor
2002	Grant of Moscow Municipality, Science and Technology in Education, “Professor-2002”
2003	Grant of Moscow Municipality, Science and Technology in Education, “Professor-2003”
2004	Grant of Moscow Municipality, Science and Technology in Education, “Professor-2004”
2006-2008	International Grant of RFBR and Austrian Academic Exchange Service (ÖAD) № 06-03-90575a “Nanofiltration of nonelectrolytes solutions under consideration of the kinetics of membrane pores blocking”, Coordinator of the Project from the Russian side
2008-2009	International Grant of RFBR and Byelorussian Republican Foundation for Basic Research № 08-03-90031a “Investigations of transport properties asymmetry of modified membranes for monitoring of nano- and ultrafiltration processes”, Principal investigator
2008-2009	International Grant of RFBR and DST (India) № 08-08-91306a “Cell models of nanofiltration through complex porous membranes”, Coordinator of the Project from the Russian side
2008-2010	Grant of RFBR № 08-08-00388-a “Filtration instability of flows in porous medium”, Principal Investigator
2008-2010	Grant of RFBR № 08-08-00609a “Experimental and theoretical investigations of anisotropic nanocomposite’s materials on the base of MF-4SC and polyaniline for membrane sensors”, Principal Investigator
2008-2010	Grant of RFBR № 08-08-00832a “Theory of Nanofiltration of Multicomponent Solutions through Hydrophobic Membranes”, Head of the Project.
2008-2011	Grant of Russian Federal Agency for Science and Innovation (Contract № 01.648.12.3023) “Development of scientific-methodological conception of controlling for content and safety of nanoparticles and nanomaterials in agriculture production, production for agriculture, foods and packing materials”, Principal Investigator, Funder and Scientific Supervisor (Head) of Etalon Nanolaboratory of Moscow State University of Food Production
2010-2011	International Grant of RFBR and DST (India) № 10-08-92652 a “Investigation of effect of physicochemical parameters and magnetic field on nanofiltration of non-Newtonian fluids through complex porous membranes”, Coordinator of the Project from the Russian side
2010-2011	International Grant of RFBR and Byelorussian Republican Foundation for Basic Research № 10-03-90007-Bel “Theoretical and experimental investigation of transport phenomena of mono- and bi-charged ions through nanostructured poly layered membranes to regulate the liquid media composition”, Principal investigator
2011-2013	Grant of RFBR № 11-08-01043a “Modeling of the aqueous-organic mixtures transport through nanoporous membranes”, Head of the Project.
2011-2012	Grant of RFBR № 11-08-96518a “Creating of mathematical model of anisotropic nanocomposite membrane and its experimental confirmation for estimation of current-voltage curve parameters and management of electro-mass transfer process”, Principal Investigator.

2011-2013	Grant of RFBR № 12-08-01091a “Experimental and theoretical study of suspension flow in the porous medium”, Principal Investigator.
2012-2013	International Grant of RFBR and Byelorussian Republican Foundation for Basic Research № 12-08-90010-Bel “Development of high permeability hollow fiber composite membranes for gas-liquid membrane contactors”, Principal investigator

PUBLICATION OF PAPERS IN PEER-REVIEWED JOURNALS

During the last seven years

- 1. Filippov A.N., Vasin S.I., Starov V.M.** Mathematical Modeling of the Hydrodynamic Permeability of a Membrane Built up from Porous Particles with a Permeable Shell. *Colloids and Surfaces A: Physicochem. Eng. Aspects*, V.282-283C, 2006, P.272-278.
- 2. Belyakov G.V., Filippov A.N.** Cavitating Vortex Generation by a Submerged Jet. *Journal of Experimental and Theoretical Physics*, №5, V.102, 2006, P. 862-868.
- 3. Ugrozov V.V., Filippov A.N., Sidorenko Yu.I.** Theoretical description of the hygroscopicity of hydrophilic biopolymers and their mixtures. *Colloid J.*, N2, V.69, 2007, P.232-236.
- 4. Ugrozov V.V., Filippov A.N., Sidorenko Yu.I.** About mathematical description of the isotherm of sorption of water vapour in grains of different cereal cultures. *Zhurnal Phisicheskoi Khimii – Journal of Physical Chemistry (Russian Academy of Sciences)*, N3, V.81, 2007, P.383-387.
- 5. Ugrozov V.V., Shebershneva N.N., Filippov A.N., Sidorenko Yu.I.** Sorption and Desorption of Water Vapor by Grains of Native Starch of Some Crops. *Colloid J.*, N3, V.70, 2008, P.366-371.
- 6. A.N.Filippov, V.M.Starov, N.A.Kononenko and N.P.Berezina.** Asymmetry of diffusion permeability of bi-layer membranes. *Advances in Colloid and Interface Science*, V.139, 2008, P.29–44.
- 7. S.I.Vasin, A.N.Filippov, V.M.Starov.** Hydrodynamic permeability of membranes built up by particles covered by porous shells: cell models. *Advances in Colloid and Interface Science*. V.139, 2008, P.83–96.
- 8. Popov K.I., Filippov A.N., Khurshudian S.A.** Contemporary state of the art in the food nanotechnology. Proceedings of Moscow State University of Food Production. Issue 1. Moscow: MSUFP Publishing Complex, 2008, P.5-33 (in Russian).
- 9. Vasin S.I., Filippov A.N.** Mathematical modeling of nanoporous membranes for concentrating and cleaning of liquid foods. Proceedings of Moscow State University of Food Production. Issue 1. Moscow: MSUFP Publishing Complex, 2008, P.34-44 (in Russian).
- 10. Vasin S.I., Filippov A.N.** Cell Models for Flows in Concentrated Media Composed of Rigid Impermeable Cylinders Covered with a Porous Layer. *Colloid J.*, V.71, №2, 2009, P.141-155.
- 11. Vasin S.I., Filippov A.N.** Permeability of Complex Porous Media. *Colloid J.*, V.71, №1, 2009, P.31-45.
- 12. Popov K.I., Filippov A.N.** Food nanotechnologies: state and prospective. *Confectionery and Bakery Production*. 2009, №10 (97), P.4-5, 24-26.
- 13. Popov K.I., Filippov A.N., Khurshudian S.A.** Food nanotechnologies. *Russian Chemical Journal (Journal of the Russian Mendeleev Chemical Society)*. V. LIII, Nanomaterials: State and Prospective, №2, 2009, P.86-97.
- 14. Kasperchik V.P., Yaskevich A.L., Kononenko N.A., Filippov A.N., Vasin S.I., Chernyaeva M.A.** Diffusion and Convective electrolyte Transport Through Modified Ultrafiltration Membranes. *Vesci NANB Ser. Khimichnykh navuk*. 2009. № 4. P. 15-20 (in Russian).

- 15. Popov K.I., Filippov A.N., Krasnoyarova O.V.** Food nanotechnologies: prospective and problems. *Meat Technologies*. №1. (85), 2010. P.6-10 (in Russian).
- 16. Filippov A.N., Iksanov R.Kh., Kononenko N.A., Berezina N.P., and Falina I.V.** Theoretical and Experimental Study of Asymmetry of Diffusion Permeability of Composite Membranes. *Colloid J.*, V.72, №2, 2010, P.243-254.
- 17. Berezina N.P., Kononenko N.A., Filippov A.N., Shkirskaya S.A., Falina I.V., Sycheva A.A.-R.** Electro-transport Properties and Morphology of MF-4SK Membranes Surface Modified by Polyaniline. *Russian Journal of Electrochemistry*. V.46, №5, 2010, P.485-493.
- 18. Popov K.I., Filippov A.N., Khurshudian S.A.** Food nanotechnologies // *Russian Journal of General Chemistry*, Volume 80, Number 3, 2010, P.630-642, DOI: 10.1134/S1070363210030436.
- 19. Pramod Kumar Yadav, Ashish Tiwari, Satya Deo, Anatoly Filippov, Sergey Vasin.** Hydrodynamic permeability of membranes built up by spherical particles covered by porous shells: effect of stress jump condition. *Acta Mechanica*, 2010, Vol. 215, P.193–209, DOI 10.1007/s00707-010-0331-8.
- 20. Satya Deo, Anatoly Filippov, Ashish Tiwari, Sergey Vasin, Victor Starov.** Hydrodynamic permeability of aggregates of porous particles with an impermeable core. *Advances in Colloid and Interface Science*, 2011, Vol. 164, P.21-37.
- 21. Filippov A.N., Kononenko N.A., Vasin S.I., Kasperchik V.P., Yaskevich A.L., Chernyaeva M.A.** Experimental and Theoretical Investigation of Asymmetry Effects of Transport Characteristics of Modified Ultrafiltration Membranes. *Colloid J.*, V.72, №6, 2010, P.846-856.
- 22. Shterman S.V., Kaplin L.A., Tujilkin V.I., Filippov A.N.** Generalized distance between particles during crystallization from solutions. *Sugar*, №6, 2010, P.54-59 (in Russian).
- 23. Popov K.I., Filippov A.N., Krasnoyarova O.V.** Food nanotechnologies: prospective and problems. *Meat technologies*, №1, 2010, P.6-10 (in Russian).
- 24. Grekhov A.M., Yushkin A.A., Tsarkov S.E., Filippov A.N., Volkov A.V.** Modern models of organic solvent nanofiltration processes. *Seri of Critical Technologies. Membranes*, №47, 2010, P.18-36.
- 25. Vasin S.I., Kharitonova T.V., Filippov A.N.** Flow of viscous liquid in modeling porous medium with fractal structure. *Colloid J.*, V.73, №2, 2011, P. 158-166.
- 26. Vasin S.I., Sherysheva E.E., Filippov A.N.** Permeability of a medium consisting of cylindrical fibers with fractal porous adlayer. *Colloid J.*, V.73, №2, 2011, P. 167-175.
- 27. Filippov A.N., Iksanov R.Kh., Volkov A.V.** Interaction of Charged Spherical Particle and Pore of Hydrophobic Charged Membrane in Electrolyte Solution. *Petroleum Chemistry*, 2011, Vol. 51, No. 7, pp. 536–541.
- 28. Vasin S.I., Filippov A.N., Sherysheva E.E.** Cell Model of Bi-porous Medium (Membrane). *Colloid J.*, V.73, №3, 2011, P. 303–308.
- 29. Filippov A.N.** Cell Models of Complex Porous Media. *Vestnik Nizhegorodskogo Universiteta, Fluids Mechanics*, 2011, №4(3), P.1215-1216.
- 30. S.I. Vasin and A.N. Filippov.** Separation of Aqueous Electrolyte Solutions with Asymmetric Membranes Containing One Charged Layer. *Colloid J.*, V.74, No. 1, 2012, P.15–24.
- 31. Ashish Tiwari, Satya Deo and Anatoly Filippov.** Effect of the magnetic field on the hydrodynamic permeability of a membrane. *Colloid J.*, V.74, No. 4, 2012, P.515-522.
- 32. A.N. Filippov and R.Kh. Iksanov.** Studies of the asymmetry of diffusion permeability of nanocomposites ion-exchange membranes: model of charge density of fixed groups linear by membrane thickness. *Russian Journal of Electrochemistry*. V.48, №2, 2012, P. 181-188.
- 33. A.N. Filippov and R.Kh. Iksanov.** Mathematical Modeling of Microfiltration of

Polydisperse Suspension on Heterogeneous Membranes. *Petroleum Chemistry*, V.52, №7, 2012, P.520-526.

34. V.V.Ugrozov and A.N.Filippov. Asymmetric Transmembrane Transfer Caused by a Difference in Adsorption Characteristics at Interfaces. *Colloid J.*, V.74, No. 6, 2012, P.742-745.

35. V.V.Kalinin, A.N.Filippov, D.Yu. Khanukaeva. Investigation of Membrane Morphology by Atomic Force Microscopy Under Mathematical Modeling of Diffusive Processes. *Proceedings of Gubkin Russian State University of Oil and Gas*. N1(266), 2012, P. 129-136.

BOOKS AND CHAPTERS IN BOOKS

Goryachev S.N., Filippov A.N. Theoretical aspects of electromigration of low-molecular components during fur manufacturing. "Furs of the World" Publishing, 1999, 69 P.

Ugrozov V.V., Filippov A.N., Sidorenko Yu.I., Shebershneva N.N. "Process of moisture sorption by hydrophilic biopolymers and biopolymer mixtures", Chapter In book: Theoretical Backgrounds of Food Technologies, Moscow: KolosS Publishing, Book 2, 2009, P. 614-623.

Popov K.I., Gmshinsky I.V., Filippov A.N., Zherdev A.V., Khotimchenko S.A., Tutelian V.A. Book "Food nanotechnologies: prospective and problems". MSUFP Publishing Complex, Moscow, 2010, 164 P.

Volfkovich Yu.M., Filippov A.N. and Bagotsky V.S. Porous Materials and Powders: Structural and Wetting Properties and Their Applications. Springer-Verlag, 2013 (in progress).

PATENTS

RU 2216987 C1, the Way of Caramel Production. Authors: Sidorenko M.Yu., Skobelskaya Z.G., Il'ina V.V., Filippov A.N., Sidorenko Yu.I., Ukrainets A.I. The Date of Priority -03 April 2003 (valid during 20 years). Patent holder – Moscow State University of Food Production. IPC 7A23G 3/00.

RU 2216988 C1, the Way of Solid Caramel Production. Authors: Sidorenko M.Yu., Skobelskaya Z.G., Il'ina V.V., Filippov A.N., Timokhin V.V., Kondakova I.A. The Date of Priority -03 April 2003(valid during 20 years). Patent holder – Moscow State University of Food Production. IPC 7A23G 3/00.

RU 2216989 C1, the Way of Caramel Obtaining. Authors: Sidorenko M.Yu., Skobelskaya Z.G., Lukin N.D., Karpov V.G., Filippov A.N., Sidorenko A.Yu. The Date of Priority -03 April 2003 (valid during 20 years). Patent holder – Moscow State University of Food Production. IPC 7A23G 3/00.

PROFESSIONAL MEMBERSHIPS

1993 and 2004, **Visiting Scientist**, Center for Energy and Environmental Physics, The Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Israel.

1997, **Visiting Scientist**, Biochemical Engineering Group, Department of Chemical Engineering, Swansea University of Wales, Swansea, UK.

2007-2009, **Deputy Pro-rector** on Basic Research and International Cooperation of MSUFP

2007-2010, **Chairman** of the Central International Interbranch Scientific and Technical Council on Nanotechnologies and Nanomaterials in the Food Industry

Deputy director of "Membrane materials" Section of the Scientific Council "Electrochemistry" of the Russian Academy of Sciences

Member of Scientific-Methodology Council of Regional Division of the Center of Metrology in Nanotechnology and Nanoindustry in the Central Federal District of Russia

Member of Dissertation Councils D.212.148.01 and D.212.148.02 (MSUFP), D.002.259.02 (A.N.Frumkin Institute of Physical Chemistry and Electrochemistry of RAS)

Member of Editorial Board of the journal “Membrane and Membrane Technologies”

Invited Co-editor of the Special Issue of “Advances in Colloid and Interface Science” (Volume 139, 2008)

Expert of RFBR

Member of Russian Membrane Society, American Nanosociety and European Colloid and Interface Society

Reviewer: Journal of Membrane Science, Langmuir, Advances in Colloid and Interface Science, Colloid Journal, Separation Science and Technology, Desalination, AAM, Canadian Journal of Physics, Zeitschrift für Angewandte Mathematik und Mechanik, Meccanica, Journal of Porous Media, Membranes and Membrane Technology, Communications in Nonlinear Science and Numerical Simulation, Industrial & Engineering Chemistry Research