

## CURRICULUM VITAE

### **Natalya A. VODOLAZKAYA**

PhD in Physical Chemistry (2002)

Doctor of Science (2012)

Professor in the Department of  
Physical Chemistry

Date and place of birth:

25 December, 1975 Tapa, Estonia



Professional address: Chemical Faculty, Department of  
Physical Chemistry,  
V.N. Karazin Kharkov National  
University,  
Svoboda sq., 4, Kharkov, 61022,  
UKRAINE

Phone: +380 57 707 54 45

E-mail: [vodolazkaya@univer.kharkov.ua](mailto:vodolazkaya@univer.kharkov.ua)

### Academic degrees and titles

- 1998** Master of Science in Chemistry  
Chemical Faculty, Kharkov State University, UKRAINE.  
Diploma with Honor. Supervisor: Prof. N.O. Mchedlov-  
Petrossyan
- 2002** PhD in Physical Chemistry or Scientific Degree of Candidate  
of Chemical Sciences in Speciality – Physical Chemistry. Title  
of Thesis: "Protolytic equilibria in micellar solutions of  
surfactants". Department of Physical Chemistry, V.N. Karazin  
Kharkov National University, UKRAINE. Supervisor: Prof.  
N.O. Mchedlov-Petrossyan.
- 2006** Master of Science in Psychology (second higher education).  
Psychology Faculty, V.N. Karazin Kharkov National  
University, UKRAINE. Diploma with Honor.
- 1998 – 2001** Postgraduate Study, V.N. Karazin Kharkov National University
- 2000 – 2007** Lecturer in Physical and Colloidal Chemistry and Senior Staff  
Scientist, V.N. Karazin Kharkov National University

2005 – 2009	Associate Professor in Physical Chemistry
Since 1 October, 2007	Person Working for the Second Doctor's Degree (Dr. Sc.)
20 October – 18 December 2008	Invited Lecturer at the University of Nancy 1 – Henri Poincare, Nancy, FRANCE
16 November – 17 December 2009	Guest Researcher at the LCPME of the University of Nancy 1 – Henri Poincare, Nancy, FRANCE
20 October 2011	Presentation of the Thesis for the Doctor of Science Degree: Speciality – Physical Chemistry. Title of Thesis: "Acidity and solvation in organized solutions: differentiation impact of nanoparticles in lyophilic dispersions". Department of Physical Chemistry, V.N. Karazin Kharkov National University, UKRAINE. Scientific consultant: Prof. N.O. Mchedlov-Petrossyan.
17 February 2012	It was given Doctor of Science Degree in Speciality – Physical Chemistry
<b>Current</b>	Professor in the Department of Physical Chemistry

#### Some of Publications in English

- 2012 Mchedlov-Petrossyan N.O., **Vodolazkaya N.A.**, Rodik R.V., Bogdanova L.N., Cheipesh T.A., Soboleva O.Yu., Kryshthal A.P., Kutuzova L.V., Kalchenko V.I. The colloidal nature of cationic calyx[6]arene aqueous solutions // *J. Phys. Chem. C.* – 2012. – Vol. 116. – P. 10245–10259. DOI: 10.1021/jp210405s.
- Vodolazkaya N.A.**, Despas C., Lebeau B., Marichal C., Walcarius A. One pot synthesis of ordered mesoporous organosilica particles bearing propyl-, octyl- and hexadecyl- chains // *J. Sol-Gel Science and Technology.* – 2012. – DOI 10.1007/s10971-012-2816-5.
- 2010 **Vodolazkaya N.A.**, Mchedlov-Petrossyan N.O., Bryleva E.Yu., Biletskaya S.V., Schrinner M., Kutuzova L.V., Ballauff M. The binding ability and solvation properties of cationic spherical polyelectrolyte brushes as studied using acid-base and solvatochromic indicators // *Functional Materials.* – 2010. – Vol. 17, No. 4. – P. 470-476.
- Vodolazkaya N.A.**, Mchedlov-Petrossyan N.O., Salamanova N.V., Surov Yu.N., Doroshenko A.O. Molecular spectroscopy studies of solvent properties of dispersed 'water pools': fluorescein and 2,7-dichlorofluorescein in reversed AOT-based microemulsions // *Journal of*

*Molecular Liquids.* – 2010. – Vol. 157. – P. 105-112.

Bogdanova L.N., Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Lebed A.V. The influence of  $\beta$ -cyclodextrin on acid-base and tautomeric equilibrium of fluorescein dyes in aqueous solution // *Carbohydrate Research.* – 2010. – Vol. 345. – P. 1882-1890.

Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Gurina Yu.A., Sun W.-C., Gee K.R. Medium effects on the prototropic equilibria of fluorescein fluoro derivatives in true and organized solution // *J. Phys. Chem.* – 2010. – Vol. 114, No. 13. – P.4551-4564.

Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Salamanova N.V., Roshal A.D., Filatov D.Yu. In search for the « phenolate » monianion of fluorescein in solution // *Chemistry Letters.* – 2010. – Vol. 39, No. 1. – P. 30-31.

2009

**Vodolazkaya N.A.**, Gurina Yu.A., Salamanova N.V., Mchedlov-Petrosyan N.O. Spectroscopic study of acid-base ionization and tautomerism of fluorescein dyes in direct microemulsions at high bulk ionic strength // *Journal of Molecular Liquids.* – 2009. – Vol. 145. – P. 188-196.

Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Vilкова L.N., Soboleva O.Yu., Kutuzova L.V., Rodik R.V., Miroshnichenko S.I., Drapaylo A.B. The Influence of Cationic Tetrapropoxycalix[4]arene Choline on Protolytic Equilibria of Acid-Base Indicators in Aqueous Solutions // *Journal of Molecular Liquids.* – 2009. – Vol. 145. – P. 197-203.

2008

Mchedlov-Petrosyan N.O., Bryleva E.Yu., **Vodolazkaya N.A.**, Dissanayake Amila A., Ford Warren T. Nature of Cationic Poly(propylenimine) Dendrimers in Aqueous Solutions as Studied Using Versatile Indicator Dyes // *Langmuir.* – 2008. – Vol. 24, No.11. – P. 5689-5699.

Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Bezkravnaya O.N., Yakubovskaya A.G., Tolmachev A.V., Grigorovich A.V. Fluorescent dye  $N,N'$ -dioctadecylrhodamine as a new interfacial acid–base indicator // *Spectrochimica Acta. Part A.* – 2008. – Vol. 69. – P. 1125-1129.

2007

Bryleva E.Yu., **Vodolazkaya N.A.**, Mchedlov-Petrosyan N.O., Samokhina L.V., Matveevskaya N.A., Tolmachev A.V. Interfacial properties of cetyltrimethylammonium-coated  $SiO_2$  nanoparticles in aqueous media as studied by using different indicator dyes // *Journal of Colloid and Interface Science.* – 2007. – Vol. 316. – P. 712-722.

Mchedlov-Petrosyan N.O., **Vodolazkaya N.A.**, Yakubovskaya A.G., Grigorovich A.V., Alekseeva V.I., Savvina L.P. A novel probe for determination of electrical surface potential of surfactant micelles:  $N,N'$ -di-*n*-octadecylrhodamine // *Journal of Physical Organic Chemistry.* – 2007. – Vol. 20, No. 5. – P. 332-344.

Bryleva E.Yu., **Vodolazkaya N.A.**, Mchedlov-Petrosyan N.O.,

Samokhina L.V., Matveevskaya N.A. The properties of silica nanoparticles modified with cationic surfactant bilayer, as studied using 2,7-dichlorofluorescein as interfacial probe // *Functional Materials*. – 2006. – Vol. 13, No. 4. – P. 662-668.

Mchedlov-Petrossyan N.O., Vilkoval L.N., **Vodolazkaya N.A.**, Yakubovskaya A.G., Rodik R.V., Boyko V.I., Kalchenko V.I. The Nature of Aqueous Solutions of a Cationic Calix[4]arene: A Comparative Study of Dye – Calixarene and Dye – Surfactant Interactions // *Sensors*. – 2006. – Vol. 6. – P. 962-977. <http://mdpi.org/subscribers/sensors/papers/s6080962.pdf>.

Mchedlov-Petrossyan N.O., Salamanova N.V., **Vodolazkaya N.A.**, Gurina Yu. A., Borodenko V.I. A dibasic acid with reversed order of stepwise dissociation constants: 2,7-dichlorofluorescein in ternary mixed solvent benzene–ethanol–water // *J. Phys. Org. Chem.* – 2006. – Vol. 19. – P.365-375.

Bezdrovnyaya O.N., Mchedlov-Petrossyan N.O., Savvin Yu.N., Tolmachev A.V., **Vodolazkaya N.A.** The influence of lead (II) ions introduced into the subphase on the stability of mixed "polyamic acid + surfactant" monolayers and manufacturing of dye-containing Langmuir-Blodgett polymeric films // *J. Braz. Chem. Soc.* – 2006. – Vol. 17, No. 4. – P.655-666.

### **Research Interests**

Protolytic equilibria in lyophilic nano-sized dispersions (in micellar solutions of surfactants; in direct and reversed microemulsions; in the suspensions of liposomes; in the suspension of silica nanoparticles modified with cationic surfactant; in aqueous solutions of calixarene and of cationic dendrimers; in Langmuir–Blodgett films).

Differentiating influence of the organized media and salt effects.

Protolytic equilibria and solvation of fluorescein dyes and of solvatochromic Reichardt's indicators in ultramicroheterogeneous dispersions.

Synthesis and physico-chemical characterization of ordered mesoporous (organo)silica materials.

### **Managed the basic techniques of experimental physical chemistry**

√ UV-VIS electronic spectroscopy in lyophilic ultramicroheterogeneous systems;

√ spectrofluorimetry;

√ potentiometry;

√ IR spectroscopy;

√ cyclic voltammetry.

### **Language**

Russian, Ukrainian (Native)

English (Good level)

French (Middle level)

*June, 2012*