

Brief Curriculum Vitae

SURNAME Belyakov **FIRST NAME(S)** Vladimir

TITLE Corresponding member of Ukrainian National Academy of Sciences, Professor, Doctor of Science (Physical Chemistry)

Affiliation and official address

Head of department "Membrane & Sorption Processes & Materials, Vernadsky Institute of General and Inorganic Chemistry" (IGIC)

32/34 Palladin av., Kiev-142, 03680 Ukraine

Telephone +380-44-4240462 **Fax** +380-44-4243070 **E-Mail** belyakov@ionc.kiev.ua

Date and place of birth 21/10/1945 Stavropol, Russia **Nationality:** Ukraine

Education (*degrees, dates, universities*)

1968 – Graduated from Department of Chemistry, Leningrad State University.

1974 – Ph.D. Thesis, Institute of Physical Chemistry, Ukrainian Acad. Sci.

1992 – Dr.Sci. Thesis, V.I.Vernadsky Institute of General & Inorganic Chemistry, Ukrainian Acad. Sci..

2007 – Professor

Career/Employment (*employers, positions and dates*)

1968-1970 – junior researcher of Institute of Luminofors, Stavropol, Russia

1970-1974 – PhD student of Institute of Physical Chemistry, Kiev, Ukraine

1974-1979 – junior researcher of Institute of Physical Chemistry, Kiev, Ukraine

1979-1986 – Senior Researcher of V.I.Vernadsky Institute of General & Inorganic Chemistry, Kiev, Ukraine

1986-1987 – Leading researcher of V.I.Vernadsky Institute of General & Inorganic Chemistry, Kiev, Ukraine

1987-1993 – Head of Electrosorption laboratory of V.I.Vernadsky Institute of General & Inorganic Chemistry, Kiev, Ukraine

1993-now – Head of Department of Membrane and Sorption Processes and Materials of V.I.Vernadsky Institute of General & Inorganic Chemistry, Kiev, Ukraine

Fields of Specialisation

(i) **main field:** synthesis of new inorganic ion – exchange selective materials (sorbents and membranes) and investigation of interaction between the surface of solids and water solutions, containing toxic molecules or ions

(ii) **other fields:** development of new hybrid sorption – membrane technologies for the removal of toxic substances from water, the using of electric fields on the increasing affectivity

Current research activities: Development of selective sorption-membrane methods for ^{90}Sr and ^{137}Cs removal from polluted solutions of nuclear objects and As(III, V) ions from ground waters

Honours, Awards, Fellowships, Membership of Professional Societies

Member of the Advisory Board of Ukrainian Membrane Society

Member of Editorial Board of "Ukrainian Chemistry Journal"

Member of Editorial Board of "Chemistry and Technology of Water" journal

Member of "Scientific Council on Inorganic Chemistry NASU"

Member of 2 Specialized Councils on Awarding of Graduate Degrees at the High Attestation Commission of Ukraine

Publications

Author of more than 300 publications in Soviet, Ukrainian, Russian and International Journals, including 60 patents of USSR, Ukraine, South Africa, Europe, USA and China

Overview of Research Topics

Professor Belyakov Vladimir Nikolaevich

Currently, the significant part of my scientific research interests is dedicated towards the development of novel and highly effective technological processes for extraction of specific toxic metal ions from water. It is well known that water plays major role in the existing ecological system. Any external impact on the water composition as a result of natural or technogenic disasters as well as possible direct influence by humans (e.g. terrorism), may spell the death sentence for both the ecological system and humankind.

Examples of such catastrophes are floods in Louisiana (USA) and the nuclear reactor explosion in Chernobyl (Ukraine). It may be assumed that in future, the water quality will be targeted by international terrorist organizations through poisoning by organic or inorganic substances. Salts of mercury, cadmium or arsenic may be used as easy accessible substances for this purpose.

Over many years, significant experience was accumulated by me in the development of highly selective inorganic sorbents for the processes of utilization of chemical and nuclear industry wastes as well as in-depth investigations into the synthesis of inorganic ion exchange membranes. Based on this know-how, the development of novel hybrid sorption-membrane technologies has been initiated with the purpose of focused extraction of hardness salts (Ca^{2+} , Mg^{2+}), radionuclides ^{137}Cs and ^{90}Sr , Cd(II) , Pb(II) , As(III) , As(V) and other ions.

Recently obtained preliminary results have demonstrated high potential for further studies in this area. The advantages of the proposed technologies for focused extraction toxic ions from water are related to their continuous nature and efficient process control by electric current. These technologies are ecologically clean and do not require the application of additional chemical reagents for the regeneration of inorganic sorbents and membrane materials.

Based on the experimental results and techno-economic studies, a new generation of compact and mobile water purification installations can be developed, that will effectively solve water supply problems in future technogenic or natural disaster regions of our planet.