

The Beauty and Fascination of Science

Anatoly L. Buchachenko

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 Springer

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To my granddaughters
Anna Lapsheva and Nika Buchachenko,
and the generation of teenagers
meeting the charm of Life

Foreword

Each book has an author, and his name is on the cover page of the book. The author is also inside the book—inspired, faithful, and conquered by its beauty and fascination. He has the talent to transfer this beauty to the reader to capture his attention and to share with him his own delight. The author is writing delightfully about mathematics, physics, chemistry, and biology; he claims that exactly these sciences are indeed social ones, i.e., they serve mankind and each person, rather than to pretend to do that. I certainly recommend reading this book.

It is a marvelous story about science, mathematics, reigned science, and chemistry, which is not the whole life, but the life is totally chemistry about the charming biology, the mind, consciousness, and quantum strings. It is about everything remarkable in science. AU1

Joint Institute for High Temperatures
Moscow, Russia
March 2019

Vladimir Fortov AU2

L.D. Landau Institute for Theoretical Physics
Moscow, Russia
February 2019

Isaac Khalatnikov

Preface

To Reader

Books as the letters

*...were written differently:
Lacrimal, disease,
Sometimes beautiful,
Mostly useless.*

This book is about science, its inner beauty, charm, which becomes open through knowledge, through understanding. There is no other way. A French mathematician, the inventor of descriptive geometry Gaspard Monge: “only the charm that accompanies science can overcome people’s disgust to the tension of the mind.” And maybe not overcome. Because thinking is great work and elegant pleasure.

The author remembers the warning of Hermann Hess: “the world is teeming with writers who have a lot of great ideas, but there is no gift to find apt and bright words for their expression.” A poet wrote about this in a easy way:

[AU3](#)

*Limitless obscure visions
Burnt their souls so strong,
But could not get to people
Through a twist of the tongue.*

The author shares the idea of a great Russian writer Mark Aldanov that the best of what was written on the tear-off sheets of the notebook was written without worries about publishers, readers, and descendants. This is how the

author wrote these notes. But this does not give any reason to appreciate what he wrote.

These notes are about science and scientific creativity. About physics that is the science of the foundation of the Universe. About chemistry that is the central science in which we are all immersed and which has its own music and its own notes. And if chemistry is not all life, then all life is chemistry. These are notes about the delightful biology that is the science of the main thing, about life and the living world, about the mind, thinking, and genius. About mathematics that is the royal science. These sciences are the most humanitarian and the most humanistic. They serve man, rather than to pretend to serve.

The book is addressed to people with an open and curious mind—distrustful, but receptive. And age has nothing to do with it. But there is an author's focus on young minds, on those who make their choices, and who are looking for their ways in life and in science. Author's call before you go, before you step on anything, make sure it is not a rake. And remind Immanuel Kant: "...have the courage to live your own mind..." Russian poet Rasul Gamzatov puts it even more elegant: "Do not saddle other people's thoughts... Get your own." He was the son of the Caucasus and loved horses.

Moscow, Russia

Anatoly L. Buchachenko

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About the Author and Translators

Author



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was born in Plesetsk now well-known Russian Space Center on September 7, 1935. He is married to Maya Buchachenko, technical editor of Science Publishers; their son Alexei is a Research Fellow in Moscow University, and their daughter is a book art designer. Hobby: modeling of the ancient wooden churches and wooden architecture.

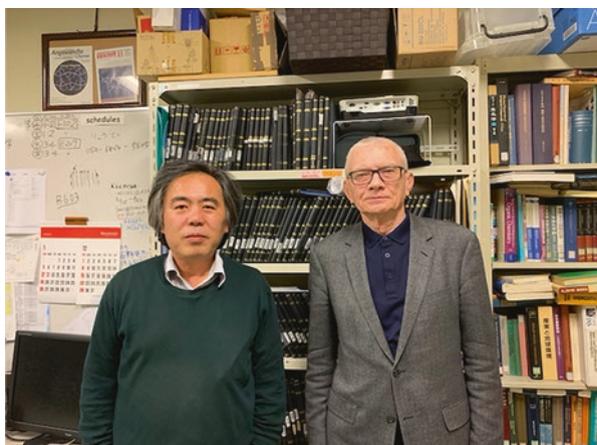
Research Interest

His research interest includes chemistry and physics of stable radicals and high spin molecules, ESR spectroscopy, NMR spectroscopy of paramagnetics, spin chemistry, and organic (molecular) ferromagnets. Buchachenko is one of the founders and leaders in spin chemistry. He discovered magnetic isotope effect, a new remarkable phenomenon of fundamental importance for chemistry, geochemistry, physics, and biology. He observed microwave emission generated by chemical reaction (chemical maser, 1978) and formulated principles of chemical radiophysics. He is also the author of the radio-induced magnetic isotope effect and spin catalysis. He has contributed new ideas in design and synthesis of molecular ferromagnets.

Books by Anatoly Buchachenko

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2. Spin Polarization and Magnetic Effects in Radical Reactions. K. Salikhov, Yu.Molin, R. Sagdeev, A. Buchachenko. Elsevier, Amsterdam, 1984;
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4. Chemical Physics of Aging and Stabilization of Polymers. N.Emanuel, A.Buchachenko. VNU Science Press, Utrecht, Netherlands, 1987;
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6. Complexes of Radicals and Molecular Oxygen with Organic Molecules. Science Publ., Moscow, 1984.
7. Magnetic Isotope Effect in Chemistry and Biochemistry. N.Y., Nova Science Publishers, 2009;
8. Chemistry as Music. Moscow, Nobelistica, 2004

Translators



Katsuy Inoue was born in Saga in 1964. He obtained his DSc (1993) degrees from the University of Tokyo. He became a JSPS researcher in 1992 (DC), 1993–1994 (PD) and got position of a Lecturer in the Kitasato University in 1994. In 1996, he moved to Institute for Molecular Science (IMS) as an Associate Professor. He has been Professor in Hiroshima University since 2004. Since 2014, he has also been working at Chirality Research Center (CResCent) in Hiroshima University as Director. In 2015, he awarded a Distinguished Professor, Hiroshima University. His main topic is development of novel functional magnets.

Vitaly Berdinskiy was born in Novosibirsk (Russia) in 1948. In 1972, he began to work as researcher at the Institute of Chemical Physics (Moscow, Russia). In 1983, he obtained his first scientific degree (PhD) for his work on chemical radiophysics. He worked in the Institute of Problems of Chemical Physics till 2006. Then he was invited to Orenburg University (Russia) as a Professor of Physics and head of the Department of Biophysics and Solid State Physics. In 2019, he was awarded the honorary title of Professor Emeritus of University Education by Russian Ministry of Science. His main topics are magnetic and spin effects in physics, chemistry, and biology.

Author Queries

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Queries	Details Required	Author's Response
AU1	Please check if edit made to the para "It is a marvelous story ..." is fine.	
AU2	Please check and confirm if the affiliations are presented correctly.	
AU3	Please check if edit made to the sentence "A poet wrote about this in a easy way" is fine	