

## Guest editorial

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**Abstract** A short introduction is given to the special issue dedicated to Academician Vladimir Ya. Shevchenko on the occasion of his 75th birthday. The guest editor tells briefly about his first meeting and subsequent long, close, and fruitful collaboration with Prof. Shevchenko. The main scientific interests and achievements of Prof. Shevchenko are outlined.

**Keywords** Vladimir Shevchenko · Nanoworld · ‘Centaur’ phases · Nanoclusters · Icosahedral polymorphs

I met Prof. Vladimir Shevchenko for the first time in November 2007 and could not presume that those 2 days in a pre-winter St. Petersburg would result in tens of new meetings, long discussions, a host of new ideas, thoughts, models, papers... and wishes for coming back to the spit of Vasil’ev island, to the Institute of Silicate Chemistry, over and over again. Now, reading the papers of this dedicated issue I even better understand why our further very productive collaboration was predetermined from the very beginning. The main reason was in a very broad mind and erudition of Vladimir that always allowed him to dip immediately into new fields of science and catch the essence of the problem. That is why it was very easy to select papers for this special issue; most of the topics of

structural chemistry belong to the scope of Vladimir’s research interests in one or other way. The only pity is that not all his pupils and friends could participate in this celebration because their research areas lie beyond the scope of Structural Chemistry, but not outside Vladimir’s views.

Although the Prof. Shevchenko’s carrier is full of achievements in experimental science, especially in the field of materials design, he has always paid a great attention to fundamentals of the structure of matter. He works on the boundary of sciences (physics, chemistry, mathematics) and on the boundary of organization of the substance structure. He introduced the term ‘nanoworld,’ described the so-called centaur phases (the phases that have no distinct interface), theoretically predicted icosahedral polymorphs of carbon and performed a lot of other high-grade investigations. Any of his works is characterized by deep insight into the problem, original approach to its solution, and brilliant mastery of theory and experimental technique.

My collaboration with Vladimir just confirms all the mentioned above. Right in our first meeting, he formulated the problem of universal description of extremely complicated intermetallic compounds that as he believed could be solved with the topological methods, which I had been developing for a long time. Frankly speaking I had been completely unaware of the problem and was quite suspicious of even possibility of its solution. However, Vladimir was very convincing and insistent as usual. And his merits provided almost immediate success: in several months, our method of nanoclustering analysis was developed and already in 2009 Structural Chemistry published our common paper on the most complicated inorganic compounds—the NaCd<sub>2</sub>-type intermetallics. Now, the nanoclustering method has elucidated many intermetallics and is used in one paper of this issue. This is just one

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Dedicated to Academician Vladimir Ya. Shevchenko on the occasion of his 75th birthday.

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example of how the power of human's foreseeing and strength of human's character can influence science and the people in it.

Academician Vladimir Shevchenko has achieved a lot in his life. He manages one of Russian research centers in the heart of St. Petersburg, he readily participates in the activity of Russian Academy of Sciences and in the life of

the Russian northern capital, he supervises young scientists and is always in contact with many famous scientists around the world. But first of all, he is a researcher, who likes to ask the Nature unexpected questions and forces it to answer. And it is a great pleasure to follow him in this way.