

Obituary

In Memoriam: Victor A. Drits (1932–2025)



Figure 1. Victor Anatolyevich Drits (circa 1985)

Victor Anatolyevich Drits was born on 25 November 1932, in the village of Chernovskoye Kopi, Chita Region, located a few hundred kilometers east of Lake Baikal. One of his ancestors, a Jewish anarchist from present-day Belarus, was exiled to Siberia in the 19th century. In 1937, during the Great Terror, Victor's father was arrested and sentenced to 10 years in Kolyma. His mother was then fired from her job and the family was evicted from their apartment. To support themselves, his mother bought a goat, but the upcoming war with Nazi Germany forced them to sell it. To this end, Victor was sent to the market, where he was spotted by a gypsy fortune-teller. When she saw him, she shouted to the whole market, 'Look! Here comes the lucky one! Look at him – he's really lucky!'. This sounded unreal to Victor, given the circumstances. Ten years later, however, his father was released and rehabilitated. He was informed that he had served these 10 years by 'mistake', as his

sentence had been canceled; but this decision never made it to Kolyma.

He returned to his previous job and the whole family moved to a new apartment in Irkutsk. Victor was then able to graduate from high school and enrolled at Irkutsk State University in 1951. From then on, Victor believed the gypsy woman was right and that he was indeed lucky. In 1955, he graduated with honors from Irkutsk State University defending a Master's thesis that presented theoretical formulas for the quantitative XRD analysis of mineral mixtures. He then worked as an assistant in the Physics Department until 1961. He was teaching 1200 hours a year while preparing his PhD thesis on the crystallography of clays, including interstratified clays. In 1957, Victor presented the results of his groundbreaking research at a conference in Lviv. In 1962, he defended his thesis for the degree of Candidate of Physical and Mathematical Sciences (PhD) at the Institute of Crystallography of the USSR Academy of Sciences in Moscow. He considered the Lviv conference to have been the most pivotal moment of his career.

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Figure 2. Left to right, standing: Bruno Lanson, Alain Baronnet, Sylvain Grangeon, Alain Plançon, Sasha Drits, Victor (with his granddaughter Zhenya on his shoulders), Irina Drits, Holger Lindgreen and his wife Ellen, Jan Środoń, Doug K. McCarty, Boris Sakharov.

Left to right, sitting: Doug McCarty's wife Bridget, Sasha Drits's wife Elena, Olga, a friend of Victor's older granddaughter Masha.

Photo taken at Victor and Irina's dacha in Tarusa, just before the 'Clays and Clay Minerals' conference of the Russian Clay group in Pushchino (2006). On that same occasion, Victor, Jan, and Alain P. went swimming in the nearby Oka River.

Soon after he defended his PhD, six Soviet universities offered him jobs, giving him a chance to leave Siberia. On his way to Lviv, where Yevhen Lazarenko had offered him a position, Victor Anatolyevich had to make a stop in Moscow. On the day he arrived, the USSR Academy of Sciences announced 21 new job openings for scientists from outside Moscow. Anna Grigor'evna Kossovskaya proposed him for the position which had become available at the Geological Institute. The position came with a small, private, two-room apartment allocated by the Russian Academy of Sciences, where he was able to settle with his wife, Irina, and his son, Alexander (Sasha). For a provincial man, this, again, was miraculous as Moscow was a closed city at that time. He served as a senior researcher from 1962 to 1970 and defended his doctoral dissertation, the equivalent of the European habilitation, in 1975. Victor was awarded the title of Professor in 1986, and served as head of the Laboratory of Physical Methods for the Study of Rock-Forming Minerals from 1970 to 2005, deputy director of the Geological Institute from 1988 to 1992, and chief research fellow since 2005.

Victor Drits is rightly considered a pioneer in the field of crystal chemistry of defective layered structures. During his 35-year tenure as head of the Laboratory of Physical Methods for the Study of Rock-Forming Minerals, he developed, together with his colleagues (Boris A. Sakharov, Simeon I. Tsipursky, Alexander (Sasha) S. Bookin, Bella B. Zviagina, Alfred L. Salyn, and Lidia G. Dainyak) the modeling of diffraction patterns from these mineral structures,

the interpretation of Mössbauer and infrared spectra of layered silicates, and new uses of electron diffraction and thermal analysis. His groundbreaking work has gained wide international recognition and is used by leading domestic and foreign laboratories. Victor Drits authored or co-authored more than 520 scientific articles, including eight monographs.

In 1992, Victor was awarded an honorary doctorate from the University of Orléans (France) for his exceptional contributions to the field of mineralogy. He was also nominated as one of the 20 honorary members of the Mineralogical Society of Great Britain and Ireland in 1995. He received The Clay Minerals Society Marilyn and Sturges W. Bailey Distinguished Member Award 1996 for the 'publication of outstanding original scientific research and for the impact of this research on the clay sciences'. At the 1997 International Clay Conference in Ottawa, Drits received the gold medal of the Association Internationale Pour l'Étude des Argiles (AIPEA) 'in recognition of his contribution to clay science'. He also presented the Pioneer in Clay Science Lecture at the 2002 Clay Minerals Society meeting in Boulder, Colorado, and was nominated honorary member of the Polish Mineralogical Society in 2020.

In the USSR, V.A. Drits collaborated intensively and successfully with leading domestic scientific institutions, such as the Geological Institute – Russian Academy of Sciences (GIN-RAN: A.G. Kossovskaya, V.D. Shutov, V.I. Muraviev, M.Ya. Katz, G.Yu. Butusova, N.A. Lisitsina, T.A. Ivanovskaya, M.V. Slonimskaya), the

Institute of Ore Deposits, Petrography, Mineralogy and Geochemistry – Russian Academy of Sciences (IGEM-RAN: B.B. Zvyagin, F.V. Chukhrov, A.I. Gorshkov, N.I. Organova, A.V. Sivtsov), Saint Petersburg State University (SPGU: Victor A. Frank-Kamenetsky who was the head of the crystallography laboratory and a very close friend of Victor's, I.V. Rozhdestvenskaya, O.V. Frank-Kamenetskaya), Kazan Federal University (G.A. Krinari, V.P. Morozov), and the Institute of Geology and Geophysics – Siberian Branch of the Russian Academy of Sciences (INGG-SO RAN: M. Yu. Kameneva).

Drits also established a wide range of international collaborations. His first contacts outside the USSR were with the German crystallographer Katharina Dornberger-Schiff in East Berlin in 1963, and with the Slovak crystallographers Slavomil Ďurovič, Vlado Kupčík and Emil Makovický in Bratislava in subsequent years. Years later, Slavomil Ďurovič described Drits as 'a man of justice'. Although he had been a member of the Communist Party of the USSR since his student years, Drits was the only one of the many Russian scientists Ďurovič contacted who answered his letter condemning the invasion of Czechoslovakia and the end of the Prague Spring.

Victor met Jacques Méring, a Lithuanian-born, naturalized Frenchman, at the 1966 International Congress of Crystallography in Moscow. On his way back from an electron microscopy conference in Grenoble in 1970, Drits and Méring met again and spent the night discussing not just crystal structure but also Russia, literature and many more subjects; they were travelling in a car while Rachel Glaeser was sleeping on the back seat! Despite the death of Jacques Méring in 1973, this marked the beginning of a long-term collaboration with the Crystallography Laboratory in Orléans (at the time, the Research Center on Solids with Imperfect Crystalline Organization). Following Méring's passing, José J. Fripiat and Cyril Tchoubar succeeded him as the institute's directors. They continued the collaboration that Méring had initiated involving young graduate students preparing their theses: Gérard Besson (1972), Boris A. Sakharov (1974), and Alain Plançon (1976). This collaboration led to numerous exchanges and collaborations between the two laboratories and fostered long-term friendships between the aforementioned three scientists and Sasha Bookin, Simeon Tsipursky, Alfred Salyn, and others. Obviously, this friendly atmosphere did not exclude more 'competitive' aspects that promoted the advancement of structural characterization of defective lamellar structures simultaneously in both laboratories. The *Honoris Causa* doctoral degree of the Orléans University also acknowledged the added value of this fruitful collaboration.

Starting in the mid-1980s, V.A. Drits established several other collaborations worldwide. In 1978, he met Jan Środoń at the first Polish Clay Conference in Bolesławiec. In 1985, Jan Środoń persuaded the organizers of the International Clay Conference in Denver, Colorado to invite Victor. Their support in terms of his costs gave him the chance to stay with Dennis (Denny) D. Eberl and his wife Jo in their Evergreen home. He also went on a field trip around Colorado with Denny and Jan, and the three developed a long-term friendship and fruitful collaboration. This collaboration led to a series of articles on the quantitative determination of clay crystal sizes to constrain their growth mechanisms. Later, Victor and Jan worked closely together in Houston, Texas, tackling issues related to the quantitative phase analysis of clay-containing mineral mixtures. Douglas (Doug) K. McCarty, a former student of R.C. Reynolds at Dartmouth, supported this project while working for Texaco/Chevron. The project, and the Clay community's sustained interest in this topic, resulted in the creation of the Reynolds Cup under the auspices of The Clay Minerals Society. During this time in Houston, the *Sybilla* code was written by

B.A. Sakharov and K. Mystkowski, based on the algorithms developed initially by B.A. Sakharov and V.A. Drits in the mid-1970s. This program is still used widely by the Clay community. This modeling approach was popularized at about the same time through the collaborative work with Holger Lindgreen's group at the Geological Survey of Denmark and Greenland which characterized the structure of interstratified minerals in clayey formations of economic interest in the Danish North Sea.

The same modeling approach was used to revisit the diagenetic smectite illitization of historical Gulf Coast sediment samples. This study is one of many resulting from the collaboration between Victor and Boris Sakharov with Alain Manceau and Bruno Lanson in Grenoble, which began in the early 1990s. It also provided Victor with an opportunity to return to the structural characterization of cryptocrystalline iron and manganese oxides which he had investigated a few decades earlier with Anatoli I. Gorshkov and Fedor V. Chukhrov. This collaboration also fostered a new generation of French scientists including Francis Claret, Anne-Claire Gaillot, and Eric Ferrage with whom the collaboration was pursued. It also provided an opportunity to organize a symposium in honor of Victor in Paris to celebrate his 65th birthday. This symposium was a rare opportunity to gather many of his Russian (B.B. Zvyagin, A.I. Gorshkov, B.A. Sakharov, A.S. Bookin) and international colleagues (H. Lindgreen, D.D. Eberl, J. Środoń) in one place.

Later, Drits expanded his collaborative network to include Toshihiro Kogure from Tokyo University aiming to investigate the crystal chemistry of defective micas in detail. By combining their respective and remarkable skills, they were able to identify and quantify the stacking defects affecting these three-dimensionally ordered minerals. Finally, his collaboration with Doug McCarty and Arkadiusz (Arek) Derkowski's group both in Houston and in Krakow, where Victor spent a year, enabled him to revisit his work on phyllosilicate dehydroxylation, which he had initiated a few decades earlier with Fabrice Muller in Orléans.

Victor spent a lot of time traveling around the world with his wife, Irina. A number of us probably remember sitting quietly in their apartment with them before they would leave for another stay abroad or on their way back to Moscow.

The above collaborations highlight the wide range of Drits' scientific interests, which also include partially incommensurate structures, layered double hydroxides, biopyriboles, and many more mineral structures. More generally, he was interested in combining in-depth interpretations of diffractometric, spectroscopic and microscopic data to determine the crystal structure of finely divided/defective structures, including the defects that control reactivity. From this perspective, Victor made significant contributions to the theoretical and methodological developments required for the reliable interpretation of experimental data obtained using different modern methods of solid-state physics and chemistry. Victor's ability to solve complex problems may have been enhanced by a local healer he consulted following a bicycle accident he suffered as a child. After hitting his head on rocks in a ditch while trying to escape a large truck, he began experiencing dizziness and headaches. His mother took him to the local healer, who was known to treat all kinds of ailments. The healer examined Victor and said, 'Yes, I see the guy's brain has shifted. Well, we'll fix it now!'. The healer then began squeezing Victor's skull from different sides, trying to return his brain to its proper place. After 15–20 minutes, the healer looked at Victor and said, 'Well, it seems everything's fine now; the boy will now think clearly'. Victor reflected later, 'Now I think his treatments may really have

made me capable of solving many problems faster and better than other people’.

Drits’ ability to tackle wide-ranging and diverse scientific issues is akin to a conductor’s work with various groups of musicians, who perceive and fruitfully implement his ideas. Wherever and with whomever Victor worked, a group of like-minded people would form around him, attracted not only by his scientific prowess and enthusiasm for solving scientific problems, but also by his unique human qualities: genuine kindness and sincere friendliness, charm and openness, love of life, and, of course, a wonderful sense of humor. Victor was also a tireless scientist always willing to tackle problems even while recovering from heart attacks in Boulder, Houston, and Grenoble hospitals. His regular sporting activities undoubtedly helped him to cope with these serious ailments. He began swimming on a daily basis in the Angara River as a young adult. The Angara river flows out of Lake Baikal, where the average annual water temperature is 7–8°C. This ‘extreme’ practice once drove him to hospital with health problems, but he always maintained the goal of building a resilient body. As an adult, he would join colleagues and friends for 10–15 km runs in the morning, and would later continue to regularly go cross-country skiing and swimming in rivers and lakes.

Anyone involved with clay minerals in some way grew up reading his articles and books, and attending his lectures. He was

not only a great scientist, but also an amazing lecturer who could explain the most complex aspects of the mineral structure in simple terms. This ability allowed him to eagerly teach and share his extensive knowledge. Victor’s worldwide network of collaborators allowed him to pursue his inextinguishable passion for science even after the collapse of the USSR, which drove many of his collaborators out of the Geological Institute to ensure their financial survival. Funding to maintain the analytical equipment was also drained out of research laboratories at that time. Despite these harsh conditions, his enthusiasm for scientific research never waned. His indomitable spirit and unwavering dedication to scientific research, despite such dramatic conditions, clearly demonstrate that he was a truly exceptional scientist.

The clay community lost one of its leading figures on 10 September 2025, about two years after his wife Irina. He is survived by his son Alexander (Sasha), a marine scientist, and two granddaughters Maria (Masha) and Evgenia (Zhenya).

Bruno Lanson 

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