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### *Geschichte der Mineralogie an der Sankt Petersburger Universität*

In der 2. Hälfte des 18. Jahrhunderts machte Rußland vor allem durch den Gelehrten M.V. LOMONOSOV (1711-1765) grosse Fortschritte in der Mineralogie. Er stellte als erster fest, dass die Minerale immer eine bestimmte, für sie charakteristische chemische Zusammensetzung und physikalische Beschaffenheit haben. Europäische Forscher kamen erst 40 Jahre später zu dieser Erkenntnis. Weiters erkannte M.V. LOMONOSOV, dass sich Erzlagerstätten erst über lange Zeiten hinweg bilden, und er fand den Plan der Mineralassoziationen und ihrer Veränderungen in Erzgängen heraus.

M.V. LOMONOSOV war seiner Zeit weit voraus, es folgte ihm der Mineraloge und Chemiker V.M. SEVERGIN (1765-1826), welcher als Begründer der beschreibenden Mineralogie gilt.

Durch ein Dekret von KATHARINA II DER GROSSEN im Jahr 1782 wurde das Schul- und Bildungswesen reformiert. Der Universitätsabsolvent V.F. ZUEV (1754-1794) wurde zum Professor der Naturwissenschaften ernannt; seine Seminare mit dem Titel "*Spuren der Naturwissenschaft*" waren für diese Zeit einzigartig und vorbildlich.

Zahlreiche weitere Namen wie A.M. TERYAEV (1767-1827), D.I. SOKOLOV (1788-1852), E.K. HOFFMAN (1801-1871), P.A. PUZYREVSKY (1830-1871), M.V. EROFEEV (1839-1889), V.V. DOKUCHAYEV (1846-1903), V.I. VERNADSKY (1863-1945), P.A. ZEMYATCHENSKY (1856-1942), S.M. KURBATOV (1882-1962), E.F. CHIRVA, A.F. MIKHAILOVA, A.A. KUKHARENKO, A.G. BULAKH, V.G. KRIVOVICHEV prägten die geschichtliche Entwicklung der Mineralogie an der St. Petersburger Universität bis zur heutigen Zeit.

### *History of Mineralogy in Saint-Petersburg University*

In the second half of the XVIII century, Russia made important contributions to the development of mineralogy, largely through the efforts of Academician M.V. LOMONOSOV (1711-1765). He was the first to propose that all minerals have definitive chemical compositions and to recommend that the chemical composition of a mineral be used along with its physical properties for classification purposes. European scientists arrived at a similar conclusion only 40 years later. LOMONOSOV also recognized that ore deposits formed over periods of time, not momentarily, and developed the concepts of mineral associations, successive crystallization of minerals in veins, and mineral alteration.

LOMONOSOV's progressive ideas were far ahead of his time, but his legacy was carried on by the mineralogist and chemist V.M. SEVERGIN (1765-1826), who is considered the founder of the Russian descriptive mineralogy. SEVERGIN focused on introducing mineralogical knowledge into the mining practice. SEVERGIN's work had a tremendous influence on the progress of mineralogy and mineral exploration in Russia. A series of comprehensive reference books, mineralogical glossaries and suchlike came from under his pen. SEVERGIN was among the first to come up with the concept of mineralogical handbooks. Importantly, his work of this kind, entitled "*A New System of Minerals Based on their External Appearance*" (1816), contained information on the chemical composition of minerals.

In the late 1700s, Russia came to the point where its educational system had to be reorganized. The Teacher's Seminary was founded by a decree from CATHERINE II THE GREAT in 1782. The alumnus of the University V.F. ZUEV (1754-1794) was invited to take the position of a Professor of Natural History at the Seminary. His tutorial, entitled "*Traces of Natural History*", was considered one of the best of its time. In 1803, the Seminary was converted to the Grammar School and one year later to the Pedagogical Institute.

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After ZUEV, the course of Natural History was taught by Prof. A.M. TERYAEV (1767-1827). In 1806, he initiated division of the Natural History course and Cabinet into three independent courses, namely Mineralogy, Botany and Zoology. The Mineralogical Cabinet of the Pedagogical Institute was that basis, on which the Department of Mineralogy was established and flourished. That was also the place where the traditions, collections and teaching methods of the newly formed Department were conceived.

L. PANSNER became the first Ordinary Professor of Mineralogy and was also one of the founding members and the first Director of the Russian Mineralogical Society.

For 22 years, the Department of Mineralogy and Geognosy was headed by D.I. SOKOLOV (1788-1852). Among other things, he introduced into the academic curriculum a field school in the environs of St. Petersburg. He was also the first Russian University professor to teach crystallography in the 1840s. In his *“Handbook of Mineralogy”*, he described all minerals that were known at that time using a chemical classification, and offered detailed information on the Russian localities of many of these minerals. His *“Course of Geognosy”* was the first geology textbook published in Russian, and was awarded the prestigious Demidov’s prize.

Between 1845 and 1863, E.K. HOFFMAN (1801-1871) was the head of the Department. During that period, the bulk of resources were focused on studying the regional geology of Russia and geological mapping. Expeditions to the Ural Mountains led by HOFFMAN brought back the first maps of the Northern Urals, geological description of that territory, ethnographic material from northern nations, as well as numerous collections of rocks and minerals.

D.I. SOKOLOV (1788-1852), a Mining Institute graduate headed the Chair of Mineralogy and Geognosy for 22 years. He introduced summer geological practice that was conducted in outskirts of Petersburg. The most significant contribution of him were course textbooks on geology and mineralogy which became classical and compulsory in all Russian Universities in the years between 1730-1740.

E.K.HOFFMAN (1801-1871) was a head of the department from 1845 till 1863. All scientific forces were put to study geological structure and creation of geological maps of Russia in this period. HOFFMAN expeditions to Ural brought the first maps of the Northern Urals, geological description of that territory, ethnographic material from the northern nations, numerous collections of the rocks and minerals. Teaching responsibilities did not stop HOFFMAN from studying geology of the Urals, which was his life work. E.K. HOFFMAN wrote two textbooks for high school: *“General Orictognosia”* in 1840 and *“Mineralogical Handbook”* in 1853).

Detailed studies of properties and composition of minerals and conditions of their formation had begun when P.A. PUZYREVSKY (1830-1871) joined the department in 1863. He was the Secretary of the Mineralogical Society and under took expeditions with his students. He trained a group of talented students. Among them there were A.A. INOSTRANTSEV, M.V. EROFEEV and V.V. DOKUCHAEV.

M.V. EROFEEV (1839-1889) further developed at the Department the methods of mineral investigations. He completed an excellent work on the Crystallography of tourmaline. He is regarded as the founder of the scientific study of real crystals. EROFEEV brought from the Urals a of beautiful collection minerals.

V.V. DOKUCHAYEVs (1846-1903) attitude to mineralogy as a science was very close to that of contemporary mineralogists and he founded the basics of dynamic and genetic mineralogy. He began his pedagogical work with a new approach to the study minerals. He put conditions of mineral formation in nature, processes of their nucleation, growth and decay as a keystone in his lectures. Mineralogical studies conducted at the department were reflected in numerous publications. V.V. DOKUCHAYEV organized expeditions to study soils and founded soil science, a new research stream at the Department.

V.I. VERNADSKY (1863-1945) was the founder of genetic mineralogy and geochemistry in Russia. He brilliantly developed ideas of his teacher DOKUCHAYEV into his study of biosphere and noosphere.



P.A. ZEMYATCHENSKY (1856-1942) equipped the Department with the state of the art analytical facilities when he was in charge of it for 28 years. ZEMYATCHENSKY mentored a great number of talented young scientists.

S. M. KURBATOV (1882-1962) led the Department for 35 years. As a talented scientist and teacher, he revived and developed the mineralogical-geochemical orientation of the courses offered at the Department. The chemical constitution of minerals, mineral parageneses, processes of mineral - deposit formation and crystallographic studies became the primary areas of research at the Department. Granite pegmatite's, contact metasomatic deposits and raw materials for ceramics became the main objects of investigation.

During the Second World War, the University was evacuated to Saratov. The Museum collection in besieged Leningrad was under the care of Associate Professor E.F. CHIRVA assisted by A.F. MIKHAILOVA. Following the War, the Department hired a number of talented young staff. Many talented teachers and students perished in the War. In 1945, S.M. KURBATOV with postgraduate students began to study apatite, copper-nickel and iron ores of Kola Peninsula in 1945, following the advice of Academician A.E. FERSMAN. Since that time on, the mysteries of origin of the giant mineral deposits at Kola have continuously attracted attention of the Department's researchers.

Prof. A.A. KUKHARENKO took charge of the Department in 1962. One of KUKHARENKO's greatest achievements was the creation of a comprehensive mineralogy course, where he all contemporary views on the crystachemistry of minerals amalgamated. Also, he introduced many new courses and reorganized the mineralogical collections in 1969. At that time, the mineralogy of granite pegmatite's and alkaline intrusions were at the focus of research at the Department, although other directions of research were also pursued.

From 1987 to 1992, the Department was chaired by Professor A.G. BULAKH, a prominent scientist and brilliant teacher. In addition to granite pegmatites and alkaline rocks, our researchers began studying the newly discovered "*Lilac Rock*" deposit of charoite and metamorphic deposits of apatite in the Aldan area. The University President allocated new space for exhibition of the Museum collections. The collections were amended with new specimens.

Celebrations of VERNADSKY's birthday gave an excellent opportunity to gather many of the Department's alumni of all ages. These celebrations were organized by Bulakh and his colleagues four years in a row. In 1989, the Museum participated, for the first time, in an international mineral show in Krakow. Since 1990, the Museum has exhibited its minerals at mineral shows in Warsaw, Wroclaw and Prague. The Museum annually participates in the Hamburg mineral show. From 1992 to the present, the Department of Mineralogy has been chaired by V.G. KRIVOVICHEV.

KRIVOVICHEV's research involves modeling of mineral-forming processes in alkaline intrusive rock and granites on the basis of detailed information on mineral chemistry and behavior of chemical elements.

Beginning in 1995, every second or third year, the Department of Mineralogy hosted the International Symposium "*Mineralogical Museums*", each which gathered about 250 participants which each gathered about 250 participants from Russia, Spain, Hungary, Italy, Poland Ukraine, France, Germany, Latvia, Bulgaria, Australia, Estonia, USA and Canada.

In 1995 and 2004 the Museum acquired 7 new display cases to house new and old unique collections of minerals and synthetic crystals. The thrust areas of research at the Department of Mineralogy changed with time following the national and global trends. In addition, the academic interests of Department's Chairs have influenced and still influence the choice of research priorities at the Department.

The Department of Mineralogy has inherited the best traditions of the St.-Petersburg from the past Leningrad mineralogical school, as well as skills and creativity in solving scientific problems and conscientious and responsible approach to teaching. Under the tutelage of our professors and instructors, many thousands of students from the faculty of Geology and other Faculties have mastered the essentials of mineralogy. The Department takes pride in its staff and students, both past and present.

