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## NEW ACQUISITIONS TO THE FERSMAN MINERALOGICAL MUSEUM, RUSSIAN ACADEMY OF SCIENCES. 2002–2003

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A total of 1,356 new mineral specimens were cataloged into the Fersman Mineralogical Museum main collections during the period 2002 to 2003. These specimens represent 640 different mineral species from 62 countries. Among these, 285 are new species for the Museum, including 10 species that were discovered by Museum staff members and 40 species that were discovered during this period by others. Of the minerals obtained, 54 are either type specimens or fragments of type specimens or cotypes. By the end of 2003 the number of valid mineral species in the Museum reached 2,910. Of the newly acquired items, approximately 51% were donated by 138 people and by 8 institutions, 18% were purchased, 15% specimens were collected by the Museum staff, 12% were exchanged with collectors and other museums, 3% were acquired as type specimens and 1% obtained in other ways. A review of the new acquisitions is presented by mineral species, geography, acquisition type, and source. The review is accompanied by a list of new species for the Museum along with a list of species that the Museum desires to obtain.

A total of 1356 specimens were cataloged into the Museum's five main collections<sup>1</sup> in the years 2002–2003. The cataloged material was separated as follows: 944 specimens were assigned to the systematic collection, 83 to the deposits collection, 230 to the crystal collection, 78 to the collection of mineral formation and transformation, and 21 specimens were cataloged into the gem collection.

About 65% of cataloged items were actually acquired in 2002–2003. The rest related to previously collected but uncataloged material. The processing of these materials could not be finished previously because of the huge volume of specimens collected. Additionally, some of the material from actively working mines, such as the iron sedimentary deposits near Kertch, Crimea, Ukraine or the Inder boron deposit in Kazakhstan was reserved (conserved) for a while to wait for possible new acquisitions with better or more representative specimens. Now those mines have stopped their operations, allowing the Museum curators to make a final selection of specimens from those deposits to either be cataloged to the main Museum collections or assigned to the exchange fund.

More than a half of acquisitions, about 51%, were donated to the Museum. Another 3% contributed as type specimens of newly discovered minerals also could be considered as donations. About 18% of the acquired items were purchased, 15% were collected by the Museum staff, 12% were obtained as an exchange with other museums and private collectors in Russia and abroad. The residual 1% came from other types of acquisitions.

This review only includes data on those specimens that were logged into the inventory

of the Museum's major collections in years 2002 and 2003. Specimens that had not, at that time, been fully processed and cataloged, as well as specimens assigned to the exchange or research collections, are not included in this review.

### **New Acquisitions as Classified by Mineral Species**

Specimens cataloged in 2002–2003 represent 640 mineral species, 285 of which are new species for the Museum. (See the list of these species given in Appendix 1). This number includes 54 species represented by type specimens, their fragments, or cotypes. 40 of the cataloged species were approved by the Commission on New Minerals and Mineral Names of the International Mineralogical Association, (IMA), since 2002, out of approximately 120 new mineral species approved for this period. 36 of those 40 species are represented by type specimens. Ten of these species were discovered and described by the Museum staff or in collaboration with the Museum staff. As of December 31, 2003 the number of valid mineral species in Fersman Museum collection totaled 2,910.

Of the 640 recently acquired mineral species, the majority, 443, are represented by only a single specimen. Another 98 are represented by 2 specimens; 3 to 5 specimens represent each of 70 species; 12 species are represented by 6 to 10 specimens and 14 species are represented by more than 10 specimens. (See Table # 1 below).

Quartz and calcite are usually on the top of this list. During this period, the number of calcite specimens (34 specimens from 16 locali-

<sup>1</sup> The principles of subdividing Museum fund to different collections and criteria of assigning mineral specimens to those collections are given in previous new acquisition review (New data on minerals v.38, 2003).

Table 1 Mineral species by the number of specimens acquired. (for more than 5 specimens).

1. Calcite	34	14. Fluorapatite	10
2. Quartz	31	15. Xonotlite	9
3. Vivianite	29	16. Opal	8
4. Hematite	24	17. Beryl	8
5. Sulphur	20	18. Holfertite	8
6. Barite	15	19. Rutile	7
7. Grossular	15	20. Anapaite	7
8. Orthoclase	14	21. Galena	7
9. Rhodochrosite	14	22. Dioptase	7
10. Hydroboracite	12	23. Gypsum	6
11. Corundum	11	24. Titanite	6
12. Pyrite	10	25. Tsumoite	6
13. Siderite	10	26. Schorl	6

ties) is a bit more than for quartz and its varieties (31 specimens from 18 localities).

A considerable part of the calcite specimens are «glendonite», a calcite pseudomorph after ikaite, from Olenitsa village, Kola Peninsula. Some were collected by Museum employee A.Nikiforov and some were donated by A.Zakharov, M.Anosov and V.Levitskiy. Additional specimens came from the Bol'shaya Balakhnya river valley, Taimyr Peninsula, and were donated by D. Sulerzhitskiy. This grouping is a logical addition to a very comprehensive collection of «glendonite» from different localities around the world. A few decent druzes of scalenohedral calcite crystals recently mined in Dashkesan, Azerbaijan were purchased along with twinned, (by 120), loose calcite crystals up to 11cm from Argentina. A few other calcite druzes are from Dal'negorsk, Primorskiy Kray, Russia. These were donated by V.Ponomarenko and represent a combination of fully faced, splitted, and dendritic crystals. Calcite crystals of unusual morphology from the Korshunovskoe iron deposit, Irkutskaya Oblast' were donated by M.Moiseev. The most interesting crystal is about 3 cm in size and has pseudooctahedral shape created by combination of rhombohedra and pinacoid <sup>www2</sup>. Of special mention is an aggregate of blocky sphere crystals of calcite from Herja, Romania, which has a black color due to jamesonite inclusions. This aggregate was donated by N.Mozgova.

Among the quartz specimens, one of the best is a druze of pinkish-orange obelisk-shaped crystals up to 4 cm long. It is colored by hematite inclusions along one of growth zone, (Photo 1). This type of material appeared relatively recently from the 2<sup>nd</sup> Sovetskiy mine, Dal'negorsk, Primorskiy Kray. It was represented in the Museum previously by just a few middle quality specimens.

Another attractive specimen is a druze of rock crystal donated by D. Abramov with a large, about 15 cm, Japanese type twin from the Astaf'evskoe deposit, South Ural <sup>www</sup>. A.Agafonov donated several tabular shaped smoky quartz crystals from, 10 to 13 cm, sprinkled with muscovite on one of prism faces <sup>www</sup>. This material was collected by the «Stone Flower» company at the Akzhailyau, East Kazakhstan in cavities under the quartz core of a pegmatite vein. A few Brazilian type twinned morion crystals 8 to 11 cm in size were obtained from the Shibanovskiy massif, Primorskiy Kray. Another morion with translucent amethyst sectors was received from the Bikchiyulskoe occurrence, Khabarovskiy Kray.

Among the cryptocrystalline quartz varieties are two nice cabochons of landscape moss agate with dendrites of manganese oxides from the Pstan deposit, Kazakhstan. These cabochons were donated by V.Grechin for the Museum gem collection <sup>www</sup>. A nice concretion of snow white cacholong from the Taskazgan, Kyzylkumy Desert, Uzbekistan, was donated by A.Agafonov.

Finishing the review of quartz acquisitions, I would like to mention a set of 30 specimens of synthetic quartz represented by different shapes, colors, zonal or sectorial crystals grown mostly in Alexandrov City. Among these synthetic quartzes are several very interesting clusters of 2 or 3 crystals grown together looking very similar to the natural «Herkimer Diamond» from the Herkimer Dolomite deposit in New York state, USA.

Next by the number of specimens is vivianite, (29). The vivianite was mostly collected by Museum expeditions during 1986–1988, (D.Abramov). All this material is from a mined out and recultivated sedimentary iron deposit near Kertch, Crimea Peninsula, Ukraine. The specimens are different by their morphology, associations and degree of iron oxidation. Their appearance is as blue powdery earthy aggregates or green to black fascicles of crystals and radiating clusters in oolitic iron ore. There are specimens of vivianite crystals on barite spherulites, inside sea shells and even vivianite pseudomorphs after these shells. The majority of the barite specimens, (#6, Table #1), were also collected at this locality. Among them are several items of perfectly shaped yellowish spherulites and spheroidolites up to 3 cm and barite (with vivianite) pseudomorphs after wood and shells. Rhodochrosite specimens, (#9, Table #1), are mostly represented by pseudomorphs of a Ca-rich rhodochrosite variety after sea shells and were acquired from the same deposits. The

<sup>2</sup> The images of specimens marked with www are posted at the Museum website <http://www.fmm.ru> under new acquisition subdivision.

locality is the same also for siderite (# 13, Table # 1) and for anapaite (# 20, Table # 1), except for several specimens from the anapaite type locality on cape Zhelezniy Rog, Taman' Peninsula near Anapa City. This occurrence is quite similar to those in the vicinity of Kertch. Anapaite specimens from Anapa vicinities were donated by Vs. Aristov and the «Stone Flower» company. They are largest anapaite crystals in Museum (up to 1.5 cm). Together, with earlier acquisitions, these specimens are probably the world's best collection of this type of deposit mineralogy.

Hematite is fourth by quantity of specimens, (24). Most of them are new material from Pathagony, Argentina, collected at the end of 2002, and are represented by hematite pseudomorphs after spectacular skeletal magnetite crystals. In some specimens the magnetite is only partly substituted and the crystal forms are different. Most of the skeletal crystals are developed mainly along the 4-fold symmetry axis. There are some individuals with skeletal sections growing along the 3- and 2-fold axis. One of the big crystals was donated by W.Larson, USA, (Photos 2 and 3). This hematite was collected from gas caverns in an acid lava, but the exact locality is still unknown. Similar material was found on the Payun Matru Volcano, Mendoza, Argentina, however the original mineral collector contends that his occurrence is more than 1000 km distant from the Payun Matru Volcano.

Several other hematite specimens of volcanic origin are from the Tolbachik, Kamchatka and the Kudriaviy, Iturup Island, volcanoes. They were donated by E. Bykova and I. Chaplygin. The nice hematite crystal, with a complicated combination of rhombohedras, about 6 cm in size, was obtained from a location in Minas Gerais, Brazil.

Among the native sulfur specimens, (20), is an interesting one which consists of a solidified fragment of melted sulfur from the Golovin Volcano, Kunashir Island of the Kurilian chain. This specimen was donated by V.Znamenskiy for a new Museum exhibit entitled «Mineralogy of Volcanoes». A few honey-yellow and lemon-yellow transparent sulfur crystals were collected recently on the dump of the mined out sulfur deposit Vodino near Samara City, Volga River Region. The crystals fill nearly the entirely cavities which are also encrusted with calcite in limestone.

Eleven out of 15 catalogued grossular crystals show a morphological diversity from skeletal crystals to crystals distorted up to a pseudoorthorhombic shape<sup>www</sup>. The green crystals

are up to 5 cm in size and were collected on the Viluy River near the Chernyshevskiy Village, Sakha-Yakutia Republic. Very nice colorless to pinkish-brown hessonite druze with crystals up to 0.7 cm from the Bazhenovskoe Asbestos Deposit, Asbest, Ural, were donated by A.Zadov.

Among the orthoclase acquisitions the most interesting are gray semi-transparent, sometimes pinkish crystals up to 8 cm from Udacha, about 80 km east of the famous Konder alkaline-ultramafic massif. The crystals are good examples of complex twinning, Baveno type combined with one or several other kinds of twin types. Several orthoclase specimens showing perfect sun stone patterns were added to the gem collection. One is from Burma, a W.Larson, USA, donation, and another from India, location unknown.

A significant number of hydroboracite specimens were catalogued after finishing the diagnostics and specimen preparation of material collected during the Museum expedition in 1986, (D. Abramov, D. Romanov, A. Nikiforov), from the Inder Borate Deposit, Kazakhstan. The most spectacular specimens of this lot are fragments of thick (up to 10 cm) parallel-columnar veinlets of yellow with pearly luster hydroboracite. They also found hydroboracite crystals up to 2 cm by size. Other material collected on that trip is best represented by perfect colorless to yellowish-brown, partly transparent goergeyite crystals up to 15 cm, colorless transparent sulfoborite crystals up to 2 cm, extremely large, up to 3 cm, colorless transparent fragments of kaliborite crystals, and also boracite, colemanite and other boron containing sedimentary deposit type minerals. The Inder Borate Deposit was not operating for many years and unlikely will be open for work in the near future. So, now we may establish the Inder Borate Deposit collection as the best specimens for the locality and one of the best for boron containing sedimentary type mineral deposits rivaling the great deposits in the Mojave Desert of California, USA.

Corundum acquisitions include a set of synthetic crystals, grown by various methods in different labs. Only the one natural corundum is remarkable, large red crystal from Mysor, India.

Among the pyrite specimens are flattened spheroidal concretions from Liu Zhu, Guansi County, China, and a strange binocular-shaped concretion from the Ulianovsk district, donated by A. Natarius.

Several very interesting apatite specimens were catalogued. First of all is a druze of color changing apatite crystals, pink under red

incandescent light and greenish under natural or fluorescent light, with muscovite quartz and feldspar from pegmatite #66, Akzhailyau, northwest of Tarbagatay, East Kazakhstan, (Photo 4). This deposit was formerly worked for piezo-electric quartz. No such kind specimens were distributed during this mine commercial exploration. A portion of that stuff was collected a few years ago. Dark-green fluorapatite crystals in phlogopite or vermiculite are also a new material from area of Snezhinsk, formerly forbidden city in Chelyabinsk region of South Ural. By color these crystals reminds one of diopside or forsterite and according to the name («liar» in Greek) bewilder even experienced mineralogists and collectors. A good-shaped prismatic crystal up to 11 cm was obtained by Museum (photo 5). Among other apatite goodies we would note several obtained and exchanged greenish-brown apatite crystals in pink calciphyre from Yates mine, Otter lake, Quebec, Canada.

There are several remarkable xonotlite specimens among recent acquisition. They look as radiating fascicles of white needle-shaped crystals and were found in Oktiabrskiy mine, Noril'sk district (donated by E. Spiridonov). Massive pinkish xonotlite aggregate from new place of its occurrence in rodingites of Bazhenovskoe deposit, Asbest city, Urals was donated by A. Zadov.

### New Acquisitions classified by Geography

Specimens catalogued in 2002–2003 were collected in 62 countries, and also in Antarctica and ocean bottom (tab. # 2).

#### Russia

**Kola Peninsula:** Most of the acquisitions from Russia are traditionally from this region. This material is represented by 155 specimens, 109 mineral species, among them 53 are from Kovdor, 47 from Lovozero, and 39 from the Khibiny massifs.

Quite a representative collection of the Kovdor Massif minerals was gathered, including high quality specimens of minerals, recently discovered in this location. There are nicely shaped, up to 2 cm, feklitchevite crystals<sup>www</sup>, radiating-tabular bakhchisaraitsevite, large flakes of greenish glagolevite, colorless crystals of labuntsovite-(Mg), and golden-yellow plates of nabalamprophyllite. The Museum's list of mineral species found in the Kovdor Massif increased by the acquisition of tochilinite, lueshite, perovskite, rhabdophane-(Ce) and

more than 10 other mineral species. A lot of Kovdor minerals, such as kovdorskite, rimkolorgite and some others were acquired as specimens of much higher quality as well. M.Moisev donated most of those acquisitions.

Really splendid acquisitions also came from the Lovozero Massif. This is material from the Palitra, «Palette», pegmatite, which was exposed in the summer of 2002 during underground mining at Kedykverpakhk Mountain. This pegmatite received its name due to the spectacular colorful combination of its minerals. First of all, we were amazed with unprecedented size, up to 18 cm, of colorless pearly natrosilite in cleaved monocrystals. Natrosilite is surrounded by purple ussingite and associated with yellow vuonnemite, red villiaumite, orange serandite, white analcime and other minerals<sup>www</sup>. Manaksite crystals fragments should be thought of as gigantic, up to 13 cm<sup>www</sup>. Previously collected manaksite was represented by grains not more than 0.5 cm. In several specimens manaksite is partly replaced with yellowish zakharovite. There are several new, for the Museum, mineral species from this association including, nalipoite, white prismatic crystal up to 3 mm, formerly discovered in pegmatites at Mont Saint-Hilaire, Canada, and also barioligite, kapustinite, K-arfvedsonite, recently discovered in this pegmatite. Several other mineral species are in the process of CNMMN IMA approval and hopefully will appear in the next review. All the specimens from the Palitra pegmatite were donated by I. Pekov and V. Grishin. A number of new, for the Museum mineral species, are type specimens from other places of the Lovozero Massif, and were donated by A. Khomyakov and N. Chukanov, including gmelinite-K, ikranite, raslakite, tsepinite-K, parakuzmenkoite-Fe, paratsepinite-Ba.

The most interesting acquisitions from the Khibiny Massif are fragment of sodalite, variety hackmanite, rhombododecahedron crystals to about 12 cm from the Koashva Mine<sup>www</sup> and labuntsovite-Fe druzes of small orange-red crystals up to 1 mm from the Kirovskiy Mine. The Museum collection of Khibiny mineral species was replenished by new, for the Museum, mineral species from this locality, including cerite-(Ce), cerite-(La), crichtonite, karupmollerite, takanelite, and ferrocelado-nite, and type specimens recently discovered in the Khibiny mineral species, including bussenite, gutkovaite-Mn, clinobarylite, kukharenkoite-(La), labuntsovite-Fe, megakalsite, paravinogradovite, paratsepinite-Ba, thomsonite-Sr, tsepinite-Ca, shirokshinite, and eveslogite. Faceted natrolite was catalogued into

the gemstone collection. Most of the Khibiny Massif specimens were donated by I. Pekov and A. Khomyakov.

**Ural Mountains:** Acquisitions from the Ural Mountains are on the second place by specimen quantity. There are 86 items, among them 41 ones are from South Urals, 38 from the Middle Urals and 7 from the Polar and Subpolar Urals. They are represented by 67 mineral species.

Besides the above-mentioned Japanese twin of quartz from the Astaf'evskoe Deposit and grossular and xonotlite from Bazhenovskoe Deposit, a number of specimens from Saranovskoe chromite Deposit are remarkable. This series includes not only the typical for the deposit Cr-amesite, Cr-diaspor, Cr-titanite, Cr-clinocllore, and millerite but also new, for the Museum, material. There are brown rutile pseudomorphs after perovskite cubic crystals, a chalcopyrite crystal up to 1.2 cm in fibrous tremolite on an albite druze, a rare, for this deposit, chalcocite crystal, and green kassite plates replacing Cr-titanite crystals<sup>www</sup>.

Among the material from South Urals must be mentioned the ilmenite crystal from the Vishnevie Mountains, anorthoclase with both sunstone and moonstone simultaneous effects, and several minerals from the Uchaly Deposit, including magnesio-axinite, tinzenite, pumpellyite-Fe<sup>II</sup>. These specimens were donated by E. Spiridonov. Type specimens of new minerals from the Urals are represented by bushmakinite and magnesiotalite. Polyakovite-(Ce) from type locality was donated by one of describers, L. Pautov. Faceted bromellite, 7x5x4 mm, from the Emerald Mines was added to the gemstone collection.

**Kamchatka and Kurilian Islands:** 45 specimens were obtained from Kamchatka and 13 from the Kudriaviy Volcano, Iturup Island of Kurilian Island chain. Most of them are minerals of volcanic sublimates. The best ever specimens of cannizzarite, a new find on the Kudriaviy volcano, were donated by I. Chaplygin and M. Yudovskaya. This material excels by quality specimens from known locations such as Vucano Island, Italy. It is represented by rosette-like aggregates or separate greyish-black lustrous thin leaf-like crystals up to 0.8 cm on fracture surfaces in andesite<sup>www</sup>. From the same source, both location and donors, the Museum has received natural rhenium sulfide, molibdenite, grinocite, molybdite, and hematite. All have a fumarolic origin.

Another set of sublimates was acquired from the Tolbachik Volcano. These are rather big hand specimens of chalcocyanite, melanothallite, lesukite, euchlorine, fedotovite, kly-

Table 2. Countries by the number of specimens acquired

1. Russia	544	34. Azerbaijan	4
2. USA	98	35. Georgia	4
3. Ukraine	96	36. Denmark	4
4. Kazakhstan	80	37. Congo	4
5. Italia	35	38. Mozambique	4
6. Czech Republic	32	39. Republic	
7. Madagascar	29	of South Africa	4
8. Canada	27	40. Japan	4
9. Argentina	25	41. Serbia	4
10. Kirghizia	22	42. Slovakia	3
11. China	22	43. Switzerland	3
12. Norway	21	44. Antarctica	2
13. Great Britain	20	45. Hungary	2
14. Germany	18	46. Greece	2
15. Uzbekistan	13	47. M'janma	3
16. Sweden	13	48. Namibia	2
17. Brazil	12	49. Romania	2
18. Tanzania	11	50. Uganda	2
19. India	10	51. Algeria	1
20. Mexico	10	52. Belgium	1
21. France	10	53. Bosnia	1
22. Tajikistan	9	54. Gabon	1
23. Chile	9	55. Israel	1
24. Australia	8	56. Iceland	1
25. Zaire	8	57. North Korea	1
26. Mongolia	8	58. Kenya	1
27. Armenia	7	59. Macedonia	1
28. Afghanistan	7	60. Oman	1
29. Bulgaria	7	61. Pakistan	1
30. Bolivia	7	62. Poland	1
31. Turkmenistan	7	63. Portugal	1
32. Austria	6	64. Ocean bottom	1
33. Morocco	6		

54 specimens are synthetic or from unknown localities.

uchevskite, alumoklyuchevskite, sofiite, kamchatkite and others. The individual minerals are well recognized by the naked eye in most cases. Only some mineral species are represented by small grains, including vergasovaite, leningradite and a few others. These species were never found in better quality. Noteworthy is a druze of tenorite crystals up to 1 cm in size<sup>www</sup>. This piece is probably one of the best tenorite specimens. It was donated by E. Bykova, who also donated a number of other specimens from Tolbachik as well. The material described above formed the basis for our recently created Museum exposition on volcano mineralogy by O. Sveshnikova. Mineral specimens for this exposition were also donated by M. Murashko, A. Babansiy, R. Vinogradova, V. Ladygin, and O. Vlodayets.

**Primorskiy Kray and Khabarovskiy Kray:**

The equal number, 21, of specimens came from each of those two regions. The first group is represented mostly by the above mentioned material from Dal'negorsk. From the second

group of interest are anatase crystals up to 8 mm sitting on nicely shaped twinned orthoclase crystals and druzes of such crystals. This material came from the location called Udacha, «Luck», near the Konder Massif. Part of these specimens were purchased and the rest were donated by A.Stupachenko. A.Stupachenko also donated some specimens from the Konder Massif, including big montichellite crystals, lamprophyllite, arfvedsonite, and others. Among the rare species, we need to mention the yakhontovite donated by V.Postnikova.

**Sakha-Yakutia:** Most of the 24 Yakutian specimens, mentioned above, are grossulars from the Viluy River. Also from this place are «akhtaragdite» samples.

**Baikal area, Irkutskaya oblast', Transbaikalia:** Among the 47 specimens from these territories we have already described above the pseudooctahedral calcite from Korshunovskoe deposit. From the rest we would like to highlight material from the Yoko-Dovyrenskiy Massif in the North Baikal area, which includes foshagite, hillebrandite, cuspidine and others donated by N.Pertsev and A.Zadov. Among more rare minerals are a type specimen of vanadiumdravite, donated by L.Reznitskiy, and also volkovskite, tantalowoginite, kilchoanite, kirschsteinite, caminite, ingodite and others.

**Krasnoyarskiy Krai:** Most of the 25 specimens acquired from this region are from the Norilsk group of deposits. Among them are xonotlite, see above, valleriite, sperrylite and others.

### Commonwealth of Independent States (Former Soviet Union Republics)

**Ukraine:** (96) The biggest part of the Ukrainian acquisitions were collected during older Museum expeditions to the sedimentary iron deposits near Kertch. This material is described above. Other than these, only few native sulfur crystals from the Yazovskoe deposit, L'vov Area and a siderite crystal from the granitic pegmatite of the Volodarsk Volynskiy, Zhitomir Area were cataloged.

**Kazakhstan:** (80) More than a third, 36, of the cataloged items from this republic are from the Inder Borate Deposit, (see above). Also mentioned above are fluorapatite and smoky quartz from Akzhailyau and moss agate from Pstan. Among others we would like to mention a new material including cranked twins of rutile found near the Ak-Koshker Village, Turgayskaya Oblast' of north Kazakhstan, donated by R.Yashkin and A.Ivonin. Newly collected specimens are copper dendrites from the Itauz Mine, Dzhezkazgan, donated by M.Kelisuly.

Also from this deposit cuprite crystals have been cataloged. Among the rare mineral species are type specimens of niksergievite, donated by G.Bekenova, and tellurides, hessite, petzite, sylvanite, and frobergite, from the Zhana-Tube Deposit.

**Kyrgyzia:** (22) Nearly all of this material was collected recently by Museum employees L.Pautov, A.Agakhanov, V.Karpenko, and T.Dikaya at the Khaidarkan Mercury Deposit, khaidarkanite; at the pegmatite field Kyrk-Bulak, sinkankasite; on the Zardalek Massif, thorutite and brannerite; and at Kara-Chagyr, rare phosphates and vanadates, including nickelalumite, hammerite, minyulite, and tangeite. Discovered by this group of collectors is the new mineral ankinovichite.

**Uzbekistan:** (13) Besides the cacholong mentioned above, some tellurides are of interest, including joseite-A from Ustarasay and altaite from the Koch-Bulak Deposit.

**Tajikistan:** (9) Most of the cataloged specimens were collected 9 or more years ago at the Dara-i-Pioz massif. These include the recently discovered (in old specimens) mineral species moskvinit-(Y), surkhobite, and maleevite.

**Turkmenistan:** (7) Previously collected gypsum crystals and native sulfur from sulfur mines near Gaurdak were cataloged.

**Armenia:** (7) Some tellurides from the Zod Deposit were acquired, including rucklidgeite, melonite, and tellurobismutite. There was no newly collected material.

**Azerbaijan:** (4) All obtained specimens are from the Dashkesan Iron Deposit including the above mentioned calcite crystals.

**Georgia:** (4) Newly collected rutile and brukite from the Verkhnyaya Racha, Rioni River Valley were donated by A.Agafonov.

### Other countries:

**United States of America (USA):** By the quantity of specimens acquired by the Museum the USA is the second on the list. A total of 98 specimens are represented by 67 mineral species from 18 States. The majority of these specimens came from California (26), Utah (25), and North Carolina (10). Nearly equal parts of these acquisitions were donations, purchases and specimens collected by the Museum staff. The most interesting part of the obtained material includes several rare mineral species, including 2 new minerals discovered in Utah by Russian researchers. These species are larisaite and holfertite. Holfertite was described from Searl (Starvation) Canyon, Thomas Range, Delta, Utah. It is represented by small, but nice, specimens with yellow nee-



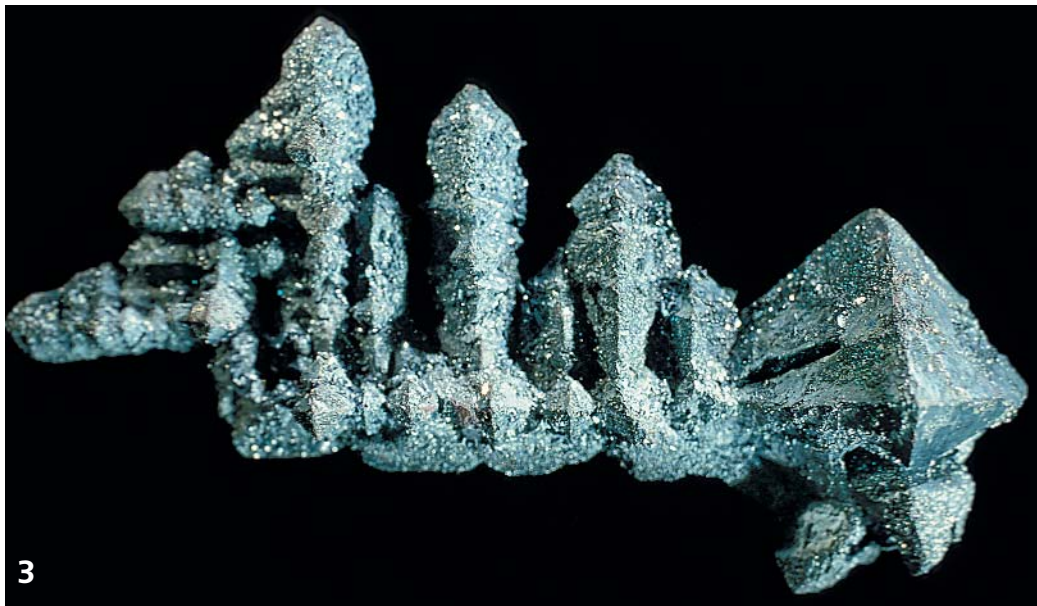
1



2

1. Quartz. The druze of crystals about 4 cm long colored by hematite inclusions. 2-nd Sovetskiy mine, Dal'negorsk, Primorskiy Kray, Russia. Purchase. Size 13 cm. FMM, #90050.
2. Hematite. A Pseudomorph after skeletal crystal of magnetite. Patagonia, Argentina. W. Larson donation. Size 7 cm. FMM, #90857.
3. Hematite. Pseudomorph after skeletal crystal of magnetite. Patagonia, Argentina. Purchase. Size 9 cm. FMM, #91086.

Photo Natalia Pekova



3



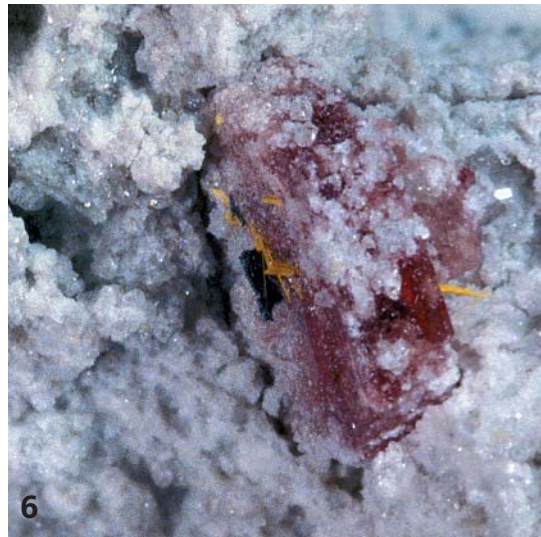
4. Fluorapatite. Pegmatite #66, Akzhailyau, Tarbagatai, East Kazakhstan. Purchase. Size 9 cm. FMM, #91406.

5. Fluorapatite. Snezhinsk, Chelyabinskaya oblast', South Urals, Russia. Purchase. Size 11 cm. FMM, #91379.

6. Hoffertite. Yellow needle pierced through red beryl crystal (bixbite). With hematite on riolite. Starvation Canyon, Thomas Range, Utah, USA. Collected by Museum staff. Beryl crystal size is about 0.5 cm. FMM, #91372.

7. Hilgardite-1A. Geode with crystals up to 1 cm.  
a) Fragment with crystals  
b) Common view  
Boulby mine, North Yorkshire, Great Britain. Exchange. Size 11 cm. FMM, #91148.

Photo Natalia Pekova





dles of holfertite in association with red beryl, smoky topaz, bixbyite and others, (Photo 6).

Added to the Museum collection from the Boron, California deposit was anderite, veatchite-p, big kurnakovite crystals and other boron minerals donated by J. Watson. Rather large, up to 2.5 cm, well shaped sulphohalite crystals from Searls Lake, California were exchanged. A pale kunzite crystal, 8.5 cm size, from the BeeBe Hole pocket on the Pack Rat Claim, Jacumba and some other specimens from southern California pegmatites were donated by J. Patterson. A small collection of specimens, representing mineralogy of emerald from alpine type veins near Hiddenite, North Carolina, was collected thanks to permission of J. Hill. J. Hill also donated a few specimens including hiddenite itself.

Among 35 specimens from **Italy**, 22 are new for the Museum mineral species from different Italian localities mostly obtained by exchange. The same situation occurred with specimens from the **Czech Republic**, including 32 specimens, of which 17 are new for the Museum mineral species. The same was for **Germany** (18/13) and **Sweden** (13/9). New acquisitions from **Canada** are represented by minerals from the Mt. Saint-Hilaire Alkaline Massif, some good betafite crystals from Silver Crater, Ontario and by the above mentioned fluorapatite. Hematite and calcite crystals from **Argentina** (25) were also already noted.

From **China** (22) a nice spessartite on quartz and feldspar from Fujian Province and andresite with new mineral hubeite from Da Ye mine, Hubei Province were obtained.

The series of rare minerals from **South Norway** (21) obtained as an exchange and as donations of I. Pekov and E. Semenov.

The most interesting piece from **Great Britain** (20) is a geode with unusually large, up to 1 cm, crystals of hilgardite-1A, colored pinkish by thin hematite inclusions, (Photo # 7), from salt layers of the Boulby Mine, North Yorkshire. There are a few more hilgardite-1A smaller crystals associated with blue boracite. A few decent druzes of green fluorite<sup>www</sup> came from the Rogerley Mine, Weardale thanks to J. Fisher and C. Graeber of UK Mining Ventures. A few unusual zeolite specimens were donated by D. Mc Callum. Among the **Brazilian** (12) material is a great piece with crust of well shaped kosnarite crystals, up to 2 mm, on elbaite from Limoeiro, Minas Gerais and a small milarite crystal on cleavelandite from Jaguaracu, Minas Gerais. **Tanzania** (11) is represented this time by crystal fragments of brown gem quality enstatite. **France**, **India** and

**Mexico** supplied us with 10 specimens each. There are big grains of recently discovered lulzacite from Saint-Aubin-des Chateaux, Loire-Atlantique, France, donated by Y. Moelo; a large spherulite of dark blue cavansite<sup>www</sup> and powellite crystals on colorless apophyllite both from Poona, India; and aggregates of creedite<sup>www</sup> as radiated crystals from the Navidad Mine, Durango, Mexico.

Among other foreign specimens are dark blue translucent spindle shape afganite crystals<sup>www</sup>, to 2 cm in size, on marble matrix and a sodalite crystal<sup>www</sup>, about 5 cm, with hackmanite areas from Sar-e-Sang, Badakhshan, **Afghanistan**.

### The types and sources of acquisitions

As we noted before, about 54 % of acquisitions made up donations from 138 private persons and 8 organizations. 116 donators are citizens of Russia and 22 donators are foreign citizens (including 5 citizens of CIS). Most part of foreign donators (11) are citizens of the USA. The museum expresses sincere gratitude to everyone who has donated specimens or contributed to Museum collection any other way.

The most active donator was I. Pekov who contributed the total of 104 specimens. They are mainly from the Khibiny and Lovozero Alkaline Massifs, Kola Peninsula, and some foreign alkaline massifs. Among them are 14 type specimens of new mineral species. M. Moiseev donated 39 specimens mostly from the Kovdor Massif. 29 specimens were donated by E. Spiridonov. Other donators were: L. Bulgak (25), V. Levitskiy (18), D. Belakovskiy (17), M. Anosov (13), N. Mozgova (12). More than 5 specimens were presented by A. Agakhanov, L. Pautov, N. Chukanov, N. Pertsev, A. Khomyakov, I. Chaplygin, M. Yudovskaya, A. Agafonov, A. Stupachenko, E. Bykova, M. Generalov, A. Zakharov, A. Zadov, A. Nikiforov, P. Pletnev, E. Semenov, S. Samoilovich and foreign donators — J. Watson and W. Pinch. Under 5 specimens were donated by C&J. Farmer, G. Ito, E. Grew, P. Haynes, J. Hill, A. Kidwell, W. Larson, D. McCallum, Y. Moelo, J. Patterson, R. Ramdor, K. Walenta, R. Withmore, D. Abramov, A. Akilin, S. Aleksandrov, V. Apollonov, Vs. Aristov, A. Babanskiy, V. Baskina, G. Bekenova, S. Belyh, S. Belyakov, E. Bologova, A. Bul'enkov, B. ayntroub, R. Vinogradova, O. Vlodavets, A. Voloshin, A. Vradiy, V. Grechin, V. Grishin, D. Davydov, R. Jenchurava, T. Dikaya, M. Dorfman, V. Dusmatov, I. Dusmatov, A. Ekimov, V. Zagorsiy, G. Zadorin, T. Zdorik, V. Znamenskiy, A. Ivonin, A. Izergin, A. Ilglyavichens, A. Kanonerov, B. Kantor, V. Karpenko, P. Kartashev, M. Kelisuby, D. Kleymenov, K. Klo-

potov, I. Klochkov, V. Kongarov, A. Konev, V. Korolev, S. Kravchenko, M. Kurilovich, V. Kushnarev, V. Ladygin, V. Lennyh, R. Liferovich, A. Malyanov, M. Manaev, O. Melnikov, L. Memetova, M. Murashko, A. Natarius, E. Pankratova, I. Petyazhko, S. Petrusenko, L. Pozharitskaya, O. Polyakova, A. Ponomarenko, V. Ponomarenko, V. Postnikova, L. Reznitskiy, D. Savelyev, M. Samoylovich, V. Sapegin, E. Saratova, O. Sveshnikova, E. Sereda, M. Seredkin, G. Skublov, T. Soboleva, V. Starostin, V.K. Stepanov, D. Sulerzhitskiy, I. Tkachenko, A. Tourchkova, A. Ust'ev, V. Ushakovskiy, A. Fedorov, A. Haugen, P. Hovorov, A. Hohlov, E. Cheremnyh, A. Cherkasov, B. Cesnokov, L. Shabynin, A. Shevnin, B. Shkurskiy, Z. Shlyukova, V. Sreyn, G. Yuhtanov, R. Yashkin.

Six organisations donated 32 specimens to the Museum. All-Russian Institute for Synthetic Minerals (VNIISIMS) contributed a half of them, a collection of synthetic quartz crystals. Great donations were also made by the Institute of Geology and Geophysics Siberian Branch of RAS, Novosibirsk, the Moscow State Regional University, the petrography chair of the Moscow State University, Ore-Petrographic Museum IGEM RAS,

joint-stock company «Inagli», and the «Stone Flower: company.

More than 200 out of 1,356 specimens catalogued during the period 2002 – 2003 were collected by 11 people of the Museum staff. The largest part were collected by D. Abramov (111), A. Nikiforov (43) and D. Romanov (37). D. Belakovskiy collected 57 specimens, L. Patutov, F. Agakhanov, V. Karpenko and T. Dikaya collected 16 specimens, N. Pekova collected 6, A. Ponomarenko collected 5, and M. Generalov collected 1 specimen. Expeditions were sponsored partly by the Museum and partly from other sources.

The Museum want list as of the end of May 2004 is in appendix №2. Besides the mineral species no yet included in the Museum collections, there are some species listed which the Museum would like to obtain in better quality or for scientific research programs.

The author thanks I. Pekov, E.Sokolova, J.Patterson, N. Pekova, A. Evseev, for discussions and significant help in preparation of this article.

The list of photos for a review of new acquisitions to Fersman Mineralogical Museum Russian Academy of Sciences for 2002 – 2003.

## Appendix 1

### The list of mineral species new for Museum which were catalogued to Museum in 2002-2003

In bold are the mineral species discovered and published for that period

\* — Mineral species represented by type specimens or it's fragments or cotypes

\*\* — Mineral species which were discovered for that period by museum stuff or in collaboration with museum stuff

Aciculite	<b>Cerite-(La)*</b>	Ferroedenite	Hohmannite	Kosnarite	Minasgeraisite-(Y)*	Petitjeanite
Agrinierite	Cervandonite-(Ce)	Ferroleakeite	Holdawayite	Krasnovite*	Minyulite	Petterdite
Akrochordite	Chabazite-Ca	Ferrorichterite	Holfertite	Krettnichite	Molybdoformacite	Phillipsite-Na
<i>Alskharovait</i> e-Zn*	Chabazite-Na	<b>Ferrosaponite*</b>	Hubeite	<b>Kristiansenite</b>	Monazite-(La)	Poldervaarite
Alumotungstite	<b>Chabazite-Sr*</b>	Fettelite	Humberstonite	Krutaitite	Montbrayite	Polyakovite-(Ce)**
Androsite-(La)	Chalcocyanite	Florencite-(La)	Hummerite	<i>Kukharenkoite-(La)*</i>	Montdorite	<i>Potassic chloropargasite**</i>
<i>Ankinovichite**</i>	Christelite	Florencite-(Nd)	<b>Ikranite*</b>	Kurumsakite	Montesommaite	Potassicpargasite
<i>Anorthominasragrite</i>	Cianciullite	Fluellite	Iltisite	Kuzmenkoite-Zn	<b>Moskvinite-(Y)**</b>	Pretulite
Arsendescloizite	Claraite	Fluocerite-(Ce)	Imiterite	Lammerite	<b>Mottanaite-(Ce)*</b>	<b>Pseudojohannite*</b>
Arseniopleite	Clinoatacamite	Foordite	Indialite	<b>Larisaite*</b>	Mundite	Pumpellyite-Fe'
Arsenoclasite	<b>Clinobarylite*</b>	Freudenbergite	Irsarsite	Lemanskiite	<i>Nabalamprophyllite**</i>	Pumpellyite-Mg
Arsenolamprite	Clinochalcomenite	Geigerite	Jaskolskiite	Leningradite	Nabesite	Pushcharovskite
Arsentsumebite	Clinotyrolite	<b>Gjerdingenite-Fe</b>	Johillerite	<b>Lepkhenilmite-Zn*</b>	Nabiasite	Quadridavnyne
Baghdadite	Cobaltpentlandite	<b>Glagolevite**</b>	Jungite	Lulzacite	Nalipoite	Rabejacite
Bakhchisaraitsevite	Cobaltsumcorite	Gmelinite-K*	Jurbanite	Magnesianoxinite	Natroglaucocerinite	Rappoldite
Banalsite	Colquiriite	Gottlobite	Kaatialaite	<b>Magnesiotalite*</b>	Natrolemyonite	<b>Raslakite*</b>
<i>Barioolite*</i>	Coombsite	Grumplucite	Kamchatkite	Mahlmoodite	<b>Neskevaarite-Fe*</b>	<b>Rastsvetaevite*</b>
Bartonite	Crichtonite	Guarinoite	Kamotoite-(Y)	<b>Maleevite**</b>	Neustadtelite	Reppiaite
Bassetite	Cyanophyllite	Guettardite	Kampfite	Mallardite	Nezhilovite	Ribbeite
<b>Biraite-(Ce)*</b>	Daqingshanite-(Ce)	Gugiaite	Kamphaugite-(Y)	Mandarinoite	Nickelalumite	Rickardite
<b>Borocookeite*</b>	<b>Decrespignite-(Y)</b>	<b>Gutkovaite-Mn*</b>	<b>Karupmollerite-Ca*</b>	Manganvesuvianite	Nikischerite	Rittmannite
Braitschite-(Ce)	Dissakisite-(Ce)	Hainite	Kassite	Mattagamite	<b>Niksergievite*</b>	Roselite-beta
Brianyoungite	Dwornikite	Hakite	Kastningite	Medaite	Norrishite	Rosenbergite
Bulachite	Ecandrewsite	Hannayite	Katoptrite	<b>Megakalsilite*</b>	Orthopinakiolite	Rouvilleite
Bursaitite	Eclarite	Hartite	Kawazulite	Melanothallite	Oxammite	Sabelliite
<b>Bushmakinite**</b>	<b>Eveslogite</b>	Hatchite	Kentbrooksit	Meloniophosphate*	<i>Parakuzmenkoite-Fe*</i>	Scainite
Bussenite*	Feclichevite*	Hechtsbergite	Khademite	Metahewettite	Paraniite-(Y)	Scandiobabingtonite
Calcioancylite-(Nd)	Fedotovite	Henmilite	Kimrobinsonite	Metaschoderite	Paratsepinite-Ba*	Schullenite
Calciobetafite	<b>Ferriallanite-(Ce)*</b>	Heulandite-Sr	Kirschsteinite	Metavanuralite	Paratsepinite-Na*	Schwertmannite
Caminite	Ferriannite	Hidalgoite	Kladnoite	Metazeunerite	<b>Paravinogradovite*</b>	Seeligerite
Caresite	Ferriaramite	Hingganite-(Ce)	Klyuchevskite	Meurigit	Pengzhizhongite-6H	Serrabrancaite
Cejkaite	Ferritschermakite	Hodgkinsonite	Kombatite	Micheelsenite-(Y)	Pentahydrate	Shannonite
Cerchiaraitite	Ferroccladonite	Hodrushite	Konderite	Millosevichite	Perhamite*	Shirokshinite

Sinkankasite	Suredaite	Temesite	Tinzenite	Tweitite-(Y)*	<b>Vitmite*</b>	Wilkinsonite
Skippenite	<b>Surkhobite**</b>	Tetraroeseveltite	Tolbachite	Uranopolycrase	Voglite	Wroewolfeite
Sodium boltwoodite	Swamboite	Thomazekite	Tratnerite	Vanadiumdravite*	Vrbaitite	Yeatmanite
Soucekite	Synadelphinite	Thomsonite-Sr*	Trechmannite	Vanoxite	Wallkilledellite-(Fe)	Yecoraite
<i>Sphaeroboltrandite**</i>	<b>Tantalowoginite</b>	Thorurite	Trilithonite	Vantasselite	Wattersite	Yeelimite
Spheniscidite	Taramite	Threadgoldite	<b>Tsepinite-Ca*</b>	Vaterite	Wawayandaite	Zdenekite
Stoppianite	Teopleite	Tinnunkulite & techn	<b>Tsepinite-K*</b>	Vertumnite	Weddellite	
Studite	Tegengrenite*	Tintinaite	Tuzlaite	Vinciennite	Wendwilsonite	

## Appendix #2

### Fersman mineralogical museum want list of mineral species as for May 31 2004

More desirable species are in bold

<b>Abelsonite</b>	Baylissite	Carrarite	Cupriauride	Ferriotharmeyerite	Girdite	Hydrophilite
Abenakiite-(Ce)	Beathrite	Cascandite	Cupromakovickite	Ferriottolinite	<b>Giuseppettite</b>	<b>Hydromarchite</b>
Abswurmbackite	Becherite	Cassedanneite	Cuprorivaite	Ferripedrizite	Glushinskite	<b>Hydrocarbroite</b>
<b>Admontite</b>	Bederite	<b>Cassidyite</b>	Cyanochroite	Ferrisurite	Goldquarryite	<b>Hydrowoodwardite</b>
Aerugite	Belendorffite	<b>Caswellsilverite</b>	Cyanophane	Ferriwhittakerite	<b>Gortdrumite</b>	<i>Hydroxylbastnaesite-(Ce)</i>
Akimotoite	Bellbergite	Catalanoite	Damaraitite	Ferrokentbrooksite	<b>Gottardiite</b>	<i>Hydroxylbastnaesite-(La)</i>
<b>Acuminite</b>	<b>Bellidoite</b>	Cavoite	Damiaoite	Ferrokesterite	<b>Graemite</b>	<i>Hydroxylbastnaesite-(Nd)</i>
Albrechtschraufite	Bellite	<b>Cebaite-(Ce)</b>	Danbaite	Ferrokinositalite	<b>Graeserite</b>	Hydroxylpyromorphite
<b>Althupite</b>	<b>Benauite</b>	<b>Cebaite-(Nd)</b>	Danielsite	Ferropyrosmalite	Gramaccioliite-(Y)	Hydroxyuvite
Alforsite	Berdesinskiite	Ceriopyrochlore-(Ce)	<b>D'Ansite</b>	Ferrosiderite	Grandreefite	<b>Hyttsoite</b>
Aluminobarroisite	<b>Bernalite</b>	)	<b>Daomanite</b>	Ferrotitanowodginite	Grantsite	Imhofite
Aluminocopiapite	Bernardite	Cervelleite	<b>Deanesmithite</b>	<b>Ferrowodginite</b>	Grattarolaite	<b>Ingersonite</b>
Amminite	Berndtite	<b>Cesante</b>	Deliensite	Ferrucite	Graulichite-(Ce)	Iridarsenite
Ammonioborite	<b>Bideauxite</b>	Chadwickite	<b>Deloryite</b>	Fetiasite	<b>Gravegliate</b>	Itoigawaite
Ammonioleucite	Bigcreekite	Chaidamuite	<b>Deansite</b>	<b>Fianellite</b>	Grayite	<b>Itoite</b>
<b>Amstallite</b>	<b>Bijvoeite-(Y)</b>	<b>Chameanite</b>	<b>Dervillite</b>	Fiedlerite-1A	<b>Griceite</b>	Jachymovite
<b>Angelellite</b>	Bismutostibiconite	<b>Changbaiite</b>	<b>Despujolsite</b>	<b>Fingerite</b>	<b>Grimaldiite</b>	Jagueite
Anhydrokainite	Bleasdaleite	Changchengite	Dessauite	Fischesserite	<b>Grimselite</b>	Jaipurite
Andremeyerite	<b>Blossite</b>	Changouite	Diaoyudaite	<b>Flagstaffite</b>	Grossite	Jamesite
Anduoite	Bobjoneseite	<b>Chantalite</b>	Dickthomssenite	Fletcherite	Guangnanite	<b>Janggunitite</b>
Antarcticite	Bobkingite	<b>Chaoite</b>	<b>Dienerte</b>	Flinkite	<b>Guanine</b>	<b>Jankovicitite</b>
Anthonyite	Bobtraillite	Charmarite	<b>Dietzeite</b>	Florenskyite	Guggenheimite	<b>Jarosewichtite</b>
Antimonoselite	<b>Bogvadite</b>	Chavesite	<b>Dinrite</b>	<i>Fluorbritholite-(Ce)</i>	Guildite	Jeffreyite
Aplowite	Boldyrevite	Chenite	Diomignite	Fluoronyboite	Gupeite	Jensenite
Arakiite	<b>Bonaccordite</b>	<b>Cheremnykhite</b>	Dittmarite	Flurite	Gysinite-(Nd)	<b>Jentschite</b>
Aravaipaite	Boralsilite	<b>Chessexite</b>	Dixenite	<b>Fontanite</b>	<b>Haapalaite</b>	Jerrygibbsite
<b>Arcubisite</b>	<b>Borishanskiite</b>	Chestermanite	Donnharrisite	<b>Francoanellite</b>	<b>Hafnon</b>	<b>Jervisite</b>
Ardaite	<b>Bornhardtite</b>	Chillagite	<b>Dorallcharite</b>	Francoisite-(Nd)	Haggertyite	<b>Jianshuiite</b>
Ardealite	<b>Bostwickite</b>	Chloalite	<b>Douglasite</b>	<b>Frankhawthorneite</b>	Haigerachite	Jixianite
Argutite	Bottinoite	<b>Chladniite</b>	Downeyite	Franklinfurnaceite	Halagurite	<b>Johachidolite</b>
<b>Aristarainite</b>	<b>Bracewellite</b>	<b>Chloraluminite</b>	Doyleite	<b>Franklinphillite</b>	Hallimondite	Johnnesite
Armalcolite	Bradleyite	<i>Chlormanganokalite</i>	<b>Dozyite</b>	Fransoletite	<b>Hanawallite</b>	<b>Johnsomervilleite</b>
<b>Armangite</b>	Brandholzite	Chlorocalcite	Dreyerite	<b>Freboldite</b>	<b>Harrisonite</b>	Johntomaite
Arsenbrackebuschite	Brendelite	Choloalite	Drobecite	<b>Freeditite</b>	<b>Hashemite</b>	<b>Johnwalkite</b>
<i>Arsenoflorensite-(Ce)</i>	Brianroulstonite	<b>Chrisstanleyite</b>	<b>Drugmanite</b>	<b>Fritzscheite</b>	<b>Hastite</b>	<b>Joliotite</b>
<i>Arsenoflorensite-(La)</i>	Brinrobertsite	Chromatite	Drysdallite	<b>Fuenzalidaite</b>	<b>Hatrunite</b>	<b>Jolliffeite</b>
<i>Arsenoflorensite-(Nd)</i>	Brodtkorbite	<b>Chrombismite</b>	Dukeite	Fukalite	<b>Hawthorneite</b>	Jorgensenite
Arsenogorceixite	<b>Brokenhillite</b>	Chvaleticeite	Duttonite	Fukuchilite	<b>Haxonite</b>	<b>Juabite</b>
Arsenogoyazite	Brongiardite	<b>Clairite</b>	<b>Earlandite</b>	Furongite	<b>Haycockite</b>	Julienite
<i>Arsenuranospathite</i>	Buchwaldite	Clearcreekite	Eastonite	Furutoberite	Hectorfloresite	Junioite
<b>Artroite</b>	<b>Buckhornite</b>	Clerite	Ecdrewsite	Gabrielite	Heideite	Jusite
Artsmithite	<b>Bunsenite</b>	Cleusonite	Edenharterite	Gabrielsonite	Heidornite	Kadyrelite
Arzakite	<b>Bursaite</b>	Clinocervantite	Effenbergerite	Gainesite	Hellandite-(Ce)	Kahlerite
<i>Ashoverite</i>	<b>Burtite</b>	Clinoferrosilite	<b>Ehrleite</b>	Gaitite	Helmutwinklerite	<b>Kalicinite</b>
Asisite	<b>Butschliite</b>	Clinomimette	Ekatite	Galgenbergite	<b>Hemloite</b>	Kamaishilite
Aspidolite	Cabalzarite	Clinorhabdophane-(Ce)	<b>Ellisite</b>	Galileite	Hendersonite	Kamitugaite
<b>Asselbornite</b>	<b>Cadwaladerite</b>	Clinoungemachite	Emilite	<b>Gallobuedantite</b>	Heneuite	<b>Katoite</b>
<b>Astrocyanite-(Ce)</b>	Calcioancylite-(Nd)	Cobaltarthurite	Ercitite	<b>Gananite</b>	Hennomartinite	Keillite
Aurivilliusite	<b>Calcioaravaipaite</b>	Cobaltkieserite	<b>Erlanite</b>	Ganterite	Henryite	<b>Kempite</b>
Baileychlorite	Calcioaravaipaite	Cobaltnustadtelite	Ermienickelite	<b>Gaotaitite</b>	Hentschelite	Kenhsuite
Baiyueboite-(Ce)	Calcioaravaipaite	Cobaltpentlandite	<b>Erniggliite</b>	Garavellite	<i>Hexatestibiopani-ckelite</i>	Keyite
Balavinskite	Calcioaravaipaite	Cobaltzippeite	<b>Ertixiite</b>	<b>Garrelsite</b>	Hiarneite	Keystoneite
Balipholite	Calcioaravaipaite	Chromite	Esperanzaite	<b>Garyansellite</b>	Hieratite	Khademite
Bamfordite	<b>Calcjarlite</b>	Comancheite	<b>Eugsterite</b>	<b>Gatehouseite</b>	Hoganite	<b>Khatyrkite</b>
Bararite	<b>Calclacite</b>	Combeite	Eveite	Gatelite-(Ce)	Honessite	<b>Khomyakovite</b>
Barberite	<b>Calderonite</b>	<b>Comblainite</b>	<b>Fabianite</b>	<b>Gaultite</b>	Hongquite	<b>Kieffite</b>
Bariomicrolite	Cameronite	Compreignacite	<b>Faheyite</b>	<b>Gebhardtite</b>	<b>Horsfordite</b>	<b>Killalaite</b>
Barioorthojoaquinite	<b>Camgasite</b>	<b>Congolite</b>	Fahleite	Gengenbachite	<b>Howardevansite</b>	Kinichilite
Bariosincosite	<b>Canaphite</b>	Coskrenite-(Ce)	<b>Fairchildite</b>	Georgeicksenite	Huangite	Kintoreite
Barquillite	Caosite	Costibite	<b>Fangite</b>	<b>Gerdremmelite</b>	Hugelite	Kirkiite
Barringerite	<b>Capgaronite</b>	Cousinite	<b>Feinglosite</b>	Gerenite-(Y)	Hungchaoite	Kitabelite
Barringtonite	<b>Carboronite</b>	Coyoteite	<b>Felbertalite</b>	Gerstmannite	Hydroastrophyllite	<b>Kitkaite</b>
<b>Barstowite</b>	<b>Carlinitite</b>	<b>Crerarite</b>	Fencooperite	Gianellaite	<i>Hydrobasaluminite</i>	<b>Kittatinnyite</b>
<b>Bartelkeite</b>	<b>Carlosruizite</b>	<b>Criddleite</b>	<b>Ferrarisite</b>	Giannetite	Hydrochlorborite	Kivuite
Batiferrite	Carlsbergite	<b>Cualtibite</b>	Ferriclinoferrholmquistite	Gilmarite	<b>Hydrodresserite</b>	Kleemanite
Baumstarkite	Carmichaelite	Cuboargyrite	Ferriropedrizite	Giniite	<i>Hydrobomkulte</i>	Kochite
Bayankhanite	Carobbiite	<b>Cupalite</b>	Ferrikinoshitalite	<b>Giraudite</b>	Hydromolysite	<b>Konyaite</b>

Koritnigite	<i>Manganolangbeinite</i>	Nevadaite	Pertsevite	Rossmanite	Strontiomelane	Vatatsumite
Kornite	Manganolotharmeyerite	Niahite	Petedunnite	Rouaite	Strontiomicrolite	<b>Vaughanite</b>
Koutekite	Manganostibite	Nichromite	<b>Peterbajlissite</b>	Roubaultite	<b>Stumpflite</b>	Veenite
Kozoite-(La)	Manganotapiolite	<b>Nickelbischofite</b>	Petewilliamsite	<b>Rouseite</b>	Suessite	Verbeekite
<b>Kribergite</b>	Mantieneite	Nickenichite	<b>Petrovskite</b>	Routhierite	Sundiusite	<b>Viaenite</b>
<b>Krieselite</b>	Marecotite	Niedermayerite	Petrukite	Rouxelite	<b>Surite</b>	Viitaniemiite
<b>Krinovite</b>	Marinellite	Nielsbohrite	Phillipsbornite	<b>Ruarsite</b>	Susannite	<b>Vincentite</b>
Kuannersuite-(Ce)	Marshite	Niigataite	Philolithite	<b>Rubicline</b>	Suzukiite	<b>Virgilite</b>
<b>Kulkeite</b>	Martinite	<i>Nioboaschynite-(Nd)</i>	Phosphammite	<b>Ruitenbergrite</b>	<b>Sveite</b>	Vochtenite
<b>Kullerudite</b>	Marumoitte	Niobokupletskite	Phosphofibrite	Ruthenarsenite	Svenekite	Voggite
Kupcikite	<b>Mathewrogersite</b>	Nisbite	Phosphogartrellite	Sabatierite	<b>Sverigeite</b>	<b>Vonbezingite</b>
Kusachuite	Matvienite	Noelbenonite	Phosphorroesslerite	Sabelliite	<b>Swaknoite</b>	<b>Vozhminite</b>
Kutinaite	Matsubaraitte	<b>Nowackite</b>	Phosphovanadylite	<b>Sabieite</b>	Swartzite	<b>Vulcanite</b>
Kuzelite	Mattagamite	Nullaginite	Phosphowalpurkite	Sadanagaite	<b>Sweetite</b>	<b>Vuorelainenite</b>
Kuzminite	<b>Matteuccite</b>	Nyboeite	Phyllotungstite	Sailaufite	Symesite	Wadalite
Laflammeite	<b>Mattheddleite</b>	Oberite 98-046	Pillaite	<b>Salioteite</b>	Synchysite-(Nd)	Wadsleyite
Laforetite	Matveevite	Oboyerite	<b>Pinalite</b>	Salzburgite	<b>Szymanskiite</b>	Wakefieldite-(Y)
Lalondeite	Maufile	<b>O'Danielite</b>	<b>Pinchite</b>	<b>Samfowlerite</b>	Takedaite	Walfordite
Langsite	Mayingite	Daninite	Pingguite	Samuelsonite	<b>Takeuchiite</b>	Walkerite
Lanmuchangite	<b>Mbobomkulite</b>	Oenite	Piretite	<b>Sanderite</b>	Tamaite	Walkkilldellite-(Fe)
<b>Laphamite</b>	Mcalpineite	Okayamalite	Pirquitasite	<b>Santanaite</b>	Tantalaeschynite-(Y)	Walkkilldellite-(Mn)
<b>Larosite</b>	<b>Mcauslanite</b>	<b>Omeite</b>	Pitiglianoite	<b>Santite</b>	Tarkianite	<b>Waltherite</b>
Larsenite	Mcbirneyite	Ominellite	Pizgrishite	Sarmientite	Taseqite	<b>Wardsmithite</b>
<b>Launayite</b>	Mccrillsite	Onellite	Platarsite	<b>Sasaite</b>	Tedhadleyite	<b>Warikahnite</b>
Laurelite	Medenbachite	Oosterboschite	<b>Playfairite</b>	Sayrite	Teineite	Watanabeite
Lausenite	<b>Melanostibite</b>	Orebroite	Plumalsite	Scacchite	<i>Tellurohauchecornite</i>	<b>Watkinsonite</b>
Lautilthalite	Mengxianminite	Orickite	Plumbobefatite	Schafarzikite	Telluronevskite	<b>Wattevillite</b>
<b>Lawrencite</b>	Mereheadite	Orlymanite	Plumbosumite	Schaferite	<b>Temagamite</b>	<b>Weishanite</b>
Lawsonbauerite	<b>Mererite</b>	Orpheite	<b>Polkovicite</b>	Schertelite	<b>Tengchongite</b>	Welinite
<b>Leakeite</b>	Metaalunogen	<b>Orschallite</b>	Potassiccarpholite	Scheteligite	Terranovaite	<b>Werdingite</b>
<b>Lecontite</b>	Metankoleite	Orthojoaquinite-(Ce)	Potosite	Schiavinatoite	<b>Teschemacherite</b>	<b>Wesselsite</b>
<b>Lehnerite</b>	<b>Metadelriote</b>	Orthojoaquinite-(La)	Poubaite	Schieffelinite	<b>Testibiopalladite</b>	Wheatleyite
<b>Leisingite</b>	Metakahlerite	Orthowalpurkite	Poudreite	Schoellhornite	<b>Thadeuie</b>	<b>Whiteite-(CaMnMg)</b>
<b>Lepersonnite-(Gd)</b>	Metakirchheimerite	<b>Osarsite</b>	<b>Pringleite</b>	Schreyerite	Theoparcelsite	Widemannite
Levinsonite-(Y)	<b>Metakoetigite</b>	<b>Osbornite</b>	<b>Prosperite</b>	Schwertmannite	Therese magnanite	Wilcoxite
<b>Levyclauidite</b>	Metalodevite	Oswaldpeetersite	<b>Protasite</b>	Sciarite	Thomasclarkite-(Y)	Wilhelmkleinite
Lewisite	Metasaleite	<b>Otjsumite</b>	Protoanthophyllite	<b>Scotlandite</b>	Thornasite	<b>Wilksmanite</b>
<b>Liebauite</b>	Metaschoepite	Ottemannite	Prouditte	<b>Sederholmite</b>	Tillmansite	Wiserite
Liebenbergite	<b>Metastudite</b>	Oursinite	<b>Przhevskite</b>	Seersinite	Tischendorfite	Woodallite
Lindqvistite	Metauranospinite	Overite	<b>Pseudocotunnite</b>	<b>Selwynite</b>	Tivanite	Woodlidgeite
<b>Lindsleyite</b>	<i>Metavandendriesscheite</i>	<b>Owensite</b>	<b>Pseudograndeefite</b>	Sesquiterpenelactonite	Tlalocite	Wupatkiite
Lisette	<i>Metavanmeersscheite</i>	Paarite	Pseudourtilite	<b>Sewardite</b>	Tobelite	<b>Wyartite</b>
Lishizhenite	<b>Metazellerite</b>	Pacelite	Pseudosinhalite	Shabaite-(Nd)	Tomichite	<b>Wycheproofite</b>
Lonecreekite	<b>Mikasaite</b>	Paderaite	Putzite	Shakhovite	Tongbaite	Xanthosite
<b>Loranskite-(Y)</b>	Minehillite	Paganosite	Qandilite	<b>Shandite</b>	Tongxinite	Xenotime-(Yb)
<b>Loseyite</b>	Mitscherlichite	<b>Pahasapaite</b>	Qilianshanite	Sharpite	Tooeleite	Xiangjiangite
Loveringite	<b>Modderite</b>	<b>Painite</b>	<b>Qingheite</b>	Sheldrickite	Torreyite	Xifengite
<b>Luberite</b>	Moelolite	Palladoarsenide	Qitianlingite	Sherwoodite	Toyohaite	Xilingolite
Lubtheenite	<b>Mohrite</b>	<i>Palladobismutharsenide</i>	Raadeite	Shirozultite	Trabzonite	Ximengite
<b>Lucasite-(Ce)</b>	Palladseite	Palladseite	<b>Rabbittite</b>	Shuangfengite	Tranquillityite	Xingzhongite
Lukenchangite-(Ce)	Palmierite	Palmierite	Rabecjacite	Sicherite	Treasurite	Xitieshanite
Lukrahnite	Pampalargaite	Pampalargaite	Radovanite	Sidpietersite	Trembathite	<b>Yagite</b>
<b>Lunijianlaite</b>	Moreauite	<b>Panasqueiraite</b>	<b>Radtkeite</b>	Sidwillite	Trigonite	Yanomamite
Lyonsite	<b>Morelandite</b>	<b>Panethite</b>	Rambergite	Sieleckiite	Trialsillite	Yedlinite
Macaulayite	Morimotoite	Panunzite	Rameauite	<b>Sigismundite</b>	Trommsdorffite	<b>Yimengite</b>
Macedonite	<b>Morozeviczite</b>	Paraarsenolamprite	Rankachite	Silhydrite	<b>Trippkeite</b>	Yingjiangite
<b>Machatschkiite</b>	<b>Moschelite</b>	<b>Parabariomicrolite</b>	Ransomite	<b>Silinaite</b>	<b>Tristramite</b>	Yixunite
Macphersonite	Mountkeithite	Parabrandtite	Rayite	<b>Simmonsite</b>	Trogtalite	<b>Yoshiokaite</b>
Macquartite	Moydite-(Y)	Paracoquimbite	Radovanite	Simonellite	<b>Trustedtite</b>	Yuanjiangite
<b>Maghagendorffite</b>	Mozartite	Paracostibite	<b>Radtkeite</b>	Simonite	Tschortnerite	Yvonite
Magnesiumdortmterite	Mozgovaitte	<b>Paradocrasite</b>	Refikite	Simplotite	Tsugaruite	<b>Zabuyelite</b>
Magnesiumsadanagaite	Mroseite	<b>Parafralesite</b>	Reidite	<b>Sinjarite</b>	Tsumgallite	Zaccagnaite
Magnesiumsadanagaite	Muchuanite	<b>Parajamesonite</b>	Reimerite	Sinnerite	Tuite	Zaherite
Magnesiumstaurolite	<b>Muckeite</b>	<b>Parakhinite</b>	Rengeite	Sinoite	<b>Tundrite-(Nd)</b>	Zairite
Magnesiumchloro-p hoenicite	<b>Mummeite</b>	Paralstonite	<b>Retzian-(Ce)</b>	Slawsonite	Tungstibite	Zellerite
Magnesiumzinnwaldite	<b>Mundrabbillaite</b>	Paramontroseite	<b>Retzian-(La)</b>	Sphaerobismoite	Turtmannite	<b>Zenzenite</b>
Magnesiumzipppeite	Munirite	Paraniite-(Y)	<b>Retzian-(Nd)</b>	Spodiosite	Tweddillite	<b>Zhanghengite</b>
<b>Magnolite</b>	Muskoxite	<b>Pararobertsite</b>	Rhabdophane-(Nd)	Spripgite	Uchucchacuaite	Zhongshangonite
Mahnertite	<b>Muthmannite</b>	<b>Paraschoepite</b>	Rhodarsenide	Springcreekite	Uhlignite	<b>Ziesite</b>
Majorite	Mutinaite	Parascorodite	<b>Rhodplumsite</b>	Srilankite	Ungarettiite	Zincalstibite
Makinenite	<b>Nagashimalite</b>	Parisite-(Nd)	Richtite	<b>Stalderite</b>	<b>Ungemachite</b>	Zincgartrellite
Makovickyite	Nagelschmidite	Parkinsonite	Rilandite	Stanekite	<b>Uramphite</b>	Zincohoegbomite
Mallestigite	<b>Nahpoite</b>	<b>Parwellite</b>	<b>Ringwoodite</b>	Stanfieldite	Uranalcarite	Zincostaurolite
<b>Manganarsite</b>	<b>Nanlingite</b>	<b>Paulkellerite</b>	Rinmanite	<b>Stanleyite</b>	<b>Uranosillite</b>	<b>Zincovollite</b>
Manganeshadlunite	Nasinite	<b>Paulmooreite</b>	Riomarinaite	<b>Stenhuggarite</b>	<b>Uranotungstite</b>	<b>Zincrosasite</b>
<b>Mangangordonite</b>	Nasledovite	<b>Pehrmanite-9R</b>	<b>Roadite</b>	<b>Stercorite</b>	Uricite	<b>Zincroselite</b>
Manganilvaite	Peisleyite	Parascorodite	Rodolicoite	Sterlinghillite	Utahite	Zinczippeite
Manganochromite	Natrodufrenite	Pellouxite	<b>Rohaite</b>	<b>Stibiobetafite</b>	Vanadomalayaite	<b>Zircophyllite</b>
Manganocummingtonite	Natrolairchildite	<b>Penobskisite</b>	Rollandite	<b>Stillwaterite</b>	Vanmeersscheite	<b>Zirklerite</b>
Manganogrunerite	Natroniobite	Perleveite-(Ce)	Rondorfite	<b>Stoiberite</b>	<b>Vanuranylite</b>	<b>Zodacite</b>
<i>Manganokukisvumite</i>	<b>Natrotantite</b>	Permanganogrunerite	Ronneburgite	<b>Strontiochevkinite</b>	Varulite	<b>Zoubekite</b>
	Nchwanginite	Perryite	Rooseveltite	<b>Strontionogrite</b>	Vastmalandite-(Ce)	<b>Zugshunsite-(Ce)</b>