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NEW ACQUISITIONS OF THE FERSMAN MINERALOGICAL MUSEUM RUSSIAN ACADEMY OF SCIENCES (1997–2001)

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Between 1997 and 2001, 3414 new mineral specimens were introduced into the inventories of the five major collections of the Fersman Mineralogical Museum RAS. These specimens represent 980 different mineral species from 73 countries. Among these, 372 are new species for the Museum, including 83 that were discovered during this period. Museum staff members discovered sixteen of these. Three of the new species were discovered in previously cataloged museum pieces that were acquired as other minerals. Of the minerals obtained, 93 are either type specimens or fragments of type specimens. By the end of 2001 the number of valid mineral species in the Museum fund reach 2700. Of the newly acquired items, 1197 were donated by 230 persons and by 12 organizations; 610 specimens were collected by the Museum staff, 600 were exchanged, 334 bought, 521 registered from previously collected materials, and 152 were 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 want list.
27 color photos.

There is a common misconception on the part of many people that major mineralogical museums have already collected everything valuable and imaginable. People very often wonder why museums are interested in items that seem, in their eyes, quite ordinary. The notion that museum collections are complete is, in a way, similar to the broadly held idea, in the late 19th and early 20th centuries, that physics was a science nearly complete, lacking just a few finishing touches.

The fact that our old, authoritative Museum possesses only about 2800 of approximately the 4000 mineral known species should be enough to enlighten most people. This proportion is typical for many of the world's large mineralogical museums. Interestingly, more than ten private systematic mineral collections have more than 3000 mineral species; moreover, museum collections are expected to characterize numerous types and varieties of minerals, their morphological variations, assemblages and everything that illustrates the processes of mineral formation. It does not matter how rich, therefore, a museum collection is a work in progress. At the outset, I would like to thank all those who understand a museum's needs and responsibilities and who are committed to building our Museum collections; it is those people who have given meaning to a review such as this.

Reports on new acquisitions to the Museum have traditionally been published in the *NEW DATA ON MINERALS* issues. Due to a lapse in publication, however, the paper outlining the new acquisitions made between 1984 and 1996 was published in *AMONG THE MINERALS* almanac (2001). This paper can also be found on our web site (http://www.fmm.ru/novpostframe.htm). The site also pictures the specimens indicated below by the www symbol.

In expanding the Museum's collections, we have been guided by the traditional structure of the collection that was introduced in the early 20th century by Acad. V. Vernadskiy. This structure is comprised of five major collections: systematic, deposits, crystals, formation and transformations of minerals, gems and stone art.

The largest is the systematic collection, which currently holds more then 90,000 items. Mineral species that are new for the Museum will be added to this collection, as will those specimens that are aesthetically appealing or that expand our knowledge of the variety of assemblages found for a given mineral species or of its chemical, morphological and other features.

The deposits collection (currently more then 30,000 items) is comprised of series of samples that illustrate the character and/or the originality of the mineral composition that is found inherently in a given mineral deposit (occurrence).

The crystal collection contains nearly 5000 items representing simple crystal forms as well as form combinations, habits, twinning and other crystallographic features.

The collection of formation and transformation of minerals holds more than 2000 samples, each of which portray some phenomenon related to the growth and dissolution or the destruction and transformation of minerals. The majority of this collection is made up of pseudomorphs.

The gem and lapidary arts collection is comprised of some 8000 gemstone minerals and items that have been crafted from these.

In general, new acquisitions are introduced into the collection in steps. They are first registered in the preliminary acquisitions book. They

are then cleaned, identified (if necessary), labeled and recorded in the database. Finally, the Museum Commission on Funding and Purchase decides into which of the major collections that the article should be distributed; the Commission can also opt to place the article into the exchange fund or into another of the Museum's collections with less important status.

This review only includes data on those specimens that were logged into the inventory of the Museum's major collections between 1997 and 2001. Specimens that had not, at that time, been fully processed and assigned as well as specimens assigned to the exchange or research collections are not included in this review.

A total of 3414 specimens (3041 inventory numbers) were introduced into the Museum's inventory between 1997 and 2001. Of these, 2075 specimens (1964 inventory numbers) were assigned to the systematic collection, 334 (305) to the deposits collection, 300 (184) to the crystal collection, 501 (448) to the mineral formation and transformation collection and 204 (140) specimens were catalogued into the gem collection.

Relative to the previous years' acquisitions, the lot of specimens acquired during this period shows a significant decrease in the percentage acquired by Museum staff through expeditions. This decrease reflects a lack of funding that hindered the staff's ability to pursue its traditional fieldwork in the Former Soviet Republics. At the same time, however, the percentage of specimens acquired by personal donation increased relative to the previous five-year period.

New Acquisitions as Classified by Mineral Species

Specimens catalogued between 1997 and 2001 represent 980 mineral species, 372 of which are new species for the Museum. These specimens include 83 of the approximately 250 new mineral species approved by the Commission on New Minerals and Mineral names of the International Mineralogical Association since 1997. Of these 83 species, 16 were discovered and described by Museum staff or in collaboration with museum staff. Three of the new mineral species were identified among the previously catalogued Museum specimens. Ninety-seven of the mineral species that are new to the Museum are type specimens (or fragments of type specimens), holotypes or co-types. By the end of 2001, the Museum listed some 2700 valid mineral species among its collections.

Of the 980 recently acquired mineral species, the majority (620) are represented by a single specimen. One hundred sixty species are represented by 2 specimens; 3 to 5 specimens represent each of 130 species; 40 species are represented by 6 to 10 specimens; 20 species by 11 to 20 specimens; 11 species by 21 to 100 items and just 3 species are represented by more than 100 specimens.

Quartz and calcite are almost always the best represented in museums and in private collections as a result of their endless diversity and prolific. This period was no exception: there were 190 newly acquired quartz specimens and 165 samples of calcite.

In addition to previously collected Russian quartz specimens, new rock crystal druzes were collected from Alpine klefts of Sub-Polar and South Urals. The obelisk-shaped crystals, up to 38 cm long are especially striking, along with groups of variously shaped crystals which Dmitriy Abramov collected at Astaf'yevskoe deposit. Yu. Pustov donated pseudodipyramidal quartz crystals of about 1 cm long on hedenbergite and a bunch of cleaved green (due to hedenbergite inclusions) quartz crystals on an andradite crust from Dal'negorsk, Russian Far East (photo 8). P. Bantsekov donated another representative of this area: a small druze of fine crystals pigmented orange-red by hematite inclusions. Many quartz samples collected at the ore deposits in Kamchatka and Russian Far East received from Central Scientific Geology-prospectical Institute. These samples are not aesthetic, but informative in term of ore deposition processes at these deposits. Quartz-calcite simplectites from torgolites of the Murun massif donated by V.Levitskiy are also genetically interesting.

New quartz acquisitions from FSU countries were supplied from a newly developed occurrence near Oni, Republic of Georgia. These are druzes of flattened rock crystal, among which Japanese twins occur, as well as zonal (due to decoration by green clinochlore) crystals with phantoms. Presence of rutile and brookite in some crystals emphasizes the Alpine vein type of mineralization (donations from A.Agafonov and purchases). The same sources supplied the Museum with recently collected quartz druzes and a bunch of splitted quartz with calcite crystals on magnetite from Dashkesan skarns, Azerbaijan. A.Kovalev donated beautiful strawberry quartz from Chimkent area of Kazakhstan. Red color of quartz and aventurescence are controlled by minute inclusions of hematite, goethite and, possibly, lepidocrocite (photo 9).

One of the most interesting specimens obtained abroad is a cluster of nested isometric quartz crystals, 3 to 4 cm long (the so-called Herkimer diamond, NY, USA). Among the purchased specimens from China are druzes of clear, strongly elongated quartz crystals with hematite inclusions and flattened hematite clusters between quartz crystals (Liu Zhon Guang Dag area). A 6-cm scepter-like amethyst crystal resting on quartz was obtained by exchange from Mangatobangy, Ambatofinandrahana, Madagascar (photo 7). Clear flattened quartz crystals were obtained from Pakistan; a skeleton quartz crystal from Nuevo Leon, Mexico, was purchased in 1999 at the Rocks and Minerals auction. A 15 cm radial cluster of pale lilac zoned quartz crystals looking like a flat blossom from the Rio Grande do Sul state, Brazil was obtained via trade. R.Currier donated quartz crystal with picturesque inclusions of carbonates and chlorite originating from the same country.

Synthetic quartz crystals of various shape and color were donated by the All-Russian Institute for Synthetic Minerals, Aleksandrov.

Chalcedony pseudomorphs after wood (Germany, Hungary, and the USA), after dinosaur bones (Colorado. USA, donated by T.Nipp), after fluorite (Zimbabwe), and after anhydrite (Vodino, the Volga basin, Russia) enlarged the collection of chalcedony varieties. A series of chalcedony and agate specimens represents a collection of pseudo-stalactites, membrane tubes, and other morphological types, which replenished a vast agate collection of the Museum and illustrates genetic concepts considered in Agates monograph (A.Godovikov *et al,* 1987). These are the specimens from Kazakhstan, Mongolia, Georgia, Brazil, and other countries, mainly from personal collection of A.Godovikov. Amateur mineralogist A.Katz, one of donators, gifted the Museum with a fine polished agate plate; the source occurrence was Mustakh, Sakha-Yakutia. The plate was named «Godovikov» ʷʷʷ to memorize our late director, who contributed greatly to mineralogy and origin of this minerals.

Calcite goodies were obtained and registered from 37 deposits and occurrences. About one half of acquired calcite specimens represented by a splendid collection of glendonite (calcite pseudomorphs after ikaite) (photo 10 – 14). A.Nikiforov, A.Zakharov, M.Anosov and V.Levitskiy collected a larger part of this collection near Olenitsa village, Kola Peninsula, during several field trips organized by the Museum in 1997 – 1999. Another part (more than 20 pieces) of glendonite was collected (and donated) by D. Sulerzhitskiy in the Bol'shaya Balakhnya river valley, Taimyr Peninsula, Russia. The Museum set of is a detailed illustration of the glendonite ontogenesis. It comprises individual crystals, twins, and intergrowths either grown separately or overgrowing pebbles of metamorphic or other rocks, petrified trees, shells, etc., The crystals or intergrowths are freestanding or covered with clay-carbonate concretions. Glendonite from Taimyr differs from that found in Kola Peninsula by shape of intergrowths; frequently, it is white. At the same time, some samples from these two localities are indistinguishable. The photographs of glendonite are located in the Web site of the Museum (http://www.fmm.ru/gallery.htm).

Among others calcite that encrusts the chambers cavity in the Ammonitoceras shell 36 cm in diameter. is worth mentioning. The piece was collected in the Belaya river basin, Caucasus. Russia, (photo 4). Among calcites acquired from Dal'negorsk the most attractive is a spherical crystal of Mn-calcite 12 cm in diameter (donated by V.Breckler). An unusual calcite piece that formed by sectorial pinacoidal-scalenohedral crystals of several generations was collected at Kukisvumchorr, Khibiny, Russia, by M. Dorfman. This mineral is a rarity in this locality. Interesting specimens were obtained from Sub-Polar Urals, Lower Tunguska basin, and Savvinskoe deposit in Transbaikal. Karstic forms of calcite collected from limestone at the village of Kol'tsovo, Kaluga oblast', are noteworthy. A fine cluster of 5 cm Iceland spar twined crystals from Sokolovskoe deposit, North Kazakhstan was donated by L.Bulgak.

Sphalerite (112 specimens) and galena (98) are on the 3rd and 4th places by the number of items acquired. This is mainly due to inventorying of proper sections of collections of V.Stepanov and A.Godovikov. These collections deserve individual consideration and description. Still, it should be noted that these sets present a very complete scope of sphalerite and galena varieties over the territories of FSU and some East European countries. Among those species acquisitions unrelated to the mentioned collections we should note a remarkable piece from Illinois, USA. It consists of two radial intergrowths of dark-colored sphaleriteʷʷʷ crystals, about 12 cm each, overgrowing a flattened quartzite fragment. Noteworthy also are small skeleton crystals of galena on argillite originated from hot sublimations fed by natural subterranean coal fire in Kukhi Malik, Central Tajikistan.

Pyrite takes the fifth place by the number of new acquisitions (82 samples). A good part of new samples originate from the Volga banks near Ul'yanovsk. In part these are small pyrite crystals crusts with very bright iridescence, encrusting fissures in spherical or elliptic septarian concretions (donations from A.Agafonov and A.Natarius). Another part consists of massive pyrite concretions, max. 20 cm in diameter, which form is so naturalistically phallic that even some experienced people believe them to be crafted by a man (donators L.Bulgak and A.Natarius) (photo 5). A pyrite pseudomorph after a jurassic stigmaria root collected in a coal pit near Borovichi, Novgorod oblast', Russia. Among other specimens of Russian origin a perfect cubic shape looking pentagonal dodecahedron of pyrite, about 11 cm in diameter, from Berezovsk, Middle Urals, along with deformed cubic crystals in chlorite schist from Dodo. Sub-Polar Urals, are noteworthy. A well-developed cubic pyrite crystal, 33 x 20 x 20 cm, with black fluorite aggregate adjoining one of its faces was obtained from Akchatau, Central Kazakhstan. This is the weightiest (about 80 pounds) specimen originating from the FSU countries for period described. Druzes of bright sparkling octahedral pyrite crystals www from Peru and as named «pyrite dollars» — discoid concretions from Sparta, Illinois, USA, are noteworthy among the foreign acquisitions.

Topaz (71 sample) and celestite (47) share the sixth and seventh positions. A part topaz was collected by the author of this paper in 1998 at Thomas Range, Utah. USA, due to a kind permission of J.Holfert who showed several good places at his claims. These are individual crystals up to 5 cm long, pinkish-brown, and intergrowths with bixbyite and pseudobrookite. Cut stones variously colored by treating in cobalt and titanium salt melts represent other part of new topaz specimens. These were included to the gem collection.

Among the new celestite specimens should be mentioned a splitted blue semi-transparent crystals associated with sulfur from Vodino, Samara oblast', Russia, collected by B.Shkurskiy. Celestite crystals, up to 5 cm of clear sky-blue color, were found at the Pinega River, Arkhangelsk oblast', within the voids in limestone. An interesting genesis small crystals of pale blue celestite on calcite helictites were collected in Promezhutochnaya cave, Kugitang Range, East Turkmenistan. Radial aggregate of gray celestite crystals hosted in dark argillite (so called stone chrysanthemum) was obtained from China.

The following table lists other mineral species acquired in quantity more than 7 specimens.

Mineral name	Number of specimens	Mineral name	Number of specimens
Crossular	41	Copper	13
Isoferroplatinum	30	Rutile	13
Sperrylite	27	Fluorite	12
Barite	23	Bixbyite	11
Gypsum	23	Cinnabar	11
Muscovite	23	Orthoclase	11
Chalcopyrite	21	Erionite-K	11
Aragonite	20	Graphite	10
Berthrandite	19	Jadeite	10
Hematite	19	Sulfur	10
Siderite	18	Phlogopite	10
Fluorapophyllite	17	Sheelite	10
Charoite	15	Schorl	10
Spinel	15	Agrellite	9
Colemanite	14	Beryl	9
Magnetite	14	Betafite	9
Opal	14	Malachite	9
Stilbite	14	Miserite	9
Fluorapatite	14	Danburite	8
Andradite	13	Diopside	8
Vesuvianite	13	Clinochlore	8
Bismuth	13	Murmanite	8
Wollastonite	13	Chrysotile	8
Corundum	13	Aegirine	8

Isoimetrical and distorted green crystals up to 5 cm make a greater part of new grossular specimens collected at the Vilyui River, Sakha-Yakutia, Russia. Zoned rhombododecahedrons up to 5 cm are from Xalostok, Mexico, represent grossular of foreign localities, as well as faceted grossular from Sri Lanka included to gem collection.

Russian Government institutions supplied all «platinum» samples. All of them are from Konder massif and represented by more or less rounded nuggets from 20 to 350 grams. They mostly contain isoferroplatinum with some chromium spinelides and Cr-diopside.

All sperrylite specimens were collected by A.Ponomarenko during 1985-1988 at Oktyabrskiy mine, Talnakh deposit, Norilsk area. They represented by crystals up to 12 mm and intergrowths — freestanding or in mooikhoekite matrix. These were catalogued after determination of associated phases, which sometimes were more interesting, then sperrylite itself. Interesting specimens of other species will be characterized along with description of other categories of new acquisitions.

New acquisition geography

The following table lists new acquisitions by their source countries.

Country	Number of specimens	Country	Number of specimens
Russia	1386	Peru	7
United States	368	Slovakia	7
Kazakhstan	148	Myanmar (Burma)	6
Tajikistan	135	Hungary	6
Australia	80	Chili	6
Canada	72	Argentina	5
Brazil	61	Norway	5
Turkmenistan	60	South Africa	5
Ukraine	54	Austria	4
Italy	51	Afghanistan	4
Azerbaijan	50	Serbia	4
Czech Republic	48	Tanzania	4
Georgia	46	Spain	3
Kyrgyzia	45	Portugal	3
Bulgaria	40	France	3
India	35	Algeria	2
China	35	Belarus	2
Germany	34	PR Congo	2
Uzbekistan	33	Oman	2
Mexico	30	South Korea	2
Poland	24	Vietnam	1
Sri Lanka	21	Egypt	1
Denmark	20	Zimbabwe	1
Rumania	18	Cuba	1
Morocco	17	Malawi	1
Armenia	16	Malaysia	1
Great Britain	13	Mali	1
Mozambique	13	New Zealand	1
Zaire	12	Senegal	1
Sweden	12	Slovenia	1
Japan	12	Sierra Leone	1
Madagascar	11	Turkey	1
Bolivia	8	Uruguay	1
Mongolia	8	Finland	1
Namibia	8	Chad	1
Switzerland	8	Antarctica	2
Greece	7	Oceans Bottom	5
Pakistan	7	Unspecified	53

New materials originate from 73 countries. Plus; some were collected from the bottom of the Atlantic and Indian oceans and some from Antarctica. Fifteen countries supplied us with one specimen each; 2 to 5 specimens came from each of 14 countries; 6 to 10 from 13 countries; 11 to 20 from 9 countries; 21 to 40 from 8 countries. Ten countries gave 41 to 100 samples each, whereas 4 countries represented by more than 100 samples each. From 11 former Soviet Union Republics we obtained 1975 samples, of which 1386 were collected in Russia.

Russia

Kola Peninsula and Karelia

As usually, new acquisitions from this region are most abundant: a total of 348 samples. of which 83 are from Khibiny massif, 95 — from Lovozero massif, and 22 — from Kovdor. These three massifs gave 67 mineral species new for the Museum, including 43 type specimens. Major contributors of rare minerals of that area are I.Pekov (54), A.Khomyakov (36), and M.Dorfman (7). In addition, rare minerals were donated by Z.Shlyukova, V.Levitskiy, M.Anosov, S.Britvin, A.Zadov, R.Liferovich, N.Manaev, V.Yakovenchuk, N.Chukanov, A.Parashchenko, M.Moiseev, and others. The Museum staff collected twenty seven specimens, 25 were either purchased or exchanged. Besides new minerals, the Khibiny-massif presented us with an interesting item, a large cleaved blocks of red transparent villiaumite found at Koashva mine, Khibiny (photo 2). The mineral is clear enough to be cut. As far as we know, this was the only finding during the whole mining history in Khibiny. Unfortunately, most of this material was discarded to the dumps and destroyed.

Unexpectedly large shomiokite-(Y) pieces and its dichroic crystals were donated by I.Pekov and A.Parashchenko. Fine lamprophyllite specimens from Khibiny, lorenzenite from Lovozero massif and diopside from Kovdor were donated by amateurs V.Silitskiy and L.Chikilyova. M. Moiseev collected at Kovdor quite remarkable specimens of new rare mineral, lemmleinite-Ba. These are bright red crystals up to 1 mm in cavities of calcite carbonatite. Among the stuff collected during Museum expeditions are large plates of purple murmanite in ussingite pegmatite (Karnasurt Mt., Lovozero). Very nice piece of elpidite from Alluaiv Mt., Lovozero massif was exchanged. (photo 19).

Other new acquisitions from Kola Peninsula were collected in the Keivy Heights (23 specimens). N.Pekova, I.Pekov, A.Voloshin, P.Kartashov, and V.Levitskiy donated rare minerals collected at Ploskaya Mt and massif Sakhariok. In addition V.Levitskiy donated a fine 8-cm staurolite twin («straight cross») hosted by muscovite schist (photo 24). More than 60 specimens were collected near Olenitsa village — mainly glendonite (see above).

An interesting new item from Karelia is a sphere cut from an almandine monocrystal found near Shueretskaya station (a donation from A.Scrafimovich). It exhibits an amazing type of asterism: fine light rings are distinguishable in several centimeters above the sphere. A

large prismatic crystal of red corundum hosted by gneiss was collected at Khit-ostrov.

Ura1s

This region gave us 211 new specimens. Forty-two of them came from Sub-Polar Ural. These are quartz, calcite, titanite, ferroaxinite, and hematite from Dodo, Puiva, and other deposits and occurrences along the east slope of the Urals. Among new things collected at the opposite slope (Yaruta Mt., Man-Khambo Range) very interesting an 8-mm crystal of recently discovered species tsaregorodtsevite sitting on quartz crystal face. A.Agafonov donated magnificent bright red corundum found at Rai-Iz massif.

Middle Urals supplied more then 70 new specimens. A.Zadov and A.Loskutov presented a series of samples, which characterize rodingite veins mineralisation at Bazhenovskoe asbestos deposit. These are idocrase crystals with reddish and pink zones, along with multicolored and colorless grossular, stilbite, xonotlite, and clinotobermorite (the first finding of the latter mineral in the region). Several vases made of serpentine from this deposit replenished the stone art collection.

M.Anosov donated interesting samples of green titanite twins up to 3.5 cm (photo 15) along with crusts of purple columnar crystals of Cr-amesite with alexandrite effect. Zoned masutomilite plates from Mokrusha pit donated by I.Pekov and elongated thin foitite crystals from Kazennitsa pit a gift from J.Patterson, represent Murzinka-Adui area. Rare minerals from the oxidation zone, phoenicochroite and embreyite were obtained from Berezovskiy mine along with previously mentioned pyrite.

South Urals gave more than 70 specimens. Among the most interesting objects we'd mention a rose shaped cluster of split blue corundum crystals, about 10 cm, from Ilmenskie Mts. (photo 3). S.Nikandrov who collected the mineral in the same area donated en cabochon-cut corundum that exhibits asterism. Other interesting findings comprise druzes with pseudocubo-octahedral crystals of perovskite up to 3 cm (photo 26) and magnetite from Zlatoust vicinity. Amazingly large (about 3-cm) hoegbomite crystal on clinochlore belongs to the same assemblage (photo 27). Unusual anorthoclase from Potaninskie Mts. that exhibits both sunstone and moonstone effects was purchased.

A total of 13 mineral species new for the Museum were obtained from South Urals, including 3 type specimens. In addition, B.Chesnokov donated a series of mineral phases he described from burning coal shafts dumps.

Russian Far East and Kamchatka Peninsula

Of 125 specimens obtained from this region, more than 100 represented Dal'negorsk area. Along with previously mentioned quartz and calcite, a large landscape piece of wollastonite skarn www is quite noteworthy. S. van Scriver donated original intergrowths of siderite spherocrystals (photo 23). Quite interesting hollow bertrandite-rhodochrosite pseudomorph after helvite up to 5cm originated from Zabytoe deposit, Khabarovskiy kray. Platinum nuggets from Konder massif already mentioned above.

Among 42 specimens from Kamchatka Peninsula are the sublimates of Tolbachik volcano fumaroles (donated by S.Filatov, S.Krivovichev, V.Popova, and N.Rudashevskiy), along with rare micro-minerals related to ultramafite-hosted PGM mineralisation. These minerals represent 2 species new for the Museum, including 7 recently discovered ones and 5 type specimens.

Krasnoyarskiy kray

A total of 128 new samples were obtained from here. These are related mainly to PGM minera1s, which occur in sulfide Cu-Ni ores of Noril'sk area. Beside previously mentioned sperrylite a collection contributed by A.Ponomarenko comprised rare minerals, including 7 species new for the Museum.

Sakha-Yakutia

Of 110 specimens, which included the above-mentioned grossular from Vilyuy, we obtained a series of polished charoite slabs from the Murun massif. The series illustrates textural and structural features of the mineral. Important specimens of rare minerals frankamenite, dalyite and others are also originate from Murun massif.

The Baikal area and Transbaikal

More than 100 specimens were obtained from those regions. A crystal of blue apatite (40 x 14 cm) hosted by yellow calciphyre from Slyudyanka, Baikal area, is one of more attractive. From tourmaline pegmatites of Malkhan Ridge, Chita oblast' a 3.5 cm danburite crystal on smoky quartz and pink elbaite on quartz (donated by D.Abramov) are noteworthy. Buryatia, as well as northern and southern parts of the Baikal area supplied us with 12 species new for the Museum, including 10 type specimens.

Northern Caucasus

A total of 34 specimens were obtained from this region, including a 35 cm one represented by crust of bright orange-red orpiment on dolo-

mite mined at the El'brusskiy mine, Karachaevo-Cherkessia (photo 6).

FSU countries

The most significant acquisitions from FSU countries came from **Azerbaijan**. These are well-formed rutile crystals up to 3.5 cm with shiny faces on quartz recently mined at Kapydzhik (Kapudzhuk) Mt. near Nakhichevan' (photo 18). They are much higher by quality compare to previously obtained pieces from this occurrence. New stuff was obtained from Dashkesan iron deposit. Among them druzes of amphibole pseudomorphs after hedenbergite are notable, along with grayish-green apatite crystals on magnetite matrix with quartz, and calcite. Nearly all pieces from Azerbaijan were purchase from Stone Flower Co. for a special museum (actually symbolic) price.

The most notable pieces from **Kazakhstan** are several druzes of large goergeyite crystals from Inder Lake as well as inderborite and colemanite from the same deposit. Well-developed trillings of davidite-(La) up to 5 cm were obtained from Bektau-Ata massif, Balkhash area. We already mentioned above pyrite from Kara-Oba, and among specimens from Akchatau a bunch of bertrandite crystals about 4 cm frozen into a face of dark violet fluorite octahedron is quiet remarkable.

Most valuable materials from **Tajikistan** are series of specimens from Dara-i-Pioz alkaline massif, collected by the Museum stuff members (D.Belakovskiy and B.Shkurskiy), purchased, exchanged, donated to the Museum, or acquired as type specimens of new species (L.Pautov and A.Agakhanov). In some of these specimens new mineral species were discovered after they were cataloged to Museum inventory e.g., dusmatovite, shibkovite, and telyushenkoite (a new Cs mineral). Many of Dara-i-Pioz species have bright luminescence and it was a good addition for Museum fluorescent display case.

The unique thing among acquisition from **Uzbekistan** is a native tellurium crystal 8-cm size (donated by P.Goloshchukov) from Koch-Bulak gold deposit south of Tashkent (photo 1). Noteworthy is the crusts of dark green crystals of volbortite up to 1cm from Utch-Kuduk (donation from L.Pautov and A.Minko).

The brightest materials from **Kyrgyzia** are blue aggregates and radial intergrowths of khaidarkanite a new mineral discovered recently by museum stuff members in Khaidarkan mercury deposit.

Other countries

United States. Maximum number of new foreign acquisitions originated from this country Donations (131 sample) is one of the sources. A 67-specimens collection donated by A.Kidwell was finally catalogued. It comprises magnificent kidwellite specimens and a series of phosphates as well as a selection of minerals from Magnet Cove, Arkansas. P.Radomsky contributed a bunch of rare fluorescent minerals from Franklin, New Jersey. J.Patterson donated helvite, danburite, and other minerals from granite pegmatites of South California. Interesting examples of sogdianite and zektserite from Golden Horn batolith, Washington, were donated by R.Becker. and R.Boggs. Trona druzes and a series of borates from Boron, California were donated by J.Watson. The list of donators, maybe an incomplete one, includes G.Robinson, L.Ream, W.Simmons, P.Haynes, T.Brent, C.Korpi, W.Heller, T.Nipp, B.Cannon, A.Lelkes, and N. Medvedev. Other source of acquisitions was an inter-museum exchange, mainly with Smithsonian National Museum of Natural History, Washington, D.C., and exchange with private collectors. Forty-three species new for the Museum were obtained this way along with exquisite moganite secretions from New Mexico (photo 22). Field collecting carried out abroad by the Museum staff members makes the third source. Along with topaz from Thomas Range mentioned above, bixbyite crystals (photo 17) (max. 1.5 cm long), flattened crystals of red beryl. cassiterite and durangite, were collected in this area. Blue bertrandite-fluorite-hyalite nodules (photo 25) were found at Brush Wellman Be deposit, now totally re-cultivated. Recently discovered mineral formikaite was established in samples collected by A.Godovikov in 1965 in Cresmore, Califonia.

Canada. Most of the canadian new acquisitions originate from Mont Saint-Hilaire and De Mix-Varennes Quarry, Quebec (33 specimens). Private collectors donated a good part of these. L.&E. Horvath donated among other species, horvathite-(Y) named after them, and manganokhomyakovite – a Mn analogue of khomyakovite named after Dr. A.Khomyakov, a Russian mineralogist. The list of Canadian contributors includes also R.Rottenberg and P.Tarasoff, F.Spertini (spertiniite from Jeffrey Mine, Asbestos was obtained from him). A remarkable intergrowth of orange serandite 4-cm in size with a white spherolite of leifite was exchanged. Large hand specimens with agrellite, eudialite and vlasovite from Kipawa alkaline complex and large fluorapatite crys-

tals from Yates mine, Quebec. also came that way. The Museum staff member in Silver Crater, Ontario, collected nice but hot betafite crystals up to 3 cm.

Mexico. Iridescent obsidian, transparent yellowish Labrador crystals from Labrador mine, Chihuahua, and spherical intergrowth of creedite from Navidad mine are the most notable specimens from that country.

Brazil. Among the acquisitions from this country there are large flattened crystals of eosphorite up to 10 cm long partially replaced by ernstite (photo 16), large crystal of hydroxylherderite from Linopolis, Minas Gerais, and stannomicrolite resting on surface of spherical stokesite intergrowth from Urucum mine, Minas Gerais.

Australia. A total of 80 samples were obtained from this country, including 11 species new for the Museum, a selection of specimens from Broken Hill (large bustamite crystals and acicular varieties of this mineral, spessartite and apatite in galena, an unusual bright-green orthoc1ase and other minerals. M.&L.Phelan donated a large sample of bright-colored stichtite from type locality in Tasmania.

India. Of 35 indian specimens the majority represented by diverse zeolites. An expressive bright-blue 2-cm cavansite spherolite and a 9 cm barrel-shaped red corundum from Mysore are of interest.

China. A large (12-cm long) well-developed yellow partially transparent scheelite dipyramidal crystal is the most impressive sample among those 35 obtained from China (photo 20). A bright-green pyromorphite from Guangxi is highly attractive. Druzes of large barite and fluorite crystals from several deposits in Hunan province are quite notable. Fine examples of fluorite and agalmatolite curving replenished the gem collection.

Of other foreign samples I would mention kidney-shaped crusts and pseudostalaktite of malachite from Zaire, a red corundum from Sierra-Leone (donated by A.Belyakov), a transparent yellow meionite 8-cm crystal from Tanzania, a lepidolite spherocrystal (the so-called Barbot eye) from Mozambique, and curving on red corundum hosted by green zoisite (Tanzania) and chalcedony.

W.Pinch, an American collector, donated a fragment of the type specimen of andyrobertsite. Unfortunately, this publication is limited, so many other noteworthy specimens remained unmentioned.

Types of new acquisitions and personalia

During 1997—2001, a total of 3414 specimens were cataloged to the main Museum fund collections. Of these 2180 came to the Museum during this period. Others were obtained earlier, but examined and cataloged during the period mentioned.

334 specimens were purchased, and 600 were obtained through exchange. Seventeen Museum staff members collected 610 specimens during field trips financed either by Museum or from other sources: D.Belakovskiy (140). A.Ponomarenko (92). A.Nikiforov (78), D.Abramov (63), A.Zakharov (46), B.Shkurskiy (41), D.Romanov (30) O.Sveshnikova (24), L.Pautov (20), A.Agakhanov (19), A.Evsecv (17), N.Pekova (13), M.Dorfman (11) and others.

A total of 521 specimens were cataloged as acquisitions from V.l.Stepanov's and A.A.Godovikov's collections.

Twelve organizations and 230 individuals donated 1197 samples (one-third of the total donation number). I.Pekov donated a maximum of 135 specimens. V.Levitskiy donated 101 specimen, A.Kidwell — 79. A significant number of specimens were donated by M.Anosov(58). D.Belakovskiy (42), A.Khomyakov (41), L.Bulgak (37), A.Zadov (29), D.Sulerzhitskiy (22), W.Heller (18), A.Nikiforov (18), L.Pautov (14), J.Patterson (13), E.Spiridonov (13), V.Karpenko (12), O.Sveshnikova (12), D.Abramov (11), D.Edwards (10), A.Agakhanov (10), E.Semenov (10), V.Silitskiy and L.Chikileva (10), A.Brusnitsyn (10). Other persons who donated specimens to the Museum at this period (directly or indirectly) are: A.Agafonov, A.Akimov, S.Aleksandrov, S.Anan'ev, V.Apollonov, V.Averin, E.Babkin, A.Badalov, R.Bagataev, A. Bakhchisaraitsev, P.Bantsekov, S.Baskakov, S.Baturov, A.Bazhenov, S.Belostotskiy, O.Belyaev, M.Bezsmertnaya, G.Bocharova, Yu.Bogdanov, P.Borisov, I.Bryzgalov, V.Bukanov, A.Bul'yenkov, A.Butler, V.Chalisov, V.Chernavtsev, B.Chesnokov, Yu.Chul'zhanov, I.Davidenko, M.Dobrovol'skaya, N.Erilova, V.Cekimyants, M.Generalov, I.Ginzburg, A.Godovikov, R.Gogoleva, P.Goloshehukov, P.Gorchakov, K.Cribakh, A.Gribanov, S.Gusev, I.Ilupin, M.Ismailov, A.Izergin, V.Kalachev, B.Kantor, G.Kapustkin, P.Kartashov, A.Katz, R.Khazov, K.Klopotov, Yu.Kobyashev, A.Konev, A.Koneva V.Kongarov, O.Kononov, A.Konoval, S.Konovalenko, V.Korolev, A.Kovalev,

Yu.Kozlov, S .Krivovichhev, E.Kutukov, E.Kuvarzina, V.Kuvshinov, V.Ladygin, A.Lapidus, A.Lapin, L.Lebedev, R.Liferovich, M.Litsarev, A.Loskutov, B.Magadeev, Kh.Magnishchan, V.Makarochkin, A.Makeev, M.Malev, S.Malinko, N.Manaev, B.Manucharyants, V.Markov, N.Medvedev, O.Mel'nikov, Yu.Men'shikov, A.Mineeva, A.Min'ko, A.Mochalov, P.Mochalov, M.Moiseev, N.Mozgova, Yu.Nadzhip, A.Natarius, B.Nenashev, S.Nikandrov, S.Nikitin, T.Nipp, T.Nishanbayev, E.Novgorodova, M.Novgorodova, M.Novikova, D.Novitskiy, N.Organova, Ya.Pakhomovskiy, E.Pankratova, A.Parashchenko, L.Pavlova, I.Peretyazhko, N.Pertsev, N.Petrovskaya, V.Pokusayev, Yu.Polekhovsky, V.Politov, O.Polyakov, A.Ponomarenko, V.Popov, M. Popov, V.Popova, L.Reznitskiy, O.Rippinen, D.Romanov, V.Rudnev, Yu.Samodurov, M.Samoylovich, S.Sandomirskaya, V.Sapegin, V.Savel'yeva, S.Savkevich, A.Serafimovich, M.Seredkin, L.Shabynin, A.Shevnin, B.Shkurskiy, Z.Shlyukova, E. Sklyarov, N.Skorobogatova M.Smirnova, N.Sobolev, A.Sokolov, V.Subbotin, O.Tananaeva, G.Tarnovskiy, I.Tkachenko, E.Tsukanov, S.Tsurin, V.Ushakovskiy, B.Vaintrub, L.Vergasova, A.Volchkov, A.Voloshin, V.Yakovenchuk, F.Yanshina, E.Zav'yalov, Yu.Zhdanov, O.Zhilina, B.Zlenko, I.Zotov and others.

Foreign donators were: A.Arnold, Arnot, C.Barbosa, R.Becker, I.Bernard, R.Boggs, V.Breckler, M.Bunno, G.Dowton, C.Garret, E.Grew, C.Hedergaard, L.&F. Horwath, J.Holfert, C.Korpi, R.Lavinsky, L.Gilberto, R.Kristiansen, F.Lewis, L.Menezes, E.Nickel, P.Haynes, J.Patterson, H.Penndorf, F.Pezzota, M.&E.Phelan, W.Pinch, L.Ream, G.Robinson, R.Currier, J.Sharp, W.Simmons, P.Tarasoff, T.Brent, J.Vaidak, S.van Scriver, D.Varhegyi, J.Watson, C.Duszan, S.Petrussenko and others.

The following organizations donated specimens to the Museum: Central Scientific Geology-prospectical Institute (TSNIGRI), All-Russian Institute for Synthetic Minerals (VNIISIMS), Institute of Geology and Geophysics Siberian brunch of RAS, a school geological club «Geokompania», Ankersmith Holding, Waikato Mineralogical Museum, a School faculty of the Moscow Geology-Prospectical Academy (MGGA/MGRI), RAS Committee on Meteorites, Pyatigorsk Regional Studies Museum, Obninsk mineralogical association, Seventh Day Adventist group and others. Another sources, including unspecified, brought 152 samples.

On behalf of the Fersman Mineralogical Museum I would like to thank all donators and everybody who participate in replenishing of our Museum collections.

As for the nearest future, we are planning to expand the list of mineral species represented in the Museum. To do so we publish here our want list (Appendix 2). Along with species which are absent in Museum collection it includes the species needed for some particular scientific studies carried out in the Museum.

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Appendix 1

A list of mineral species new for the Museum contributed during 1997-2001.

Mineral species approved by CNMMN IMA and published during 1997—2001 are set in bold.
* — mineral species represented in Museum by type specimens or fragments of type specimens
** — mineral species discovered by Museum staff or in collaboration with Museum staff.
*** — mineral species discovered in previously cataloged specimens that acquired as other minerals.

Abernathyite
Abhurite
Aeschynite-(Nd)
Agardite-(Y)
Aheylite
Alacranite
Altisite*
Alumoklyuchevskite
Alumopharmacosiderite
Ammonioalunite
Andyrobertsite*
Antimonpearceite
Archerite
Arhbarite
Arsenocrandallite
Arsenuranospathite
Ashburtonite
Atlasovite*
Auricupride
Avicennite
Babkinite*
Baksanite*
Bariumpharmacosiderite
Barrerite
Barroisite
Bazhenovite
Behierite
Belkovite*
Belloite
Belovite-(La)
Benyacarite
Berezanskite**
Bergslagite
Bicchulite
Biehlite
Bismuthopyrochlore*
Bismutocolumbite*
Bismutomicrolite*
Blatonite
Bowieite
Bradachekite*
Braggite
Brezinaite
Brizziite
Burpalite*
Buryatite*
Buttgenbachite
Bystrite*
Calcioancylite-(Ce)
Calciohilairite
Camerolaite
Cannonite
Caysichite-(Y)
Cebollite
Chabazite-Sr*
Charlesite
Chayesite
Chengdeite
Cheralite
Cherepanovite
Chernikovite*
Chiavennite
Chlorartinite
Chloromenite
Chromceladonite*
Chromphyllite*
Clinotobermorite
Cobaltlotharmeyerite
Coquandite
Crawfordite*
Cronusite
Cryptohalite
Cumengite
Cuproiridsite
Cuprorhodsite
Dashkovaite***
Defernite
Dellaite
Deloneite-(Ce)*
Dorrite
Dusmatovite**
Edgarbaileyite
Edgarite
Edoylerite
Embreyite
Englishite
Eriochalcite
Erlichmanite
Ershovite*
Esperite
Eugenite
Feroxyhyte
Ferronordite-(Ce)**
Ferronordite-(La)*
Ferrorhodsite
Ferrotapiolite
Feruvite
Fervanite
Filipstadite
Finnemanite
Fluorellestadite
Fluormagnesioarfvedsonite*
Fluornatromicrolite
Formicaite*
Frankamenite
Froodite
Gamagarite
Ganophyllite
Gartrellite
Gasparite-(Ce)
Geminite
Georgiadesite
Germanocolusite*
Geversite
Gladiusite*
Gordaite
Grischunite
Gupeiite
Hammarite
Haradaite
Haynesite
Henrymeyerite
Heulandite-(Sr)
Hexaferrum
Heyrovskiite

Hibbingite
Hochelagaite
Hoernesite
Hollingworthite
Hongshiite
Horvathite-(Y)
Hsianghualite
Hunchunite
Hutchinsonite
Hydrohonessite
Hydroxycancrinite•
Hydroxylclinohumite•
Hydroxylellestadite
Ilínskite•
Inaglyite
Indium•
Insizwaite
Intersilite•
Iquiqueite
Iraqite-(La)
Irhtemite
Isomertieite
Isovite••
Iwakiite
Jaffeite
Jahnsite-(CaMnFe)
Jedwabite••
Jennite
Jinshajiangite
Juanitaite
Juonniite
Kalifersite•
Kamiokite
Kanemite
Kapitsaite-(Y)••
Karlite
Kashinite
Keithconnite
Khaidarkanite••
Khmaralite
Khristovite-(Ce)••
Kipushite
Kochkarite
Komkovite
Koragoite
Korobitsynite•
Kosmochlor
Kozoite-(Nd)
Kremersite
Krupkaite
Krutaite
Kuzmenkoite-Mn•
Kyzylkumite
Labuntsovite-Fe•
Labuntsovite-Mg•
Laffittite
Lanthanite-(La)
Lemmleinite-Ba•
Lemmleinite-K•
Lenaite
Lermontovite•
Lesukite
Letovicite
Likasite
Lindackerite
Lintisite•
Lisitsinite•
Lithiowodginite•
Litvinskite•
Loudounite
Luanheite
Luddenite
Lulzacite
Magnesiofoitite
Magnesiohastingsite
Magnesiokataphorite
Majakite
Makarochkinite•
Malanite
Malinkoite•
Manaksite
Manandonite
Manganokhomyakovite
Manganonauyakasite•
Manganonordite-(Ce)••
Manganosegelerite•
Manganotychite•
Maricopaite
Marrite
Masutomilite
Mawbyite
Mazzite
Megacyclite•
Meixnerite
Merenskyite
Mertieite-I
Metamunirite
Metarossite
Michenerite
Minasragrite
Mineevite-(Y)•
Molybdophyllite
Monazite-(Nd)
Moolooite
Nafertisite•
Natroxalate•
Neltnerite
Nepskoeite•
Nickelhexahydrite
Nickellotharmeyerite
Nickelschneebergite
Niobocarbide••
Nitrammite
Novgorodovaite•••
Nuffieldite
Olangaite•
Olekminskite•
Olkhonskite•
Orcelite
Organovaite-Mn•
Organovaite-Zn•
Orlandite
Orthominasragrite
Orthoserpierite
Padmaite•
Palenzonaite
Paracelsian
Paranatisite•
Parapierrotite
Paraschachnerite
Parasibirskite
Paulkerrite
Peisleyite
Pekoite
Penfieldite
Peprossiite-(Ce)
Petersenite-(Ce)
Phoenicochroite
Phuralumite
Piypite
Plafarsite
Polyphite•
Potasicferrisadanagaite•
Povondraite
Preisingerite
Prismatine
Pseudoboleite
Pyatenkoite-(Y)•
Quadruphite•
Quintinite
Ramsbeckite
Reinhardbraunsite
Remondite-(La)•
Rhodarsenide
Rimkorolgite
Robinsonite
Roggianite
Rorisite•
Roscherite
Roshchinite•
Rosiaite
Roweite
Sabinaite
Saddlebackite
Sanjuanite
Sarcopside
Sazykinaite-(Y)•
Schlossmacherite
Schmiederite
Schneebergite
Schuetteite
Schumacherite
Scrutinyite
Segnitite
Seidite-(Ce)•
Shcherbinaite•
Shibkovite••
Shkatulkalite
Shomiokite-(Y)•
Siderazot
Sigloite
Silvialite
Sincosite
Skinnerite
Smithite
Sodium zippeite
Sofiite
Sopcheite
Sorosite
Spertiniite
Squawcreekite
Stannomicrolite
Stetefeldtite
Stibiocolusite•
Stistaite
Strakhovite•
Stringhamite
Strontiowhitlockite•
Studenitsite•
Sudburyite
Switzerite
Takanelite
Taneyamalite
Tantalcarbide
Tellurobismuthite
Telluropalladinite
Telyushenkoite•••
Ternovite•
Tetraauricupride
Thalfenisite
Tiettaite•
Tinsleyite
Tiragalloite
Tocornalite
Tolovkite
Triangulite
Tschernichite
Tsnigriite•
Tsumebite
Tuliokite•
Turkestanite••
Ulrichite
Urusovite
Urvantsevite
Vajdakite
Varennesite
Vasilite
Vergasovaite•
Vicanite-(Ce)
Vihorlatite
Villyaellenite
Vistepite••
Wallisite
Weilite
Weinebeneite
Weissbergite
Widgiemooolthalite
Wilhelmvierlingite
Wiluite
Yanomamite
Zalesiite
Zemannite
Zhemchuzhnikovite
Zincocopiapite
Zincowoodwardite
Znucalite
Zvyagintsevite

Appendix 2

The Museum want list as for April 30 2003.

The most wanted mineral species are set in bold. Some mineral species listed are represented in Museum but needs better quality or for research programs.

Abelsonite
Abenakiite-(Ce)
Abswurmbachite
Achavalite
Acuminite
Admontite
Aerugite
Akimotoite
Alarsite
Albrechtschraufite
Alforsite
Allanite-(La)
Althupite
Aluminobarroisite
Aluminocopiapite
Amminite
Ammonioborite
Ammonioleucite
Amstallite
Anandite-2O
Andremeyerite
Androsite-(La)
Anduoite
Angelellite
Anhydrokainite
Antarcticite
Anthonyite
Antimonselite
Aplowite
Arakiite
Aravaipaite
Arcubisite
Ardaite
Ardealite
Argutite
Aristarainite
Armalcolite
Armangite
Arsenbrackebuschite
Arsenobismite
Arsenoflorencite-(Ce)
Arsenoflorencite-(La)
Arsenoflorencite-(Nd)
Arsenogorceixite
Arsenogoyazite
Arsenohauchecornite
Arsenuranospathite
Artroeite
Arzakite
Arzrunite
Aschamalmite
Ashoverite
Asisite
Aspidolite
Asselbornite
Astrocyanite-(Ce)
Athabascaite
Atheneite
Aubertite
Auroantimonate
Averievite
Baghdadite
Baileychlore
Baiyuneboite-(Ce)
Balipholite
Bamfordite
Banalsite
Bararite
Barberiite
Bariomicrolite
Barioorthojoaquinite
Bariosincosite
Barquillite
Barringerite
Barringtonite
Barstowite
Bartelkeite
Bassetite
Bastnaesite-(La)
Bastnaesite-(Y)
Baumstarkite
Baylissite
Bearthite
Bechererite
Bederite
Belendorffite
Bellbergite
Bellidoite
Bellite
Benauite
Berdesinskiite
Bernalite
Bernardite
Berndtite
Bideauxite
Bigcreekite
Bijvoetite-(Y)
Billingsleyite
Bismutostibiconite
Blakeite
Bleasdaleite
Blossite
Bobkingite
Bogvadite
Bonaccordite
Boralsilite
Borishanskiite
Bornhardtite
Bostwickite
Bottinoite
Brabantite
Bracewellite
Bradleyite
Braggite
Brandholzite
Brendelite
Brewsterite-Ba
Brianite
Brianroulstonite
Brindleyite
Brinrobertsite
Brizziite
Brodtkorbite
Brokenhillite
Bruggenite
Brunogeierite
Buchwaldite
Buckhornite
Bulachite
Bunsenite
Burnsite
Bursaite
Burtite
Butschliite
Cabalzarite
Cadwaladerite
Calcioaravaiapaite
Calciobetafite
Calcioburbankite
Calciocopiapite
Calcjarlite
Calclacite
Calderonite
Calkinsite-(Ce)
Cameronite
Camgasite
Canaphite
Canfieldite
Caoxite
Capgaronnite
Carboborite
Carboirite
Caresite
Carlhintzeite
Carlinite
Carlosruizite
Carlsbergite
Carmichaelite
Carobbiite
Carraraite
Cascandite
Cassedanneite
Cassidyite
Caswellsilverite
Cavoite
Cebaite-(Ce)
Ceriopyrochlore-(Ce)
Cervelleite
Cesanite
Chadwickite
Chaidamuite
Chameanite
Changbaiite
Changchengite
Changoite
Chantalite
Chaoite
Charmarite
Chelkarite
Chenite
Cheremnykhite
Chernovite-(Y)
Chessexite
Chesterite
Chestermanite
Chillagite
Chiluite
Chladniite
Chloraluminite
Chlorbartonite

Chlorellestadite
Chlormanganokalite
Chlorocalcite
Chlorozincite
Choloalite
Chrisstanleyite
Christite
Chromatite
Chrombismite
Chursinite
Chvaleticeite
Cianciulliite
Ciprianite
Clairite
Claringbullite
Clearcreekite
Clerite
Clinocervantite
Clinoferrosilite
Clinojimthompsonite
Clinomimetite
Clinoungemachite
Cobaltpentlandite
Cobaltzippeite
Cochromite
Comancheite
Combeite
Comblainite
Compreignacite
Congolite
Coparsite
Coskrenite-(Ce)
Costibite
Coyoteite
Crerarite
Criddleite
Cualstibite
Cuboargyrite
Cupalite
Cupropavonite
Cuprorivaite
Cyanochroite
Damaraite
Damiaoite
Danbaite
Danielsite
D'Ansite
Daomanite
Davidite-(Ce)
Davidite-(Y)
Deanesmithite
Deliensite
Deloryite
Derbylite
Derriksite
Dervillite
Despujolsite
Dessauite
Diaoyudaoite
Dienerite
Dietzeite
Dimorphite
Dinite
Diomignite
Dissakisite-(Ce)
Dittmarite
Dixenite
Donharrisite
Dorallcharite
Douglasite
Downeyite
Doyleite
Dozyite
Dreyerite
Drugmanite
Drysdallite
Dukeite
Duttonite
Earlandite
Eastonite
Ecandrewsite
Eckermannite
Effenbergerite
Ehrleite
Eifelite
Ekatite
Ellisite
Emilite
Ercitite
Erlianite
Ernienickelite
Erniggliite
Ertixiite
Eskimoite
Esperanzaite
Eugsterite
Eveite
Fabianite
Faheyite
Fahleite
Fairbankite
Fairchildite
Falcondoite
Fangite
Farringtonite
Feinglosite
Feitknechtite
Felbertalite
Fencooperite
Ferdisilicite
Fermorite
Ferrarisite
Ferrikatophorite
Ferrilotharmeyerite
Ferrinatrite
Ferripedrizite
Ferristrunzite
Ferrisurite
Ferritschermakite
Ferriwinchite
Ferroakermanite
Ferroalluaudite
Ferroaluminobarroisite
Ferroaluminoceladonite
Ferroaluminotschermakite
Ferroaluminowinchite
Ferrobarroisite
Ferrobustamite
Ferroclinoholmquistite
Ferroeckermannite
Ferroedenite
Ferroferribarroisite
Ferroferritschermakite
Ferroferriwinchite
Ferroglaucophane
Ferrohexahydrite
Ferroholmquistite
Ferrohornblende
Ferrokaersutite
Ferrokesterite
Ferrokinoshitalite
Ferropargasite
Ferropyrosmalite
Ferrorichterite
Ferrotitanowodginite
Ferrowinchite
Ferrowodginite
Ferruccite
Fetiasite
Fianellite
Fiedlerite-1A
Fingerite
Fischesserite
Flagstaffite
Fletcherite
Flinkite
Florencite-(La)
Florencite-(Nd)
Florenskyite
Florensovite
Fluocerite-(La)
Fluorannite
Fluorbritholite-(Ce)
Fluorcannilloite
Fluorferroleakeite
Flurite
Fontanite
Franciscanite
Francoanellite
Francoisite-(Nd)
Frankhawthorneite
Franklinfurnaceite
Franklinphillite
Fransoletite
Freboldite
Freedite
Fritzcheite
Fuenzalidaite
Fukalite
Fukuchilite
Furongite
Furutobeite
Gabrielsonite
Gainesite
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Gallobeudantite
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Garavellite
Garrelsite
Garyansellite
Gatehouseite
Gaultite
Gebhardite
Geerite
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Georgeericksenite
Gerdtremmelite
Gerenite-(Y)
Gerstmannite
Gianellaite
Giannetite
Giessenite
Gilmarite
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Giorgiosite
Giraudite
Girdite
Gittinsite
Giuseppettite
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Grantsite
Grattarolaite
Gravegliaite
Grayite
Gregoryite
Griceite
Grimaldiite
Grimselite
Grossite
Grumiplucite
Guanine
Guettardite
Guildite
Gupeiite
Guyanaite
Gwihabaite
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Hafnon
Haggertyite
Haigerachite
Haineaultite
Hallimondite
Hanawaltite
Hannayite
Harrisonite
Hastite
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Hawthorneite
Haxonite
Haycockite
Hectorfloresite
Heideite
Heidornite
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Helmutwinklerite
Hemloite
Hendersonite
Heneuite
Hennomartinite
Henryite
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Hexatestibiopanickelite
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Horsfordite
Howardevansite
Huangite
Hugelite
Hungchaoite
Hydrobasaluminite
Hydrochlorborite
Hydrodresserite
Hydrombobomkulite
Hydroniumjarosite
Hydroromarchite
Hydroscarbroite
Hydrowoodwardite
Hydroxylbastnaesite-(Ce)
Hydroxylbastnaesite-(La)
Hydroxylbastnaesite-(Nd)
Hydroxylellestadite
Hydroxyuvite
Hyttsjoite
Idaite
Imgreite
Imhofite
Incaite
Ingersonite
Iridarsenite
Isolueshite
Itoigawaite
Itoite
Jahnsite-(CaMnMn)
Jahnsite-(MnMnMn)
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Jamesite
Janggunite
Jankovicite
Jarosewichite
Jeanbandyite
Jeffreyite
Jensenite
Jentschite
Jerrygibbsite
Jervisite
Jianshuiite
Jimthompsonite
Jixianite
Johachidolite
Johninnesite
Johnsomervilleite
Johntomoite
Johnwalkite
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Killalaite
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Kleemanite
Kolicite
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Koutekite
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Kulkeite
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Kusachiite
Kutinaite
Kuzelite
Kuzminite
Kyzylkumite
Laflammeite
Laforetite
Langisite
Lansfordite
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Laphamite
Lapieite
Larosite
Larsenite
Launayite
Laurelite
Lausenite
Lautenthalite
Lawrencite
Lawsonbauerite
Leakeite
Lecontite
Lehnerite
Leisingite
Lepersonnite-(Gd)
Levinsonite-(Y)
Levyclaudite
Lewisite
Liandratite
Liebauite
Liebenbergite
Lindqvistite
Lindsleyite
Lisetite
Lishizhenite
Lonecreekite
Loranskite-(Y)
Loseyite
Lourenswalsite
Loveringite
Luberoite
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Lukenchangite-(Ce)
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Lyonsite
Macaulayite
Macedonite
Machatschkiite
Macphersonite
Macquartite
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Maghagendorfite
Magnesioaluminotaramite
Magnesiochloritoid
Magnesioclinoholmquistite
Magnesiocopiapite
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Magnesiodumortierite
Magnesioferrikatophorite
Magnesioferritaramite
Magnesioholmquistite
Magnesiohulsite
Magnesiosadanagaite
Magnesiotaramite
Magnesiumchlorophoenicite
Magnesiumzippeite
Magnolite
Majorite
Makinenite
Makovickyite
Mallardite
Mallestigite
Mammothite
Manganarsite
Manganeseshadlunite
Mangangordonite
Manganochromite
Manganolangbeinite
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Manganotapiolite
Mantienneite
Mapimite
Marshite
Marumoite
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Mathiasite
Matsubaraite
Mattagamite
Matteuccite
Mattheddleite
Matveevite
Mauhertite
Mayingite
Mbobomkulite
Mcalpineite
Mcauslanite
Mcbirneyite
Mcconnellite
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Medenbachite
Melanostibite
Mendozite
Menqxianminite
Mereheadite
Mereiterite
Metaalunogen
Metaankoleite
Metadelrioite
Metakahlerite
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Metakoettigite
Metalodevite
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Metauranospinite
Metavandendriesscheite
Metavanmeersscheite
Metazellerite
Miassite
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Minguzzite
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Modderite
Moeloite
Mohrite

Moluranite
Molysite
Monazite-(Nd)
Monazite-(Sm)
Monetite
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Montdorite
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Moreauite
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Morimotoite
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Mutinaite
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Niahite
Nichromite
Nickelaustinite
Nickelbischofite
Nickelbloedite
Nickelhexahydrite
Nickelphosphide
Nickenichite
Niedermayerite
Nierite
Nimite
Niningerite
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Noelbensonite
Nowackiite
Nukundamite
Nullaginite
Nyboëite
Obertiite
Oboyerite
Obradovicite
O'Danielite
Odinite
Oenite
Ojuelaite
Okayamalite
Oldhamite
Omeiite
Oneillite
Oosterboschite
Orcelite
Orebroite
Orickite
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Orpheite
Orschallite
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Osarsite
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Otjisumeite
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Oursinite
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Owensite
Oxammite
Oyelite
Paarite
Paceite
Paderaite
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Pahasapaite
Painite
Palladoarsenide
Palladobismutharsenide
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Parwelite
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Paulmooreite
Paxite
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Petrukite
Petscheckite
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Rambergite
Rameauite
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Rankachite
Ransomite
Ranunculite
Rayite
Redingtonite
Redledgeite
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Refikite
Reichenbachite
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Reinerite
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Rengeite
Reppiaite
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Rooseveltite
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Sadanagaite
Saliotite
Salzburgite
Samfowlerite
Sanderite
Santanaite
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Saryarkite-(Y)
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Sayrite
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Schiavinatoite
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Schoellhornite
Schreyerite
Sclarite
Scotlandite
Seamanite
Sederholmite
Seelite
Selwynite
Sewardite
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Shakhovite
Shandite
Sharpite
Sheldrickite
Sherwoodite
Shigaite
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Sicherite
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Sidwillite
Sieleckiite
Siqismundite
Silhydrite
Silicon
Silinaite
Simmonsite
Simonellite
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Simplotite
Sinjarite
Sinnerite
Sinoite
Skippenite
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Spadaite
Sphaerobismoite
Spodiosite
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Srilankite
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Stanfieldite
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Sudovikovite
Suessite
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Suolunite
Surite
Susannite
Suzukiite
Sveite
Svenekite
Sverigeite
Swaknoite
Swamboite
Swartzite
Sweetite
Symesite
Synchysite-(Nd)
Szmikite
Szymanskiite
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Takedaite
Takeuchiite
Tamaite
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Taramite
Tarkianite
Tatyanaite
Tedhadleyite
Teineite
Tellurohauchecornite
Telluronevskite
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Torreyite
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Uhligite
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Upalite
Uramphite
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Uricite
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Utahite
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Vanmeersscheite
Vanoxite
Vanuranylite
Varulite
Vaterite
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Vikingite
Villamaninite
Vincentite
Vinciennite
Virgilite
Vochtenite
Voggite
Vonbezingite
Vozhminite
Vulcanite
Vuorelainenite
Wadalite
Wadsleyite
Wakefieldite-(Y)
Walfordite
Wallkilldellite-(Mn)
Walthierite
Wardsmithite
Warikahnite
Watanabeite
Watkinsonite
Wattevillite
Wawayandaite
Weishanite
Weissite
Welinite
Werdingite
Wernerkrauseite
Wesselsite
Wheatleyite
Whiteite-(CaMnMg)
Widenmannite
Wilcoxite
Wilhelmkleinite
Wilhelmvierlingite
Wilkmanite
Willyamite
Wiserite
Woodallite
Wooldridgeite
Wulfingite
Wupatkiite
Wyartite
Wycheproofite
Xanthiosite
Xenotime-(Yb)
Xiangjiangite
Xifengite
Xilingolite
Ximengite
Xingzhongite
Xitieshanite
Yagiite
Yaroslavite
Yedlinite
Yimengite
Yingjiangite
Yixunite
Yoshiokaite
Yttroceberysite-(Y)
Yttrocolumbite-(Y)
Yuanjiangite
Yvonite
Zabuyelite
Zaccagnaite
Zaherite
Zairite
Zellerite
Zenzenite
Zhanghengite
Ziesite
Zincalstibite
Zincgartrellite
Zincobotryogen
Zincochromite
Zincohoegbomite
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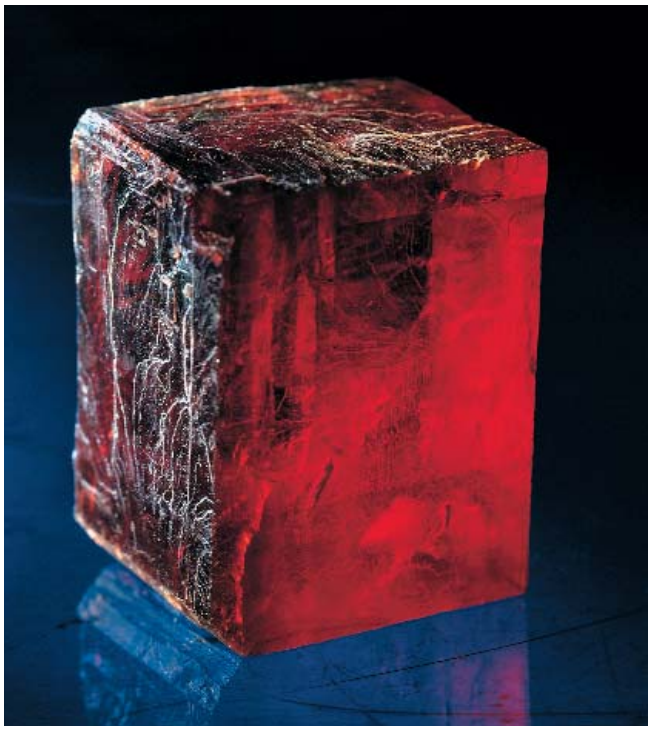
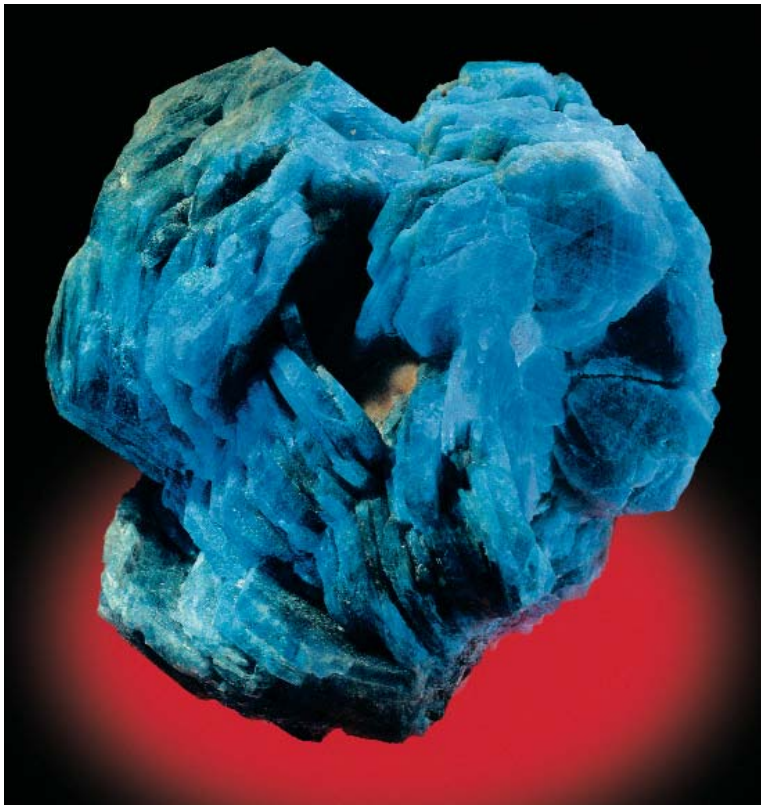
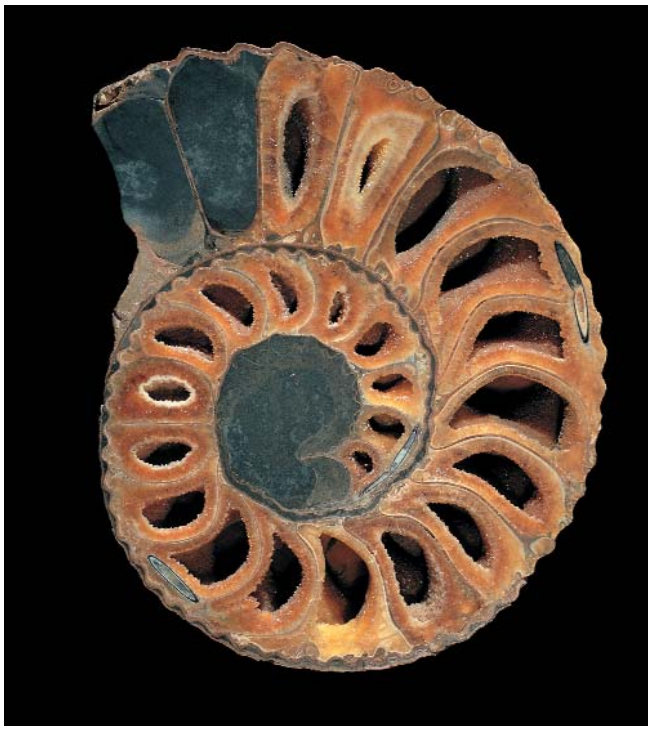
Zircophyllite
Zirklerite
Zodacite
Zoubekite
Zugshunstite-(Ce)

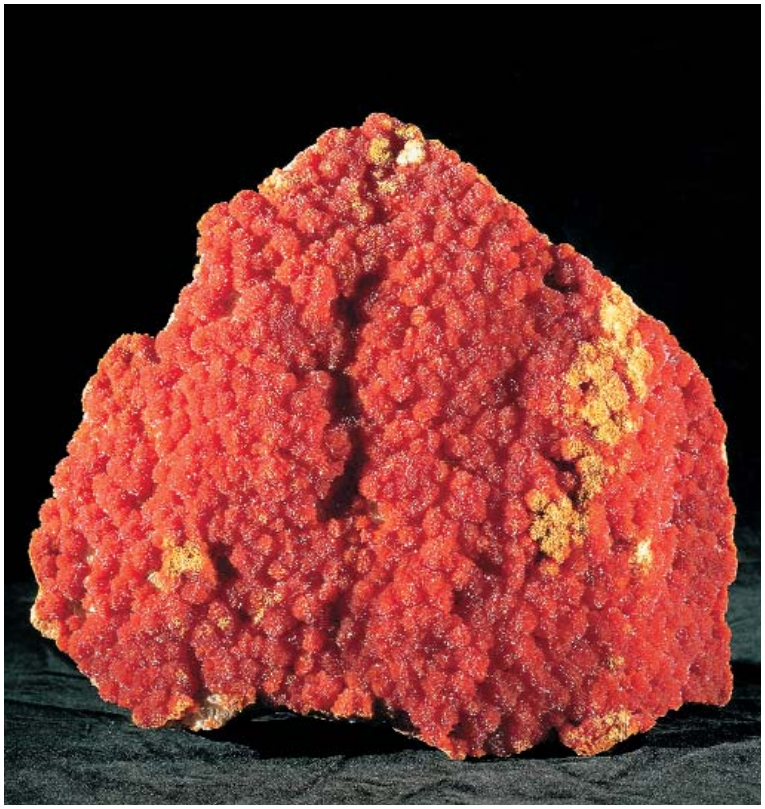




1. Native tellurium. crystal fragment 8 x 2.5cm with intergrowings of joseite, tennantite, empressite, sylvanite. Kochbulak gold deposit, near town of Angren, Kuraminskiy Range of Tien'-Shan' Mts., Uzbekistan. FMM #89884, donation of P.M. Goloshchukov.
2. Viliaumite, transparent fragment of crystal. Size of specimen 4.5 cm. Koashva mine, Khibiny, Kola Peninsula, Russia. FMM #90217, 2000.
3. Corundum (sapphire), A rose-shaped splitted blue corundum crystals. 10 cm high. Ilmenskie Mts., Ural, Russia. FMM # OP2076, 1999.

Photo M. Leibov





4. Calcite,
Calcite encrusting cameras inside the Ammonitoeeras shell. 36 cm in diameter. Belaya river basin, Caucasus, Russia
FMM #OP2081, 1999.

5. Pyrite, concretion.
Size 10 cm.
Volga River basin, near city of Ul'yanovsk, Russia.
FMM #OP2033, donation of L.V. Bulgak, 1999.

6. Orpiment. Crust of small bright orange-red crystals on dolomite. Size of specimen 3 cm. El'brusskiy mine, Northern Caucasus, Russia.
FMM #90000, 2001.

Photo M. Leibov

7. Amethyst, scepter on rock crystal. Size 11cm. Mangatobangy, Ambatofinandrahana, Madagaskar. FMM OP1825, exchange, 1997.

8. **Quartz,** druze of splitted green (because of thin hedenbergite inclusions) quartz crystals on an andradite. Size 10 cm. Sinerechenskoye occurrence, near Kavalerovo, Primorskiy kray, Russia. FMM #90264. donaton of Yu. Pustov, 2001.

9. **Strawberry quartz,** druze, size 11 cm, Chimkent area, Tyan′-Shan′ Mts., South Kazakhstan, FMM #88615, donation of A.V. Kovalev, 1997.

Photo M. Leibov

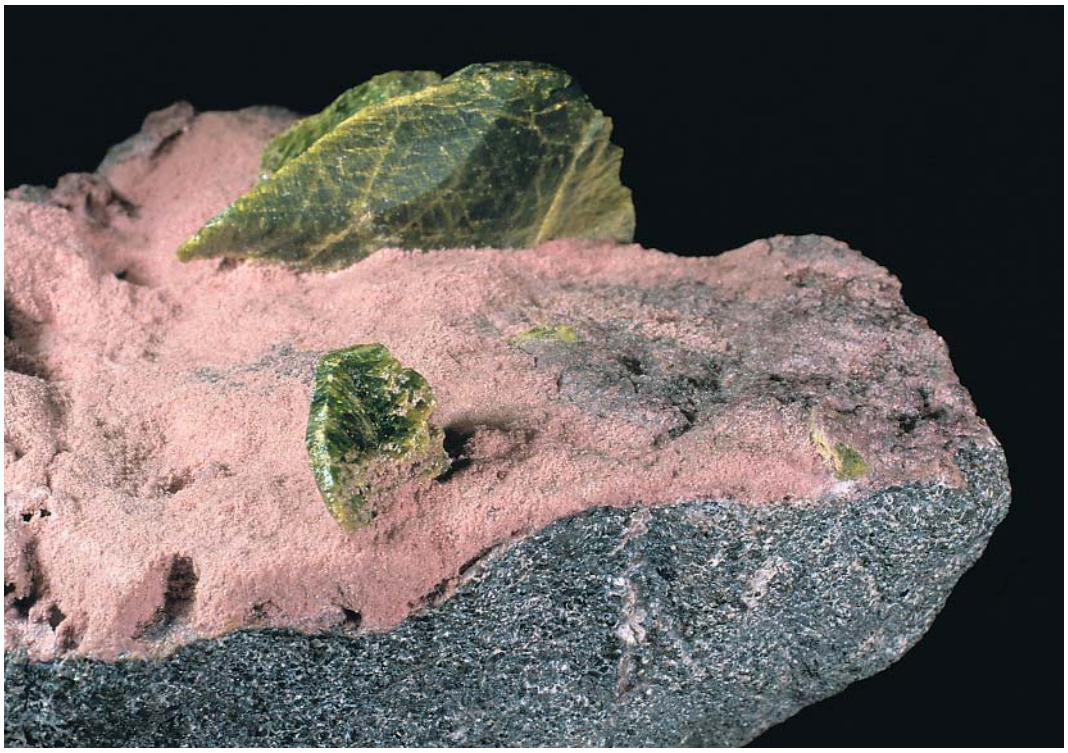
10. **Glendonite** (calcite pseudomorph after ikaite). Size 15 cm. Olenitsa river, near Olenitsa village, Terskiy shore of White See, Russia. FMM OP1951, Museum expedition, 1998

11. **Glendonite** (calcite pseudomorph after ikaite). Radial crystal cluster 3.5 cm. Size of specimen 9 cm. Bol'shaya Balakhnya river, Khatanga, Taimyr Peninsula, Russia. FMM #OP2124, donation of D.L.Sulerzhitsky, 2000.

12. **Glendonite** (calcite pseudomorph after ikaite). Crystal clusters in the centers of intergrown clay-carbonate concretions. Size 9 cm. Olenitsa river, near Olenitsa village, Terskiy shore of White See, Kola, Russia. FMM OP1953, Museum expedition, 1998.

13. **Glendonite** (calcite pseudomorph after ikaite). Twin intergrowth in clay-carbonate concretion. Size 9 cm. Olenitsa river, near Olenitsa village, Terskiy shore of White See, Kola, Russia. FMM K4727, Museum expedition, 1998.

14. **Glendonite** (calcite pseudomorph after ikaite). Cut of the crystal cluster in clay-carbonate concretion. Size 6 cm. Olenitsa river, near Olenitsa village, Terskiy shore of White See, Kola, Russia. FMM OP1900, donation of D.I. Belakovskiy, 1998.



15. **Titanite,** Twin intergrowth 3.5 cm in size with kaemmererite on massive chromite. Size of specimen 10cm. Saranovskoe deposit, Ural, Russia. FMM #90045, donation of M.Yu. Anosov. 2000.

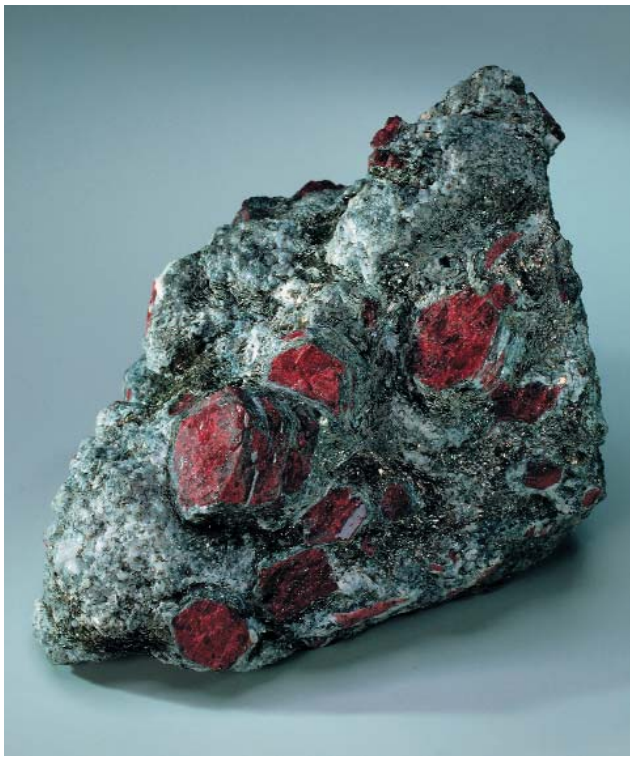
16. Eosphorite, Slightly splitted crystal 9.5cm partly replaced by ernstite. Linopolis, Divino das Laranjeiras, Minas Gerais**,** FMM # 90319. Exchange, 2001.

17. Bixbyite, Cubic crystal 1.2 cm on topaz from the rhyolite cavity. Bixbyite site, Thomas Range, Juab Co., Utah, USA. FMM #89227. 1998.

18. Rutile . Twin crystal (4 cm long) on quartz. Kapydzhik Mt., Nakhichevan' near, Zanzezur Range, Azerbaijan. FMM#89806, 1999.

19. **Elpidite,** Intergrowth of columnar crystals bunches on natrolite. Size 15cm. Alluaiv Mt., Lovozero massif, Kola Peninsula, Russia. FMM # 90236, Exchange, 2000.

20. **Scheelite**, Blocky dipyramidal crystal, 12 cm. Xuebaoding Pingwu, Sichuan, China. FMM # 89909, exchange, 2000.



21. Corundum (ruby), Corundum crystals in plagioclase-biotite rock. Size of specimen 13 cm. Rai-Iz massif, Polar Ural, Russia FMM #89011, Exchange. 1997.

22. Moganite. Chalcedony containing moganite in rhyolite lithophyse. Geronimo Area, 100 miles NE of Lordsburg, New Mexico, USA. FMM #OP-1914, 1998.

23. Siderite, intergrowths of spherocrystals. Size of specimen — 3.5 cm. Dal'negorsk, Primorskiy Kray, Russia. FMM #OP2108, donation of Star Van Scriver, 2000.

24. Staurolite, right cross shaped twin in mica schist, size 11cm, Keivy, Kola Peninsula, Russia. FMM # 88824, donation of V.Levitskiy, 1997.

25. Bertrandite, opal-bertrandite-fluorite nodule. Brush-Wellman berylium mine, Spor Mt., Juab Co., Utah, USA. 1998.

26. Perovskite, pseudocubic crystal 3 cm in size. Medvedevka, near Ziatoust city, South Ural. FMM #89480.

27. Hoegbomite, intergrowth of hoegbomite crystals up to 3 cm on clinochiore. Size of specimen 6 cm. Medvedevka, near Zlatoust city, South Ural, Russia. FMM #89863, 1999.