

Gemstone and Mineral Aspect in Karakoram Block of North Pakistan

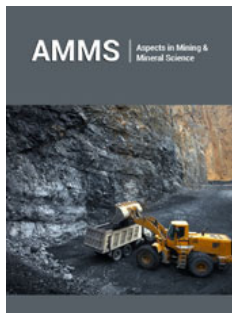
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Abstract

An overview of the gemstone and mineral potential in the Karakoram Block is discussed in this paper. The gemstones from across the Indian-Asia collisional zone, sandwiched by Kohistan-Ladakh Island Arc along the Main Karakoram Thrust possesses a variety of high quality gems. These gemstones and minerals are suture-associated, pegmatite-associated and found in hydrothermal veins. The gemstones, especially from Shigar and Hunza valleys dominantly include aquamarine, ruby, peridot, topaz, tourmaline etc. These highly valued gems need certain attention for their exploration, where the old and obsolete methodologies are still being used that abolishes the quality, quantity and worth of these gems. It also needs encouragement and proper professional training for the local people to enhance this industry environmentally and commercially.

Keywords: Karakoram block; Kohistan-Ladakh island arc; Shigar; Hunza; Aquamarine

Introduction

The Karakoram Block on the northern side represents the Asian Plate, whereas the Indian Plate lies to the southern side and the Kohistan-Ladakh Island Arc is sandwiched in between [1]. The different types of minerals are associated with the collisional zone along the Main Karakoram Thrust (MKT), especially in the hanging wall that represents the Karakoram Metamorphic Complex (KMC) (Figure 1). The Shigar and Hunza valleys are dominant in possessing the pegmatitic veins etc. bearing variety of gems and economic minerals therein [2]. The Shigar valley mainly includes the gem varieties of beryl, topaz, garnet, fluorite, apatite and tourmaline, whereas ruby alongwith sapphire, beryl, tourmaline, spinel, pargasite and adularia (moonstone) are reportedly mined from the Hunza valley. It always remained quest to explore the gems by safe viable methods, provided in a properly mapped way. The proper and latest tools are also of mere need for the excellent results.

Discussion

Mainly the gemstone varieties overall found in Karakoram Block and its vicinity are placed into three categories [3], i.e., 1) Suture-associated gemstones: along Indus suture and Karakoram suture zones, e.g. emerald, peridot, ruby, sapphire, pargasite etc. 2) Pegmatite-associated gemstones: found where extensive pegmatite fields are formed consequent to the granitic batholiths found in Gilgit-Skardu region, e.g. beryl, aquamarine, topaz, garnet, tourmaline, zircon etc. 3) Gemstones in hydrothermal veins: the gemstones found are topaz, zircon, rutile, azurite etc. The Shigar valley mainly contains the gem variety of beryl (aquamarine), topaz (colorless and yellow), garnet, fluorite, apatite, tourmaline etc. whereas gemstones either of metamorphic or metasomatic paragenesis like epidote, zoisite, clinozoisite etc. are also found. Alike Shigar having suture and pegmatite association, Hunza valley also bear gemstones like ruby and sapphire, beryl, tourmaline, spinel, pargasite, adularia, topaz etc. The pegmatite gem-tourmaline, kunzite, aquamarine, peridot and ruby are mainly found in the Hindu Kush Range located to the northwest between the border of Pakistan and Afghanistan, i.e., Chitral, Nuristan etc. [2,3], (Figure 1).

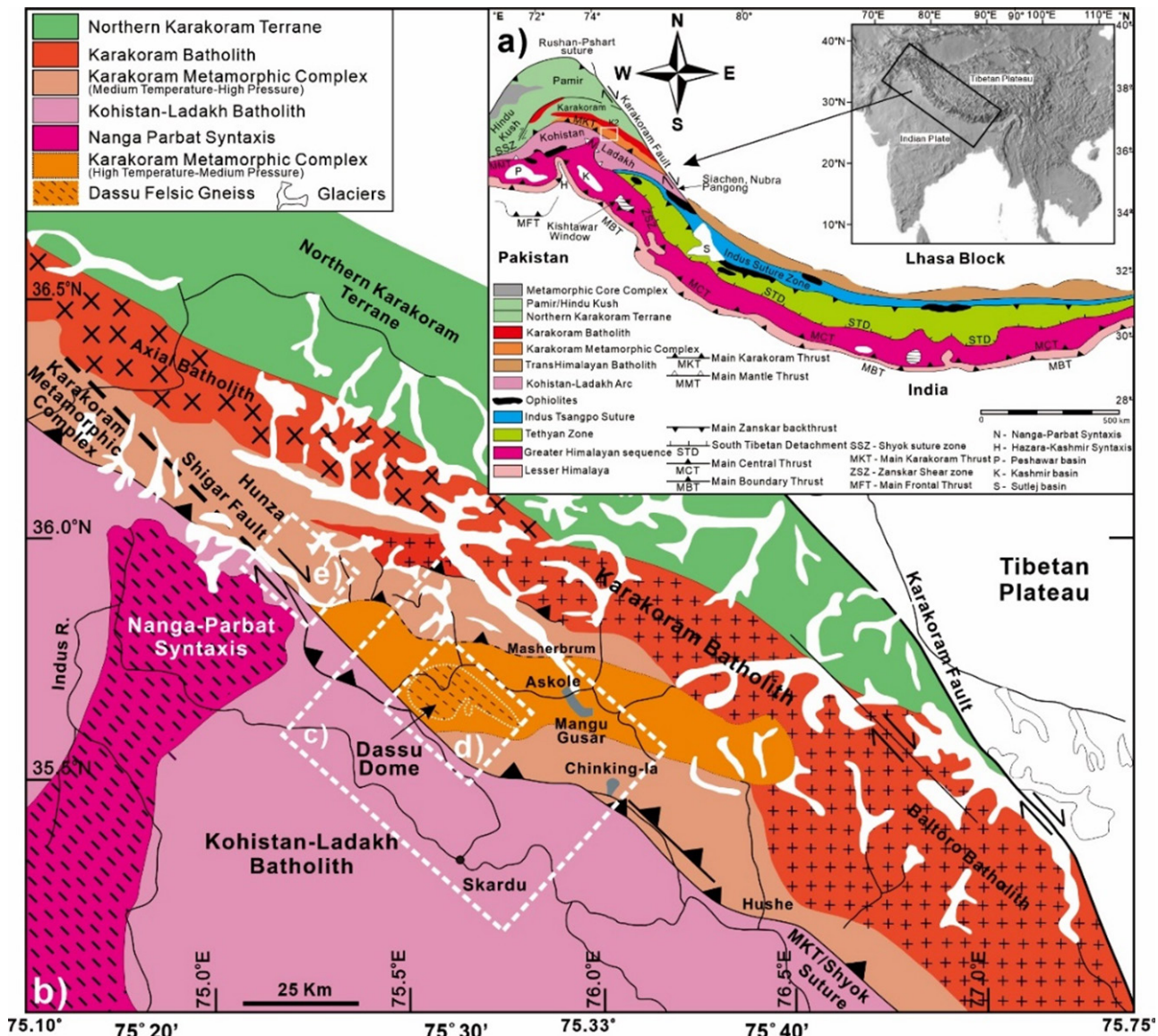


Figure 1: Terrane map of Central Asia showing major plate boundaries, suture zones and faults. Boxes show the study areas. KP=Karakoram Fault, H=Hazara-Kashmir Syntaxis and NP=Nanga Parbat Syntaxis. b) Regional map, enboxed c) Shigar valley, d) Dassu area and e) Hunza area, Karakoram Block, north Pakistan (after [4]).

Economic Importance

In general, the granitic pegmatites of these areas have specific quality to hold a variety of gemstones, such as aquamarine, goshenite, topaz, tourmaline, fluorite etc. which is the distinction quality throughout the world and attraction for the minerals and gem collectors. The gems are mostly of high quality with clarity. The ruby, peridot and aquamarine in especial rank among the high quality and price gems around the world [4].

Exploration and Evaluation of Gemstones

Pakistan is endowed with great mineral wealth, especially the gemstones, but its proper exploration and evaluation is still lacking. The mineral sector organizations are not playing their role in exploring this hidden wealth. So far limited exploration work has been done on local scale, but no detailed large scale exploration has

ever been conducted. There is a great need to explore many areas in the northern Pakistan, including Shigar valley, where there is a great potential for the occurrence of various types of gemstones. The proper identification and evaluation of the gemstones at the mining sites are very important. For this purpose, the government should provide expertise to the local people so that they cannot be deceived by the gem traders. In this way the trust should be established between the local gem dealers and international gem traders so that this business can flourish without any mistrust. This will certainly help in the socio-economic uplift of the country in general and the northern areas in particular.

Conclusion

The northern Pakistan, especially the Karakoram Block has a large variety of gemstones and minerals potential that is yet to

be explored. The obsolete methodologies and techniques for the quarrying badly affects the gems quality, so the latest scientific techniques are needed to be adopted for the better results in having best quality gems treasure.

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