Title : Mineralogy and Geochemistry of “Thoen Kaew Pong Kham” from Thoen District, Lampang Province

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ABSTRACT

Kaew Pong Kham is a trade name for a quartz gemstone in Thailand. It is the OTOP product of Mae Thod Sub-district, Thoen District, Lampang Province. The characteristics of Kaew Pong Kham were analyzed from 24 cabochon samples and 24 raw samples. Samples were collected from the Bo Pong Luang and Bo Mae Toen deposits, Mae Thod Sub-district, Thoen District, Lampang Province. Gemological properties—such as color, transparency, specific gravity (S.G.), refractive index (RI), and fluorescence—were analyzed using gemological tools. Mineral, texture, and inclusion were identified by polarizing and gemological microscopes. Geochemical composition was analyzed by X-ray Fluorescence spectrometry. Based on mineralogical, gemological, and geochemical studies, samples were classified into three groups. The coarse-grained quartz group consists of 34 samples. These samples have S.G. values ranging from 2.56 to 2.68. They are transparent to translucent and display colorless, colorless with inclusions (hematite, chlorite, and biotite), bluish-white to medium-dark gray, and moderate reddish-brown to pale yellowish-orange. The geochemical composition shows high SiO_2 (84-99%), low to moderate Fe_2O_3 (0.02–6.73%), and low CaO (0.06–1.48%). The microcrystalline quartz group includes 8 samples, with S.G. values between 2.41 and 2.61. These samples are translucent to opaque and range in color from moderate reddish-orange to dark

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yellowish-brown. Their geochemical character is high SiO_2 (88-98%), high Fe_2O_3 (0.19 – 7.55%), and low CaO (0.14 – 1.29%). The silicified rock and non-quartz group has 6 samples. This group contains black silicified pyroclastic rock with S.G. values of 2.44 – 2.61, high SiO_2 (89 – 94%), low Fe_2O_3 (1.24 – 1.46%), and moderate CaO (2.45%). It also includes light blue silicified tourmaline aplite with S.G. of 2.61, high SiO_2 (92%), moderate Fe_2O_3 (2.93%), CaO (2.45%), and grayish purple fluorite with S.G. values of 3.03, low SiO_2 (5.59%) and Fe_2O_3 (1.32%), and high CaO (90%).

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