Contribution ID: **48** Type: **Poster**

Spectroscopic properties for identifying sapphire samples from Ban Bo Kaew, Phrae Province, Thailand

Thursday 25 May 2017 17:10 (50 minutes)

Gemstone commercial is a high revenue for Thailand especially ruby and sapphire. Moreover, Phrae is a potential gem field located at the northern part of Thailand. The studies of spectroscopic properties are mainly to identify gemstone using advanced techniques (e.g. UV-Vis-NIR spectroscopy, FTIR spectroscopy and Raman spectroscopy). Typically, UV-Vis-NIR spectroscopy is a technique to study the cause of color in gemstones. FTIR spectroscopy is a technique to study the functional groups in gem-materials. Raman pattern can be applied to identify the mineral inclusions in gemstones. In this study, the natural sapphires from Ban Bo Kaew were divided into two groups based on colors including blue and green. The samples were analyzed by UV-Vis-NIR spectrometer, FTIR spectrometer and Raman spectroscope for studying spectroscopic properties. According to UV-Vis-NIR spectra, the blue sapphires show higher Fe^{3+}/Ti^{4+} and Fe^{2+}/Fe^{3+} absorption peaks than those of green sapphires. Otherwise, green sapphires display higher Fe^{3+}/Fe^{3+} absorption peaks than blue sapphires. The FTIR spectra of both blue and green sapphire samples show the absorption peaks of –OH,-CH and CO_2. The mineral inclusions including zircon, feldspar, rutile and ferrocolumbite in sapphires from this area were observed by Raman spectroscope. The spectroscopic properties of sapphire samples from Ban Bo Kaew, Phrae Province, Thailand are applied to be the specific evidence for gemstone identification.

Author: MOGMUED, Jidapa (Department of Earth Sciences, Faculty of Science, Kasetsart University)

Co-authors: Mr MONARUMIT, Natthapong (Kasetsart University); Dr WON-IN, Krit (Department of Earth Sciences, Faculty of Science, Kasetsart University); SATITKUNE, Somruedee

Presenter: MOGMUED, Jidapa (Department of Earth Sciences, Faculty of Science, Kasetsart University)

Session Classification: Poster Presentation II

Track Classification: Material Physics and Functional Materials