Powder XRD, Thermal and Spectroscopic Charcterization of Schreyerite $V_2Ti_3O_5$ a Rare Vanadium-Titanium oxide Mineral from a Pb-Zn Ore deposit, Bhilwara, Rajasthan, India.

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Study on titanium bearing refractory minerals attracted much attention beause of their many industrial and catalytic applications as well as their presence in Lunar surface as well as in the meteorites like Murchison . Example : the presence of a new mineral machiite in Murchison meteorite (IMA 2016-067). Schreyerite $V_2Ti_3O_9$ has been identified in a metamorphic rocks of Kwale District of Kenya by Meden and Schmetzer (1978). Occrrence of shreyerite has been suggested in 2.5-3.2 Ga Rampura-Agucha zinc-lead-silver ore deposit, located 15 km southeast of Gulabpura in Bhilwara District (Hoellerand Stumpfl (1995) and in a metamorphic rocks of the Lake Baikal, Russia (Dobelin et al. 2006).

We present here for the first time systematic characterization studies on shreyerite from Bhilwara District of Rajasthan, using powder X ray diffraction, DTA/TG, FTIR, Micro Raman spectroscopic techniques, at room pressure. The X Ray diffraction pattern showed strong XRD lines at 0.41, 0.338, 0.288. 0.273, 0.250, 0.24, 0.22, 0.211, 0.201, 0.17 nm charactertistics of monocline shreyerite The samples are stable up to 800 K. The vibrational modes at 968 cm^{-1} (due to V=O vibration) and 438 cm^{-1} (due to Ti-O vibration) are predominat. Raman peak at 1040 cm^{-1} represent tetrahedral coordination of V. The content of TiO_2 is measured and found to be 59.05 to 58.20 wt % which is more than the samples from Russia(51.- 53 wt %) . We thank CSIR-SHORE, PRL-PLANEX and ISRO for funding.

Refereces :

Doebelin, N et al. (2006) Schreyerite V2Ti3O9: New Occurrence and crystal structure. American Mineralogist 91,196-202.

Hoeller, W and Stumpfi.EF (1995) Cr-V Oxides from Rampura-Agucha Pb-Zn-(Ag) deposit, Rajasthan, India. Canadian Mineralogist, 33, 745-752.