

INFRARED SPECTRUM OF JADEITE IN 83-JADE

GUO YING, SONG GONGBAO, XIONG NING, YANG XIANG

BaSan Jade is a kind of new jade, which has appeared in recent years in China. On the basis of many researches on Mineralogy, Petrology and Colorimetry of BaSan Jade, the author analyzed structure feature of Jadeite in BaSan Jade. And for the first time in China, divided its constitutive in detail. Study the infrared spectra characters of Jadeite in BaSan Jade deeply and point out that the infrared spectra of Jadeite in BaSan Jade are mainly composed with Si-O radical and M-O radical vibration. The Si-O radical infrared vibration includes Si-Ot1, Si-Ot2 and Si-Ob-Si (stretching vibration) and zigzag vibration; Si-O (stretching vibration) is in the inter-mediate frequency area ($1100 \sim 600 \text{ cm}^{-1}$) Si-O zigzag vibration and M-O are in the low frequency area. The vibration frequency of unsymmetrical (stretching vibration) is higher than symmetrical (stretching vibration). And we specially assigned the infrared absorption band of in Si-O Jadeite: in Si-O unsymmetrical (stretching vibration), $\nu_{\text{as}}(\text{Si-Ob-Si})$ vibration frequency is $1063 \sim 1067 \text{ cm}^{-1}$ (the highest) $\nu_{\text{as}}(\text{Si-Ot2})$ vibration frequency is $976 \sim 993 \text{ cm}^{-1}$, $\nu_{\text{as}}(\text{Si-Ot1})$ vibration frequency is $925 \sim 926 \text{ cm}^{-1}$ in the Si-O symmetrical (stretching vibration), Si-Ot2, Si-Ot1 vibration frequency is higher than Si-Ob-Si vibration frequency accordingly—that is, the $\nu_{\text{s}}(\text{Si-Ot2})$ is $856 \sim 857 \text{ cm}^{-1}$, $\nu_{\text{s}}(\text{Si-Ot1})$ is $747 \sim 748 \text{ cm}^{-1}$, $\nu_{\text{s}}(\text{Si-Ob-Si})$ is $662 \sim 663 \text{ cm}^{-1}$. This research supplies the accurate infrared spectra data on distinguishing BaSan Jade. Further research should be developed on vibration frequency of spectrum and splitting extent of bands. Keywords: BaSan Jade, Jadeite Jade, Infrared Spectra, Band Assignment