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VIBRATIONAL SPECTROSCOPY AND CRYSTAL CHEMICAL DIVERSITY  
OF THE NATURAL CLATHRATE — MELANOPHLOGITE

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Investigations of melanophlogite samples from different Italian localities have been carried out by means of IR and Raman spectroscopy. The results were analyzed in comparison with published data for structurally studied melanophlogite from the Hamilton Mt., California, USA. The results of the investigation show that melanophlogite is not a single mineral species, but a mineral group including minerals with different combinations of small molecules ( $\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{H}_2\text{S}$ ,  $\text{N}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{C}_2\text{H}_6$ ) entrapped in the structural cages of two types.

*Key words:* melanophlogite, clathrate, IR spectroscopy, Raman spectroscopy.