

INVESTIGATION OF FLUID INCLUSIONS IN “MARAMUREŞ DIAMONDS” BY FTIR SPECTROSCOPY

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Due to their sparkling appearance, limpid quartz crystals from Romania are called “Maramureş Diamonds.” GHIURCA & VALACZKAI (1996) described the host rocks, origin of SiO₂, shapes and dimensions of these crystals and compared them with other similar occurrences.

PINTEA (1995) identified several fluid inclusions, e.g. water, hydrocarbons and CO₂ in these crystals by microthermometry. But the different types of hydrocarbons could not be differentiated by this method. Due to this reason FTIR spectroscopy was used in the present investigation.

An overview of bigger (>1mm) inclusions were obtained by a FTIR spectrometer (Perkin-Elmer 1760), equipped with a diffuse reflection accessory. The smaller inclusions (ca. 10 µm) were investigated by direct transmission using a FTIR microscope (Perkin-Elmer, Auto-image).

It was possible by the present investigation to distinguish between inclusions of CH₂, CH₃ and CH₄. In addition to that inclusion of H₂S was identified in some samples as follows.

Results: Fluid inclusions identified in Maramureş Diamonds:

<u>Band (cm⁻¹)</u>	<u>Vibration</u>	<u>Inclusion</u>
1604	H-O	Water
1640	C=O	Carbonyl
1787	C=O	Carbonyl
2361	C-O	Carbon dioxide
2598	H-S	Hydrogen sulphide
2663	H-S	”
2930	C-H	CH ₂
2960	C-H	CH ₃
3013	C-H	CH ₄
3200	=CH-	CH _{aromat}

References

- GHIURCA, V. & VALACZKAI, T. (1996). *Studii și Cercetari (St. Naturii)*, 2: 9–13.
PINTEA, I. (1995). *Rom. J. Mineralogy*, 76, 2.