REFLECTANCE VALUES AND MICROHARDNESS TESTS OF BURSAITE

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Among the pneumatolytic-hydrothermal deposits, in the contact zone between marbles and granites of the Uludağ massif (Bursa, Western Turkey), a new mineral was discovered and named *Bursaite;* subsequently this mineral was studied and described by P. de Wijkerslooth (1955).

However, due to the absence of modern photometer system and microhardness equipment, it was impossible at that time to measure the reflectance and to carry out the microhardness tests.

New developments in the equipment of ore microscopes permit us now the investigation of the reflectance and microhardness of the bursaite.

At my disposal exist two polished sections of the original ore samples.

The ore consists of a very large amount of sphalerite, containing inclusions of chalcopyrite, pyrite, pyrrhotite and bursaite. Bursaite occurs also in the vicinity of sphalerite and in the gangue minerals. There is a very subordinate amount of magnetite, which is partly replaced by sphalerite. Sphalerite is locally traversed by specularite veinlets. Chalcopyrite is sometimes surrounded by covellite. As gangue minerals calcite, quartz tremolite and garnet are observed.

BURSAITE

Bursaite, $5PbS.2Bi_2S_3$.is monoclinic. Bursaites occur as narrow columnar crystals with an elongation // c axis. Sometimes one finds cross sections (001).

Crystals contain twin lamellae, twin plane is // c. Color is white, similar to galena. Bireflectance is very weak in air and more distinct in oil (white-light gray).

Anisotropic effects are strong in air and stronger in oil.

Undei crossed nicols the colors in diagonal positions are as follows: gray in air. Gray-brownish olivine green in oil. The (010) sections shows oblique extinctions.

REFLECTANCE

Reflectances were determined with a Vickers reflectance ore microscope supplied with a photomultiplier and amplifier.

The reflectance values were determined for two bursaite crystals at wave lengths of 470, 490, 510, 530, 550, 570, 590, 610, 630, 650 nm and so the spectral curves for Rg and Ra of the two bursaite crystals were plotted (see Fig. 1).

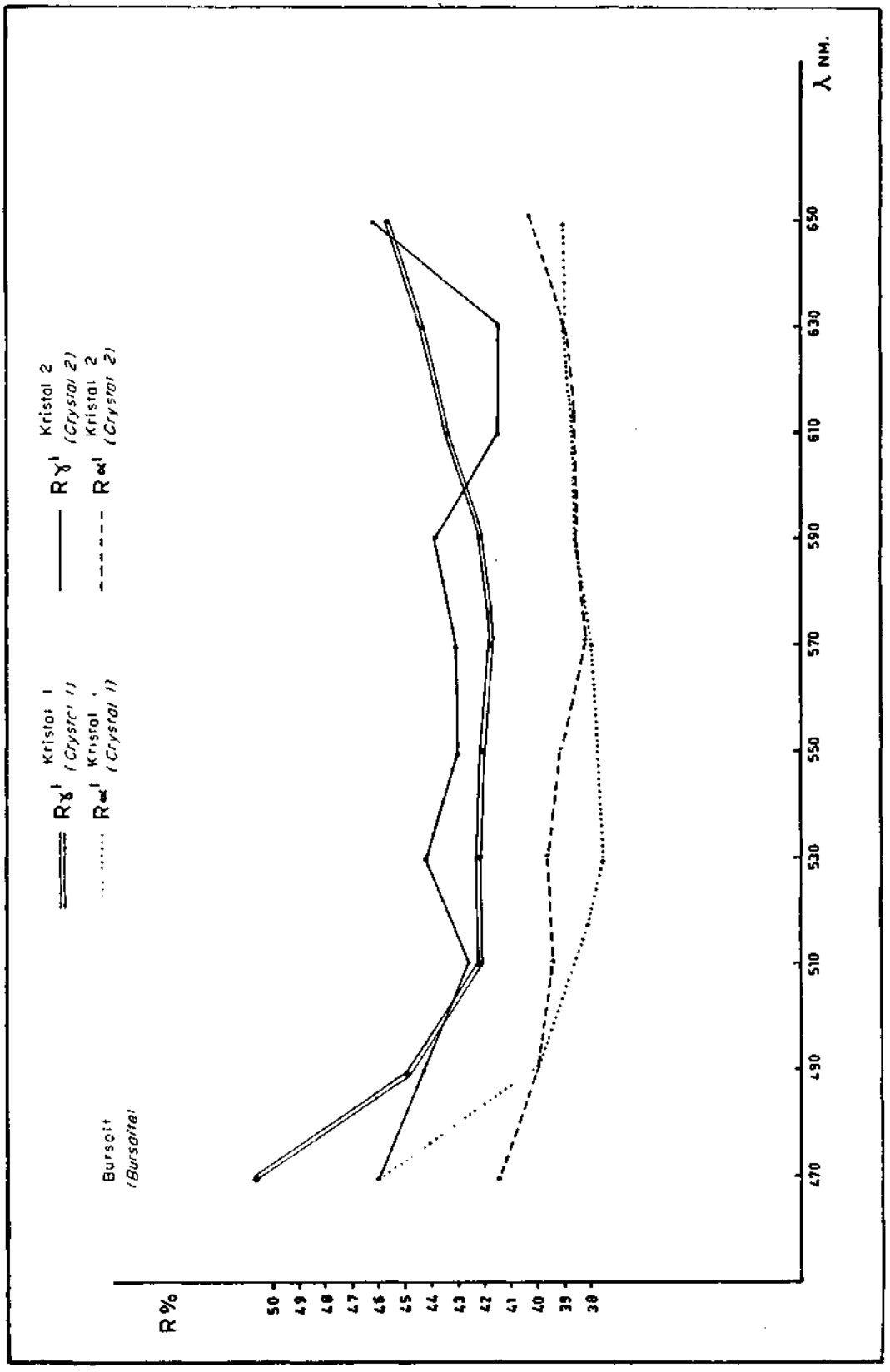
Bursait
(Bursaitel
Rγ¹ Kristal 1 (Crystal 1)
Rα¹ Kristal 1 (Crystal 1)
Rγ¹ Kristal 2 (Crystal 2)
Rα¹ Kristal 2 (Crystal 2)
R%
λ NM.

Fig. 1

These reflectance values are also given in the following table.

Wave length (in nm)	*Crystal 1*		*Crystal 2*	
	Rγ′	*Rα′*	*Rγ′*	*Rα′*
470	50.6	46.	46.	41.4
490	44.8	40.4	44.3	40
510	42.1	38.5	42.6	39.5
530	42.2	37.4	44.3	39.6
550	42.	37.6	43.	39.2
570	41.8	38.	43.1	38.2
590	42.3	38.5	44.	38.5
610	43.6	38.6	41.4	38.6
630	44.4	38.9	41.4	38.9
650	45.8	39.1	46.3	40.2

VICKERS HARDNESS NUMBERS

The Vickers hardness numbers are determined by the Vickers microhardness instrument.

The microhardness tests were carried out on four bursaite crystals.

The Vickers hardness numbers for 100-gr load are as follows:

VHN_{100}	109
VHN_{100}	115
VHN_{100}	128
VHN_{100}	141

Due to the shortage of ore material only four Vickers hardness numbers could be determined.

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