

FIG. 2. Magnesite, crystal group.

OCCURRENCES OF EUCOLITE IN NORTHERN HUDSPETH COUNTY, TEXAS

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Eucolite, a rare sodium-zirconium silicate, was found in Miller Mountain and Pump Station Hills, about 12 miles apart, both in northern Hudspeth County, Texas. The areas are accessible from several dirt roads and both are on the west central edge of the U.S. Geological Survey Preliminary Oil and Gas Map 90, Hudspeth and Culberson Counties, Texas (King, 1949). This mineral is reported for the first time in Texas.

Miller Mountain Occurrence. The eucolite occurs in the Miller Mountain in irregular dikes along sheer zones associated with a laccolith, a conical mass of nepheline-syenite porphyry about 2.5 miles in diameter. The laccolith is one of a group of Tertiary alkalic intrusives that make up the Cornudas Mountains of Texas and New Mexico located at the eastern margin of the Sierra Diablo Plateau about fifty-two miles east of El Paso, Texas.

The eucolite-bearing dikes are peripheral apophyses which penetrate short distances into mildly contact-metamorphosed limestones and shales of Permian and Pennsylvanian (?) age. Most of the eucolite occurs in small subhedral to euhedral crystals about 0.5 to 3.5 mm. in diameter; it

is distributed irregularly in the dikes but concentrated in veinlets and stringers that finger out into the calcareous rocks.

The eucolite is yellowish brown in color with some patches showing the rosy-pink color and pleochroism characteristic of eudialyte. The color is occasionally zonally distributed in individual crystals as shown in Figure 1.

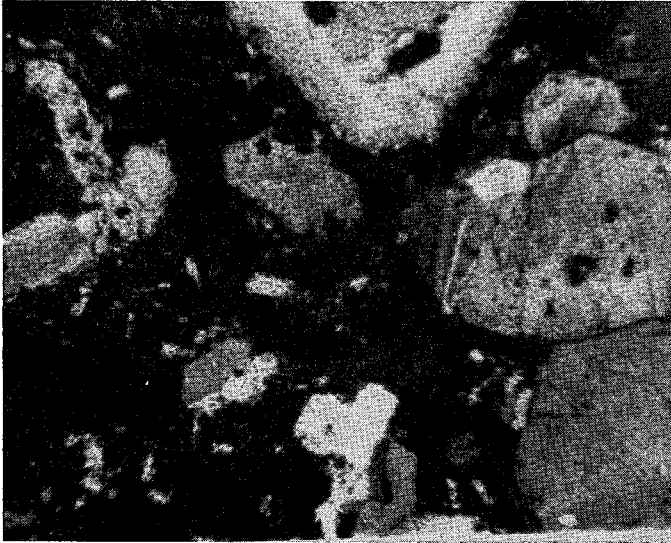


FIG. 1. Phenocrysts of euhedral hexagonal (dark gray) and zoned eucolite. The color of the latter crystal (upper center) is zonally distributed in which the light area is rosy-pink eudialyte and the rest is made up of eucolite. The groundmass is composed of nepheline, zeolite and altered alkalic feldspar. Tertiary nepheline syenite porphyry dike in Miller Mountain. Crossed nicols with analyser in almost 45° position. $40\times$

The following optical properties were determined: Color, yellowish-brown; indices of refraction, $\omega = 1.588 \pm 0.001$, $\epsilon = 1.594 \pm 0.003$; interference figure, uniaxial; optical sign, negative. Associated with the eucolite are nepheline, analcime, aegirite, apophyllite, alkali feldspars, and several contact-metamorphic lime silicates. The properties of eucolite here recorded are in essential agreement with those described by Clabaugh (1949, p. 1879–80) in the Wind Mountain laccolith in Otero County, New Mexico, about 11 miles north of Miller Mountain, Texas. The laccolith is the largest of a group of Tertiary alkalic intrusives that make up the Cornudas Mountains.

Pump Station Hills Occurrence. The nepheline syenite in the Pump Station Hills forms irregular bodies along sheer zones of a great mass of

Precambrian metamorphosed volcanics and shallow intrusives (King, 1949). Only two outcrops were located, though the syenite occurs abundantly as float. Textures of the nepheline syenite range from medium- to coarse-grained with alkalic feldspar tablets as much as 2.5 cm. in length and 1.5 cm. in width, and with nepheline crystals as large as 2 cm. in diameter, the average grain size being about 3 mm. by 1.5 mm. Marked irregularities in grain size, some zonal arrangement of minerals in the coarsest phases, and occurrence of massive mafic minerals suggest that at least a part of the excessively coarse-grained material is pegmatoid in character.

The specimen which contains eucolite was found only as float and it is a dark, green-gray to dark brown nepheline syenite; medium-grained, gneissic to almost schistose, with white stringers of nepheline and albite and abundant brown zircon. Microscopic examinations indicate orthoclase, micropertthite, albite, nepheline, aegirine, zircon, biotite, and eucolite in parallel arrangement.

The eucolite is pale yellow in color. It has grown anhedrally and parallel to biotite, albite, and nepheline, as shown in Figure 2. Optically this mineral is uniaxial with negative optical sign. Indices of refraction are: $\omega = 1.658$; $\epsilon = 1.636 \pm 0.002$. Pleochroism is imperceptible. Known

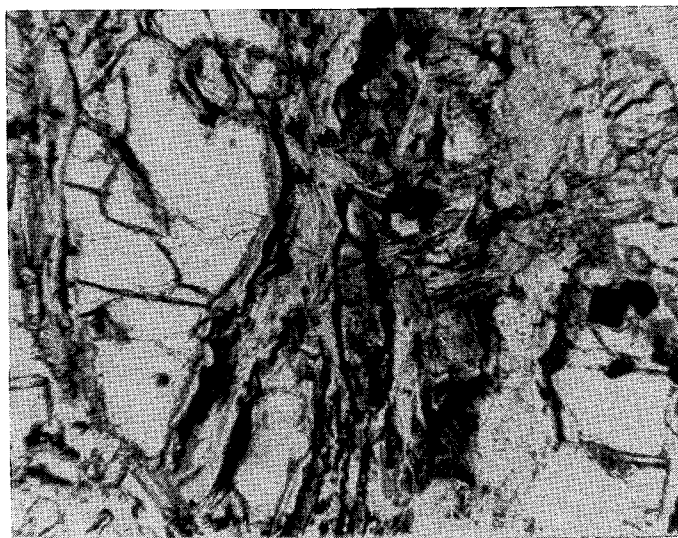


FIG. 2. Eucolite (high relief) associated with white stringers of albite and nepheline in elongated bands as shown in the center of picture. Note the altered alkalic feldspar (upper right) and dark euhedral zircon and magnetite crystals throughout the entire picture. Precambrian nepheline syenite in Pump Station Hills. Nicols not crossed. 22 \times

specimens of eucolite from Wisconsin were obtained, and x -ray diffraction patterns were taken. The x -ray examination confirmed the identification of the eucolite.

The occurrences and properties of eucolite here described are similar to those from other localities. The indices of refraction of the eucolite in the Pump Station Hills, however, are high, reminiscent of the Wisconsin eucolite (Stobbe & Murray, 1956, p. 933), and the mineral may therefore contain considerable cesium. The euhedral hexagonal eucolite in Miller Mountain is similar in crystal habit to the Pilansberg, western Transvaal, eucolite (referred by Stobbe & Murray, 1956, p. 934).

Though the occurrence of eucolite in Miller Mountain is reported for the first time in Texas, it is part of the Tertiary Cornudas Mountains alkalic intrusives in New Mexico and Texas, of which Clabaugh (1949) has already described the New Mexico eucolite. The discovery of eucolite in Precambrian nepheline syenite in Pump Station Hills in northern Hudspeth County, Texas, has added a fifth locality in the United States. The four other localities where eucolite has been found are Magnet Cove, Arkansas (Williams, 1891, p. 163-343); Bearpaw Mountains, Montana (Pecora, 1942, p. 415); Cornudas Mountains, New Mexico (Clabaugh, 1949, p. 1879-80) and Marathon County, Wisconsin (Stobbe & Murray, 1956, p. 932-934).

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