

## **Type and Formation of Cancrinite Within the Alkaline Intrusive Rocks: Özvatan (Kayseri)–Turkey**

KIYMET DENİZ<sup>1</sup>, YUSUF KAGAN KADIOĞLU<sup>1-2</sup>, TAMER  
KORALAY<sup>3</sup>, BAHATTIN GÜLLÜ<sup>4</sup>

<sup>1</sup>Ankara Uni. Fac. of Eng. Dept. of Geological Eng., 06830,  
Ankara/Turkey and kdeniz@eng.ankara.edu.tr

<sup>2</sup>Ankara Uni. Earth Sci. App. & Res. Centre (YEBİM),  
06830, Ankara/Turkey and kadi@ankara.edu.tr

<sup>3</sup>Pamukkale Uni. Fac. of Eng. Dept. of Geological Eng.,  
20017, Denizli/Turkey and tkoralay@pau.edu.tr

<sup>4</sup>Aksaray Uni. Fac. of Eng. Dept. of Geological Eng., 68100,  
Aksaray/Turkey and bahattinogullu@gmail.com

Cancrinites are common constituents of most of the alkaline intrusive rocks. They can form as a primary or secondary within the silica under saturated rocks with different chemical compositions. Despite the formation of cancrinite is well understood, there is lack of determination on the type of this mineral and making overtures about explaining magma evolution. For these purposes, Özvatan Syenitoids is determined as a study area where cancrinite minerals are abundantly observed within the nepheline syenites in the CACC. We have carried out mineralogical and petrographic investigations using Raman and EPMA spectrometers. Cancrinites occurred individual anhedral grains and have uniaxial negative optical character. Cancrinite has a strong Raman shift in 1055–1042 cm<sup>-1</sup>, 505–459–422 cm<sup>-1</sup>, 348 cm<sup>-1</sup>, 295–276–226cm<sup>-1</sup> and weak peaks in 980–974–969 cm<sup>-1</sup>, 767 cm<sup>-1</sup>, 153 cm<sup>-1</sup>, 116 cm<sup>-1</sup>. Chemical composition of cancrinites are 18.03 wt. % Na<sub>2</sub>O, 34.76 wt. % SiO<sub>2</sub>, 27.40 wt. % Al<sub>2</sub>O<sub>3</sub>, 5.03 wt. % CaO, 0.04 wt. % K<sub>2</sub>O, 0.19 wt. % SO<sub>3</sub>. The mineral chemistry of these occurrences reveal that the cancrinites are Na rich vishnevitite in composition.

The cancrinites of Özvatan syenitoid formed during the late stages of crystallization rather than reaction between nepheline and calcite. Soon after formation of nepheline, temperature may decrease rapidly and then act in the formation of the cancrinites within the Özvatan syenitoids.

**Keywords:** Cancrinite, vishnevitite, syenite, Raman, EPMA, Central Anatolia Crystalline Complex (CACC)

*This study was supported by Ankara University Department of Scientific Research Projects (17B0443003) and Ministry of Development project (2012K120440).*