Dualite \( \text{Na}_{30}(\text{Ca},\text{Na},\text{Ce},\text{Sr})_{12}(\text{Na},\text{Mn},\text{Fe},\text{Ti})_{6}\text{Zr}_3\text{Ti}_3\text{MnSi}_{11}\text{O}_{144}((\text{OH},\text{H}_2\text{O},\text{Cl})_9) \)

**Crystal Data**: Hexagonal.  
**Point Group**: 3m.  
As irregularly shaped grains to 0.5 mm.

**Physical Properties**:  
**Cleavage**: None.  
**Fracture**: Conchoidal.  
**Tenacity**: Brittle.  
**Hardness** = 5  
D(meas.) = 2.84(3)  
D(calc.) = 2.814

**Optical Properties**:  
**Color**: Yellow.  
**Streak**: White.  
**Luster**: Vitreous.  
**Optical Class**: Uniaxial (+).  
\( \omega = 1.610(1) \)  
\( \varepsilon = 1.613(1) \)

**Cell Data**:  
**Space Group**: R3m.  
\( a = 14.153(9) \)  
\( c = 60.72(5) \)  
\( Z = 3 \)

**X-ray Powder Pattern**: Mount Alluaiv, Lovozero Pluton, Kola Peninsula, Russia.

2.964 (100), 2.839 (90), 2.159 (60), 1.770 (60), 4.31 (50), 1.362 (50), 7.11

**Chemistry**:  
(1) Mount Alluaiv, Lovozero Pluton, Kola Peninsula, Russia; average electron microprobe analysis, \( \text{H}_2\text{O} \) calculated; corresponds to \((\text{Na}_{29.78}\text{Ba}_{0.10}\text{K}_{0.08})_{2-30}(\text{Ca}_{8.55}\text{Na}_{1.39}\text{REE}_{1.27}\text{Sr}_{0.79})_{2-12}(\text{Na}_{3.01}\text{Mn}_{1.35}\text{Fe}^{2+}_{0.87}\text{Ti}_{0.77})_{2-6}(\text{Zr}_{2.61}\text{Nb}_{0.39})_{2-3}(\text{Ti}_{2.22}\text{Nb}_{0.48})_{2-3}(\text{Mn}_{0.92}\text{Si}_{0.18})_{2-1}(\text{Si}_{0.71}\text{Al}_{0.23})_{2-3}\text{O}_{144}([\text{OH}]_{6.54}(\text{H}_2\text{O})_{1.34}\text{Cl}_{0.98}]_{z=8.86}\).  

**Mineral Group**: Eudialyte group.

**Occurrence**: Formed during the final stages of peralkaline pegmatite formation.

**Association**: K-Na feldspar, nepheline, sodalite, cancrinite, aegirine, alkaline amphibole, eudialyte, lovozerite, lomonosovite, vuonnemite, lamprophyllite, sphalerite, villiaumite.

**Distribution**: At Mount Alluaiv, Lovozero Pluton, Kola Peninsula, Russia.

**Name**: From Latin dualis (dual) alluding to the dual taxonomic membership of this mineral, at the same time zirconosilicate and titanosilicate.

**Type Material**: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow.

**References**:  