Aeschynite-(Ce) \((\text{Ce, Ca, Fe, Th})(\text{Ti, Nb})_2(\text{O, OH})_6\)

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Crystal Data: Orthorhombic; commonly metamict. Point Group: \(2/m \ 2/m \ 2/m\). Crystals prismatic \([001]\), also tabular \([010]\) and striated on \([010]\) parallel to \([100]\), to 10 cm; also massive.


Optical Properties: Translucent, transparent in very thin fragments. Color: Black, brown, light brown to yellow; reddish brown to light brown in transmitted light. Luster: Submetallic, resinous to waxy; dull when altered. Optical Class: Isotropic when metamict. \(n = 2.26(1)\)

Cell Data: Space Group: \(P\text{mnb}\) (synthetic \(\text{CeTiNbO}_6\)). \(a = 7.538 \quad b = 10.958 \quad c = 5.396\)  
\(Z = 4\)

X-ray Powder Pattern: Synthetic \(\text{CeTiNbO}_6\).  
2.975 (100), 3.024 (80), 3.106 (35), 2.698 (30), 5.48 (25), 4.431 (25), 2.037 (25)

Chemistry:  
| \(\text{Nb}_2\text{O}_5\) | 29.64 | 23.85 | \((\text{La}, \text{Dy})_2\text{O}_3\) | 5.60 | \((\text{La}, \text{Dy})_2\text{O}_3\) | 5.60 |
| \(\text{Ta}_2\text{O}_5\) | 6.97 | | \(\text{Ce}_2\text{O}_3\) | 18.49 | 19.50 |
| \(\text{TiO}_2\) | 21.81 | 22.60 | \(\text{FeO}\) | 3.17 | 4.28 |
| \(\text{SnO}_2\) | 0.18 | trace | \(\text{CaO}\) | 2.75 | 2.52 |
| \(\text{ThO}_2\) | 15.75 | 15.42 | \(\text{LOI}\) | 1.07 | |
| \((\text{Y}, \text{Er})_2\text{O}_3\) | 1.12 | 4.53 | Total | 99.58 | 99.67 |

(1) Miass, Russia. (2) Hidra Island, Norway.

Polymorphism & Series: Dimorphous with lucasite-(Ce); forms series with nioboaeschynite-(Ce) and with aeschynite-(Y).

Occurrence: In nepheline syenites and alkali syenite massifs; in granite pegmatites; in carbonatites in alkalic rocks; a detrital mineral in placers.

Association: Feldspar, zircon, samarskite, columbite, allanite, titanite.

Distribution: From around Miass and Zlatoust, Vishnev-Ylmen Mountains, Southern Ural Mountains, Russia. In Norway, on Hidra (Hitterő) Island, from near Arendal, at Frikstad, and elsewhere. In Germany, at Döbschütz and Königsahl, Lausiter Bergland. From near the Leckbachscharte, Habachtal, and in the Lohninger quarry, near Rauris, Austria. At Val Bedretto and Val Naips, Tavetsch, Graubünden, Switzerland. In the USA, from south of Darby, Ravalli Co., Montana, and in the Henderson molybdenum mine, Clear Creek Co., Colorado.

Name: From the Greek for shame, in allusion to the fact that early chemists had difficulty with separations of titanium from zirconium in some samples; cerium for the dominant rare-earth element.


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