Huanghoite-(Ce)  

Crystal Data: Hexagonal.  
Point Group: \( \text{3} \ 2/m \).  
As platy to granular crystals and in aggregates, to 10 cm.

Physical Properties:  
Cleavage: On \( \{0001\} \), distinct.  
Fracture: Irregular.  
Hardness = 4.5  
\( D(\text{meas.}) = 4.51–4.67 \) \( D(\text{calc.}) = 4.84 \)

Optical Properties:  
Translucent.  
Color: Honey-yellow to yellowish green, orange.  
Luster: Greasy.  
Optical Class: Uniaxial (−).  
Pleochroism: Weak; in shades of greenish yellow.  
\( \omega = 1.765–1.770 \)  
\( \epsilon = 1.588–1.610 \)

Cell Data:  
Space Group: \( R3m \).  
\( a = 5.072(1) \) \( c = 38.46(1) \) \( Z = 6 \)

X-ray Powder Pattern:  
Bayan Obo deposit, China.  
3.21 (10), 1.937 (10), 2.01 (9), 3.91 (7), 2.50 (7), 1.616 (7), 1.557 (7)

Chemistry:  
\[
\begin{array}{ccc}
\text{CO}_2 & 20.90 & 21.13 \\
\text{Ce}_2\text{O}_4 & 39.41 & \\
\text{RE}_2\text{O}_3 & 38.40 & \\
\text{BaO} & 36.46 & 36.82 \\
\text{F} & 4.00 & 4.56 \\
\text{H}_2\text{O} & 0.93 & \\
\text{−O=F} & 1.68 & 1.92 \\
\text{Total} & 99.01 & 100.00
\end{array}
\]

(1) Bayan Obo deposit, China; Ce > La confirmed by X-ray spectographic analysis.  
(2) \( \text{BaCe(CO}_3)_2\text{F} \).

Occurrence: An uncommon mineral in hydrothermal veins associated with rare-earth-bearing carbonatite deposits in alkaline igneous complexes.

Association:  
Aegirine, fluorite, magnetite, hematite, monazite, bastnäsite, parisite, aeschynite, calcite (Bayan Obo, China); “chlorite”, barite, strontianite, pyrite, hematite, ankerite, dolomite (Siberia, Russia).

Distribution:  
From the Bayan Obo Fe–Nb–RE deposit, 130 km north of Baotou, Inner Mongolia, China. In Russia, from an unspecified carbonatite in Siberia, and in the Khibiny massif, Kola Peninsula. From the Aley carbonatite, east of Williston Lake, British Columbia, Canada. At the Qaqarssuk carbonatite, near Sukkertoppen, Greenland.

Name: For the Huang Ho (Yellow River), China, 150 km south of the Bayan Obo deposit, China, where the first specimens were collected.


References:  
(2) (1963) Amer. Mineral., 48, 1179 (abs. ref. 1).  

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