

Crystal Data: Hexagonal. *Point Group:* 6/m. As grains to 2 mm.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 3.5
D(meas.) = 4.44(1) D(calc.) = 4.55

Optical Properties: Transparent. *Color:* Colorless to pale pink. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (+). $\omega = 1.483(1)$ $\varepsilon = 1.503(1)$

Cell Data: Space Group: $P6_3/m$. $a = 6.0861(12)$ $c = 3.6810(8)$ $Z = 1$

X-ray Powder Pattern: Strange Lake deposit, Quebec-Labrador, Canada.
3.036 (100), 1.757 (80), 5.29 (70), 2.146 (70), 1.152 (40), 0.9189 (40), 2.351 (30)

Chemistry:	(1)
Na	6.4
Ca	11.5
Y	2.2
La	11.3
Ce	22.0
Nd	8.0
Sm	1.1
Gd	2.9
Dy	0.4
F	35.4
Total	101.2

(1) Strange Lake deposit, Quebec-Labrador, Canada; average of 7 electron microprobe analyses, corresponds to $\text{Na}_{0.90}\text{Ca}_{0.92}(\text{Ce}_{0.51}\text{La}_{0.26}\text{Y}_{0.08}\text{Nd}_{0.18}\text{Gd}_{0.06}\text{Sm}_{0.02}\text{Dy}_{0.01})_{\Sigma=1.12}\text{F}_6$.

Occurrence: In a rare-earth-element enriched, peralkaline granitic complex (Strange Lake).

Association: Vlasovite, narsarsukite, willemite, fluorite (Strange lake).

Distribution: From the Strange Lake deposit, Quebec-Labrador, Canada.

Name: Honors the first cosmonaut, Yuri Alekseevich *Gagarin* (1934-1968) and a suffix for the dominant rare earth element, *cerium*.

Type Material: National Mineral Collection, Geological Survey of Canada, Ottawa (NMC 67314).
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References: (1) Sciberras, M.J., P. Leverett, P.A. Williams, D.E. Hibbs, A.C. Roberts, and J.D. Grice (2011) The single-crystal X-ray structure of gagarinite-(Ce). *Can. Mineral.*, 49, 1111-1114. (2) (2012) *Amer. Mineral.*, 97, 2071 (abs. ref. 1). (3) Jambor, J.L., A.C. Roberts, D.R. Ownes, and J.D. Grice (1996) Zajacite-(Ce) [*sic* = gagarinite-(Ce)], a new rare-earth fluorite from the Strange Lake Deposit, Quebec-Labrador. *Can. Mineral.*, 34, 1299-1304. (4) Stepanov, A.V. and E.A. Severov (1961) Gagarinite, a new rare-earth mineral. *Doklady Acad. Nauk SSSR*, 141, 954-957 (in Russian). (5) (1962) *Amer. Mineral.*, 47, 805 (abs. ref. 4).