Novgorodovaite $Ca_2(C_2O_4)Cl_2 \cdot 2H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As aggregates to 3 cm of grains to 7 mm.

Physical Properties: *Cleavage*: Good on {110} and {100}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = 2.5 D(meas.) = 2.38(1) D(calc.) = 2.40 Nonfluorescent.

Optical Properties: Transparent. *Color:* Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). $\alpha = 1.565(2)$ $\beta = 1.645(2)$ $\gamma = 1.725(4)$ 2V(meas.) = 88(10)° 2V(calc.) = 87(3)° Orientation: $Y = b$, $Z \wedge c = 40°$ (synthetic).

Cell Data: *Space Group*: *I*2/*m*. $a = 6.936(3)$ $b = 7.382(3)$ $c = 7.443(3)$ $\beta = 94.3(1)°$ Z = 2

X-ray Powder Pattern: Chelkar salt dome, western Kazakhstan.
2.917 (100), 2.956 (80), 5.062 (70), 4.323 (70b), 4.063 (70b), 4.812 (50), 3.644 (50)

Chemistry:

	(1)
C	8.53
H	1.67
Ca	29.43
Cl	24.56
O	[35.81]
Total	100.00

(1) Chelkar salt dome, western Kazakhstan; electron microprobe and selective absorption analyses, H_2O and BeO calculated, O by difference; corresponds to $Ca_{2.00}(C_2O_4)_{0.97}Cl_{1.89}(OH)_{0.17} \cdot 2.17H_2O$.

Occurrence: In a drill-core from evaporite rocks.

Association: Anhydrite, gypsum, halite, bischofite, magnesite, hilgardite.

Distribution: Chelkar salt dome, western Kazakhstan.

Name: Honors mineralogist Margarita Ivanovna *Novgorodova* (b. 1938), Director of the A.E. Fersman Mineralogical Museum, Moscow, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Moscow, Russia (69819 and 69820).

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(3) Piro, O.E., G.A. Echeverría, A.C. González-Baró and E.J. Baran (2018) Crystal structure and spectroscopic behavior of synthetic novgorodovaite $Ca_2(C_2O_4)Cl_2 \cdot 2H_2O$ and its twinned triclinic heptahydrate analog. Physics and Chemistry of Minerals, 45, 185-195.