Gadolinite-(Nd)  \( \text{Nd}_2\text{Fe}^{2+}\text{Be}_2\text{O}_2(\text{SiO}_4)_2 \)

Crystal Data: Monoclinic.  
**Point Group:** 2/m.  
As anhedral grains to 150 \( \mu \text{m} \).

**Physical Properties:**  
- **Cleavage:** None.  
- **Tenacity:** Brittle.  
- **Fracture:** Conchoidal.  
- **Hardness:** 6.5-7  
- **D(meas.)** = n.d.  
- **D(calc.)** = 4.86

**Optical Properties:**  
- **Transparency:** Transparent.  
- **Color:** Olive green.  
- **Streak:** White.  
- **Luster:** Vitreous to adamantine.  
- **Optical Class:** Biaxial (-).  
- \( \alpha = 1.78(1) \quad \beta(\text{calc.}) = 1.80 \quad \gamma = 1.81(1) \)  
- **Dispersion:** Strong, \( r < v \).  
- **Pleochroism:** Weak in shades of olive green.

**Cell Data:**  
- **Space Group:** P2₁/c.  
- \( a = 4.8216(3) \quad b = 7.6985(4) \quad c = 10.1362(6) \quad \beta = 90.234(4)^\circ \quad Z = 2 \)

**X-ray Powder Pattern:**  
Malmkärra mine, south-central Sweden.  
2.888 (100), 4.830 (72), 3.191 (52), 2.607 (49), 3.603 (37), 3.097 (35), 2.412 (24)

**Chemistry:**  
<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
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<tbody>
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<td>( \text{SiO}_2 )</td>
<td>21.77</td>
<td>20.77</td>
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<td>( \text{Y}_2\text{O}_3 )</td>
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<td>( \text{La}_2\text{O}_3 )</td>
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<td>( \text{Ce}_2\text{O}_3 )</td>
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<td>( \text{Pr}_2\text{O}_3 )</td>
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<td>( \text{Nd}_2\text{O}_3 )</td>
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<td>58.16</td>
<td>10.62</td>
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<td>( \text{Sm}_2\text{O}_3 )</td>
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<td>( \text{DY}_2\text{O}_3 )</td>
<td>1.32</td>
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</table>

(1) Malmkärra mine, south-central Sweden; average of 11 electron microprobe analyses and laser ablation inductively coupled plasma mass spectrometry supplemented by Raman spectroscopy.  
\( \text{H}_2\text{O} \) calculated for charge balance, \( \text{BeO} \) from stoichiometry; corresponds to \((\text{Nd}_{0.63}\text{Ce}_{0.47}\text{Y}_{0.22}\text{Sm}_{0.17}\text{Gd}_{0.13}\text{Pr}_{0.11}\text{La}_{0.09}\text{Dy}_{0.04}\text{Ca}_{0.01}\text{Er}_{0.01}\text{ Tb}_{0.01}\text{ Eu}_{0.01}\text{Ho}_{0.01})\text{Fe}_{1.69}\text{Mg}_{0.07}\text{Mn}_{0.01}\text{Ce}_{0.89}\text{Be}_{1.98}\text{B}_{2.02}\text{Si}_{2.06}\text{O}_{6.66}\text{(OH)}_{0.34} \)  
(2) \( \text{Nd}_2\text{Fe}^{2+}\text{Be}_2\text{O}_2(\text{SiO}_4)_2 \)

**Mineral Group:** Gadolinite supergroup, gadolinite subgroup.

**Occurrence:** In Fe-REE “Bastnäs-type” polymetallic skarn deposits.

**Association:**  
- Fluorbritholite-(Ce), västmanlandite-(Ce), dollaseite-(Ce), bastnäsite-(Ce), tremolite.

**Distribution:**  
At the Malmkärra mine [TL], ~3.5 km west-southwest of Norberg, as well as at the Johanna and Nya Bastnäs mines, south-central Sweden.

**Name:** Suffix indicates the Nd-dominant member of the gadolinite subgroup.

**Type Material:**  
Moravian Museum, Brno, Czech Republic (B 11298).

**References:**  