**Dorrite**  
Ca$_4$Mg$_2$Fe$^{3+}$_{10}O$_4$[(Si$_2$Al$_{10}$)O$_{36}$]

**Crystal Data:** Triclinic, pseudomonoclinic by twinning. **Point Group:** 1 or $\bar{1}$. As anhedral to prismatic grains, to 0.1 mm; some grains exhibit hopper and skeletal habits.  
**Twinning:** Twinned by two-fold rotation about the pseudomonoclinic [010] axis.

**Physical Properties:**  
- **Cleavage:** Good on {010} and {001}.  
- **Fracture:** Irregular.  
- **Tenacity:** Brittle.  
- **Hardness:** $\sim 5$.  
- **D(meas.) =** n.d.  
- **D(calc.) =** 3.959

**Optical Properties:**  
- **Color:** Dark red-brown to dark brown.  
- **Streak:** Gray.  
- **Luster:** Submetallic.

**Optical Class:** Biaxial.  
- $\alpha = 1.82(1)$  
- $\beta = 1.84(1)$  
- $\gamma = 1.86(1)$  
- $2V$(meas.) = 90°

**Pleochroism:** In ultrathinned sections, very strong; $X =$ red-orange brown; $Y =$ yellowish brown; $Z =$ greenish brown.  
**Absorption:** Extreme.

**Cell Data:**  
- **Space Group:** $P1$ or $P\bar{1}$.  
- $a = 10.505(3)$  
- $b = 10.897(3)$  
- $c = 9.019(1)$  
- $\alpha = 106.26(2)^\circ$  
- $\beta = 95.16(2)^\circ$  
- $\gamma = 124.75(2)^\circ$  
- $Z = 2$

**X-ray Powder Pattern:** Durham ranch, Wyoming, USA.  
2.971 (100), 2.558 (80), 2.515 (80), 2.125 (60), 1.511 (30), 1.482 (30), 8.1 (20)

**Chemistry:**

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</table>

(1) Durham ranch, Wyoming, USA; by electron microprobe, Fe$^{3+}$:Fe$^{3+}$ calculated from stoichiometry; corresponding to (Ca$_{4.99}$Na$_{0.01}$)$_{2+2.00}$Fe$^{3+}_{163.36}$Fe$^{3+}_{0.02}$Na$_{0.01}$Mn$_{0.00}$Cr$_{0.00}$Ti$_{0.00}$Ca$_{0.00}$O$_{36}$Fe$_{4.00}$Al$_{1.00}$Si$_{2.00}$O$_{20}$.  
(2) Ca$_3$Mg$_2$Fe$_{4}$Al$_{4}$Si$_{2}$O$_{20}$.

**Polymorphism & Series:** Forms a series with khesinite.

**Mineral Group:** Sapphirine supergroup, rhönite group.

**Occurrence:** A product of oxidizing, high-temperature, low-pressure metamorphism of alkaline rocks, in a pyrometamorphic zone in sediments.

**Association:** Esseneite, titanian andradite, magnetite-magnesioferrite-spinel, plagioclase, gehlenite-âkermanite, wollastonite, ulvöspinel, nepheline, apatite, ferroan sahamalite.

**Distribution:** From the Durham ranch, Powder River basin, 13 km northeast of Reno Junction and 25 km south of Gillette, Campbell Co., Wyoming, USA.

**Name:** To honor Dr. John A. Dorr, Jr., Professor of Geology, University of Michigan, Ann Arbor, Michigan, USA, in recognition of his regional geologic research in Wyoming.

**Type Material:** University of Michigan, Ann Arbor, Michigan; National Museum of Natural History, Washington, D.C., USA (163357).

**References:**  