

Crystal Structure and Thermal Behaviour of $\text{Er}_2(\text{SeO}_4)_3 \cdot 8\text{H}_2\text{O}$

Ina Krügermann and Mathias S. Wickleder

Institut für Anorganische Chemie, Universität zu Köln, Greinstraße 6, D-50939 Köln, Germany

Reprint requests to PD Dr. Mathias S. Wickleder. Fax: +49 (0)221 470 5083.

E-mail: m.wickleder@uni-koeln.de

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Dedicated to Professor Kurt O. Klepp on the occasion of his 60th birthday

Single crystals of $\text{Er}_2(\text{SeO}_4)_3 \cdot 8\text{H}_2\text{O}$ were obtained by dissolving Er_2O_3 in selenic acid. The selenate crystallizes in the monoclinic space group $C2/c$ ($Z = 4$, $a = 1372.8(2)$, $b = 687.51(7)$, $c = 1860.2(3)$ pm, $\beta = 101.85(2)^\circ$, $R_{\text{all}} = 0.0518$) and contains the Er^{3+} ions in eightfold coordination of oxygen atoms that belong to two crystallographically different SeO_4^{2-} ions and to four H_2O molecules. According to DTA/TG measurements and temperature dependent powder diffraction data, $\text{Er}_2(\text{SeO}_4)_3 \cdot 8\text{H}_2\text{O}$ decomposes in several steps yielding finally Er_2O_3 . $\text{Er}_2(\text{SeO}_4)_3$ and $\text{Er}_2(\text{SeO}_3)_3$ could be identified as intermediates, and for $\text{Er}_2(\text{SeO}_4)_3$ a phase transition was detected.

Key words: Erbium, Selenate, Selenite, Crystal Structure, Thermal Analysis