

# Oxotellurate(IV) der Lanthanide:

## II. Die isotype Reihe $M_2\text{Te}_5\text{O}_{13}$ ( $M = \text{Dy} - \text{Lu}$ )

Oxotellurates(IV) of Lanthanides: II. The Isotypic Series  $M_2\text{Te}_5\text{O}_{13}$  ( $M = \text{Dy} - \text{Lu}$ )

Steffen F. Meier und Thomas Schleid

Institut für Anorganische Chemie, Universität Stuttgart, Pfaffenwaldring 55, D-70569 Stuttgart

Sonderdruckanforderungen an Prof. Dr. Th. Schleid. Fax: +49(0)711/685-4241.

E-mail: schleid@iac.uni-stuttgart.de

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For the shortly discovered formula type  $M_2\text{Te}_5\text{O}_{13}$  (triclinic,  $P\bar{1}$ ), the establishment of an isostructural series in the last third of the lanthanide family ( $M = \text{Dy} - \text{Lu}$ ) was possible. The excessive formula unit  $\text{TeO}_2$  additional to the well-known composition  $M_2\text{Te}_4\text{O}_{11}$  (monoclinic,  $C2/c$ ) leads to the slicing of the  $[M_2\text{O}_{10}]^{14-}$  layers which are typical for the tellurium-oxide poorer compounds. By coupling together the bicapped trigonal prismatic ( $M1$ , CN = 8) and the pentagonal bipyramidal ( $M2$ , CN = 7) lanthanide-oxygen polyhedra *via* edges,  $[M_4\text{O}_{20}]^{28-}$  bands are formed stretching along the  $a$  axis and piling up to a primitive rod-packing. The linkage of these bands occurs parallel to the (010) plane *via*  $\text{Te}3$  as well as *via*  $\text{Te}4$  parallel to (100). Besides the usual 3+1 coordination, two of the five crystallographically independent tellurium sites are coordinated regularly fourfold ( $d(\text{Te} - \text{O}) \approx 186 - 213$  pm) and even 3+2-fold by oxygen atoms. The tellurium-oxygen polyhedra form corrugated layers running parallel to (101) which follow so close to each other that the tellurium-oxygen partial structure appears to be almost three-dimensional at a passing glance. As in  $M_2\text{Te}_4\text{O}_{11}$ -type representatives, the non-bonding electron pair (*lone pair*) of each  $\text{Te}^{4+}$  cation shows stereochemical activity which always appears to flock together in large tellurium neighbored positions.

*Key words:* Lanthanides, Oxotellurates(IV), Crystal Structures