

# Hydrogen Bonds in the Crystal Structure of Strontium Hydroxide Octahydrate $\text{Sr}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$

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*Dedicated to Prof. Dr. Roger Blachnik on the occasion of his 70<sup>th</sup> birthday*

Strontium hydroxide octahydrate  $\text{Sr}(\text{OH})_2 \cdot 8 \text{H}_2\text{O}$  crystallizes in the tetragonal space group  $P4/ncc$  with cell constants  $a = 9.017(1)$  and  $c = 11.603(1) \text{ \AA}$ . The crystal structure has been refined from 2656 diffractometer data up to  $2\vartheta = 60^\circ$  to an  $R$  value of 0.0303. With the new diffraction data it was possible to localize the positions of all hydrogen atoms for the first time and to describe the hydrogen bonding scheme in detail. The  $\text{Sr}^{2+}$  ions are square antiprismatically coordinated by eight water molecules. These  $\{\text{Sr}(\text{H}_2\text{O})_8\}^{2+}$  coordination polyhedra are linked with each other *via* hydrogen bonds in a way that linear columns parallel to the  $c$  axis result. The two hydroxyl anions of the asymmetric unit are linked by weak hydrogen bonds and are not coordinated to strontium atoms. Like the strontium atoms, they form linear chains parallel to the  $c$  axis. Both,  $\{\text{Sr}(\text{H}_2\text{O})_8\}^{2+}$  columns and  $\text{OH}^-$  chains, are interconnected through two types of additional hydrogen bonds.

**Key words:** Hydrogen Bonds, Coordination Chemistry, Hydrates, Hydroxides, Strontium