Zur Kenntnis von Calciumtetrahydrogen-hexaoxo-diperiodattetrahydrat $CaH_4I_2O_{10} \cdot 4\ H_2O$: Kristallstruktur, Schwingungsspektren und thermische Analyse

On Calciumtetrahydrogen-hexaoxo-diperiodatetetrahydrate $CaH_4I_2O_{10} \cdot 4\ H_2O$: Crystal Structure, Vibrational Spectroscopy and Thermal Analysis

H. Haeuseler und M. Botova

Anorganische Chemie der Universität, D-57068 Siegen

Sonderdruckanforderungen an Prof. H. Haeuseler E-mail: haeuseler@chemie.uni-siegen.de

Herrn Professor Albrecht Mewis zum 60. Geburtstag gewidmet

Z. Naturforsch. **57 b,** 1337–1345 (2002); eingegangen am 17. Juni 2002

Periodate, Crystal Structure, Vibrational Spectroscopy, Thermal Analysis

By crystallisation from a strongly acidic aqueous solution calciumtetrahydrogen-hexaoxo-diperiodatetetrahydrate $CaH_4I_2O_{10} \cdot 4\ H_2O$ has been obtained. In the structure of this compound (S. G. *C*2/*c*, Nr. 15), $Z = 4$, $a = 1986{,}6(4)$, $b = 564{,}2(1)$, $c = 1149{,}4(20)$ pm, $\beta = 120{,}62(3)°$) centrosymmetric $H_4I_2O_{10}^{2-}$ anions in the form of edge-sharing octahedra form layers via hydrogen bonds originating from the acidic, *trans*-configurated OH groups of the anions. IR and Raman spectra are analysed with respect to the hydrogen bond system and the internal vibrations of the periodate anion. The dehydration of the compound takes place via $Ca(IO_4)_2 \cdot 5\ H_2O$ and $Ca(IO_4)_2 \cdot 2H_2O$ leading at 143 °C to the anhydrous metaperiodate $Ca(IO_4)_2$ which decomposes above 248 °C to $Ca(IO_3)_2$.