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Hydrogen bonding in zirconium sulfate tetrahydrate.*

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In reporting the structure of zirconium sulfate tetrahydrate, Singer & Cromer (1959) suggested a configuration for the hydrogen bonds which placed a hydrogen atom between two oxygen atoms in the same coordination polyhedron of zirconium. It is expected that a water molecule coordinated to a cation will have its hydrogen atoms on the side away from the cation. In several hydrated sulfates, e.g., $NiSO_4 . 6\,H_2O$ (Beevers & Lipson, 1932), $NiSO_4 . 7\,H_2O$ (Beevers & Schwartz, 1935), $CuSO_4 . 5\,H_2O$ (Beevers & Lipson, 1934), and $KAl(SO_4)_2 . 12\,H_2O$ (Lipson & Beevers, 1935), there are just enough short oxygen–oxygen distances to account for all of the hydrogen bonds, if one excludes from consideration the short distances between oxygen atoms in the same coordination polyhedron or in the same sulfate group.

An examination of the structure of $Zr(SO_4)_2 . 4\,H_2O$, as reported by Singer & Cromer (1959), reveals a more plausible assignment. Each water oxygen, O_3, has four close neighbors in the same square antiprism, O_2 at 2·53, 2·62, and 2·86 Å and O_3 at 2·72 Å. It has three other neighbors, O_1 at 2·69, 2·75, and 2·93 Å. It is reasonable to assign the hydrogen bonds to the 2·69 and 2·75 Å distances. The angle between these two bonds is 88°, and the bisector of this angle, within experimental error, is 180° from the line from O_3 to Zr.

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Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the General Secretary of the International Union of Crystallography (Dr D. W. Smits, Laboratory of Inorganic and Physical Chemistry, 10 Bloemsingel, Groningen, The Netherlands).

The Sixth Annual Conference on Magnetism and Magnetic Materials

The Sixth Annual Conference on Magnetism and Magnetic Materials will be held in New York City, 14–17 November 1960, at the New Yorker Hotel. This conference is sponsored jointly by the American Institute of Electrical Engineers and the American Institute of Physics, in cooperation with the Office of Naval Research, the Institute of Radio Engineers and the Metallurgical Society of the A.I.M.E.

Authors should submit titles and abstracts of proposed papers by 26 August to A. M. Clogston or R. C. Fletcher, Programme Chairmen, Bell Telephone Laboratories, Murray Hill, New Jersey. Further conference details can be obtained from the Local Chairman, L. R. Bickford, Jr., IBM Research Center, Yorktown Heights, New York.