$$F = \frac{2}{1-p^2}\left[1-\frac{1}{(m\pi)^2}\right]^{-1} \times \left\{\frac{J_1(2m\pi p)}{2m\pi p} - \frac{1}{(2m\pi)^2}\left[1+J_0(2m\pi p) + \left(\frac{p}{2}\right)^2\{2(1+J_0(2m\pi p))-2J_2(2m\pi p)\}\ldots + \left(\frac{p}{2}\right)^n\{{}^{2n}C_n(1+J_0(2m\pi p))-2\,{}^{2n}C_{n-1}J_2(2m\pi p)\ldots + (-)^n J_{2n}(2m\pi p)\}\right]\right\}$$

C. An expansion asymptotic to F for large values of $p(1-p^2)$.

We give the leading terms of this expansion, these being sufficient to calculate F to $\sim 1\%$ accuracy in the ranges $1/(2m) < p < 1-1/(2m)$; $1+1/(2m) < p < \infty$

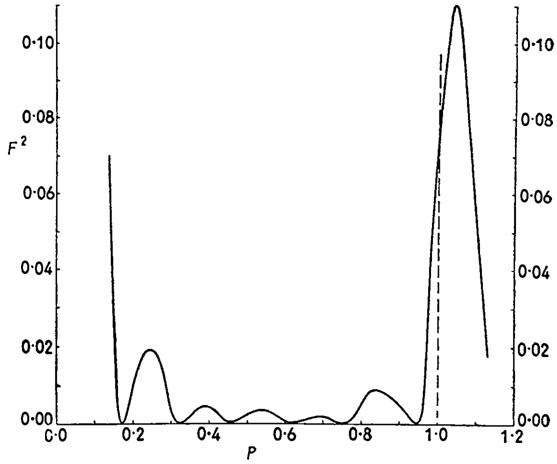

Fig. 1. Plot of scattering intensity against $p = kR/(2m\pi)$ for $2m = 7$.

$$F = \frac{2}{1-p^2}\left[1-\frac{1}{(m\pi)^2}\right]^{-1}\left\{\frac{J_1(2m\pi p)}{2m\pi p} - \frac{1}{(2m\pi)^2}\left[\begin{array}{l} 0, p > 1; \\ (1-p^2)^{-\frac{1}{2}},\ p < 1 \end{array}\right] - \frac{1}{(2m\pi)^2}\cdot\frac{(2m\pi p)^{-\frac{1}{2}}}{1-p^2}\cdot\left(\frac{2}{\pi}\right)^{\frac{1}{2}}\left(\begin{array}{l}\cos\left(2m\pi p-\frac{\pi}{4}\right)\cdot\left[1-\frac{9+30p^2+345p^4}{2![16m\pi p(1-p^2)]^2}+\ldots\right] \\ +\sin\left(2m\pi p-\frac{\pi}{4}\right)\cdot\left[\frac{1-9p^2}{16m\pi p(1-p^2)}-\frac{225-315p^2-17325p^4-28{,}665p^6}{3![16m\pi p(1-p^2)]^3}\right]\end{array}\right)\right\}.$$

In an interpretation of the scattering pattern of keratin, R.D.B. Fraser & T. McRae (Private communication) evaluated F^2 for $2m = 7$ and p in the range $0{\cdot}15 < p < 1{\cdot}13$, using the series A and C. The graph of F^2 in this range is shown in Fig. 1.

Reference

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The unit-cell dimensions and space group of monoclinic $NiSO_4.6H_2O$.

By D. June Sutor
Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England

(*Received* 23 *September* 1958)

Crystals of the green monoclinic hexahydrate of nickel sulphate, which is unstable at room temperature, were obtained by the slow evaporation of a cold mixture of solutions of disodium adenosine triphosphate and nickel sulphate whilst trying to crystallize a heavy atom salt of the nucleotide. The unit-cell dimensions of two different crystals, determined from rotation and Weissenberg photographs, are given in Table 1.

Table 1. *Unit-cell dimensions*

	Crystal 1	Crystal 2
a (Å)	9·84	11·58
b (Å)	7·17	6·09
c (Å)	24·0	23·9
β (°)	97·5	94·0

The axial ratios of crystal 1 (1·372:1:3·347) agree with those quoted by Groth when the c axis of his crystal is doubled (1·3723:1:3·3526, $\beta = 98°\ 15'$). Crystal 1 is also isomorphous with the modification of $MgSO_4.6H_2O$ studied by Ide (1938), ($a = 10{\cdot}04$, $b = 7{\cdot}15$, $c = 22{\cdot}34$ Å, $\beta = 98°\ 34'$, space group given as $C2/c$).

The measured density $2{\cdot}0\pm0{\cdot}1$ g.cm.$^{-3}$ corresponds to the more accurate value 2·036 quoted in Groth; the calculated value for 8 molecules per unit cell is 2·07 for both crystals 1 and 2.

For both crystals reflexions hkl are absent when $h+k$ is odd, but there are no other systematic lattice absences; the space group may thus be either $C2/m$, Cm or $C2$.

For crystal 1, the absence of peaks along the line $z = 0$ in the $0kl$ sharpened Patterson projection precludes a mirror plane perpendicular to b, but the presence of peaks along $y = 0$ indicates a two-fold axis parallel to b; the space group is probably $C2$. Although there is no glide-plane perpendicular to the diad axis, the $00l$ reflexions with l odd are absent, suggesting that the z coordinates of at least the nickel atoms are in accordance with the space group $C2/c$.

No further work on this compound is contemplated.

Reference

Ide, K. H. (1938). *Naturwissenschaften*, **26**, 411.