Table 2. *Rotation pattern data for* L-*isoleucine*

(Zero layer line and first layer line)

Line number	Intensity	d_{obs}	d_{calc}	hkl
1	s	14·15 Å	13·89 Å	100
2	s	6·972	6·945	200
3	vs	4·849	4·832	230
4	vw	4·695	4·746	140; 300
5	vs	4·467	4·503	310
6	vw	4·191	4·173	320
7	vw	4·040	4·031	050
8	vs	3·842	3·875	150
9	vs	3·506	3·489	250
10	w	3·251	3·268	160
11	vw	3·099	3·083	430
12	vs	2·812	2·832	170
13	w	2·714	2·721	360
14	m	2·528	2·522	080
15	w	2·426	2·421	540
16	s	2·364	2·369	280
17	vw	2·241	2·242	090
18	vw	2·103	2·106	640
19	vw	2·004	2·008	650; 570
20	vs	4·794	4·854	111
21	m	4·674	4·733	021
22	s	4·517	4·480	211
23	vw	4·052	4·013	131
24	s	3·918	3·911	221
25	s	3·657	3·673	041
26	w	3·314	3·272	321
27	vw	3·217	3·224	051
28	uw	3·088	3·107	331
29	vs	2·860	2·848	061
30	s	2·793	2·800	421
31	vw	2·625	2·635	261
32	vw	2·492	2·499	171
33	w	2·421	2·425	361

reliability of an indexed powder pattern gave $M_{20} = 7\cdot6$, where $(10^4 \sin^2 \theta)_{20} = 934$, $X_{20} = 0$, $N_{20} = 28$, and the discrepancy in the $10^4 \sin^2 \theta$ value, $\bar{\varepsilon} = 2\cdot20$. The number of observed lines below $(10^4 \sin^2 \theta)_{20}$ is 26% of the theoretically expected number and the actual discrepancy in this range is 0·28 times the average expected discrepancy calculated by de Wolff's (1961) method. This corresponds to a probability of 10^{-12} for an alternative lattice of the same size. The cell data derived are thus substantially correct. No systematic absences among observed reflexions could be found except 00*l* for $l = 2n + 1$. The probable space group is $P222_1$.

The crystal structure of D-leucine (Möller, 1949) is based on double-layer units stacked along the *b* axis, where $a = 5\cdot36$, $b = 14\cdot70$, $c = 9\cdot65$ Å; space group $P2_122$ or $P222$, and $Z = 4$. Comparing present data, the molecules of L-isoleucine are expected to pack in double-layer units parallel to the *bc* plane, with the length of the chain along the *a* axis, as proposed for DL-isoleucine (Dawson & Mathieson, 1951).

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Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M.M.Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Infra-red spectra and structure of organic long chain polymers. By ARTHUR ELLIOT. Pp. viii + 119. London: Arnold, 1969. Price 35 s.

This book deals exclusively with one topic – the infrared-spectroscopic study of polymer structures of organic and biological origin.

The author considers in some detail the practical aspects of obtaining polymer spectra – choice of spectrometer, utilization of polarized radiation, preparation of samples, methods of drying and deuteroexchange, *etc*. Special attention is given to the question of dichroism in the infrared-spectra of polymers, polypeptides and some proteins (*i.e.* to the field in which the author of the book has acquired a worldwide reputation.)

Special aspects of polymer spectroscopy are treated separately – hydrogen-bond formation, vibrational modes in the amide (peptide) group and the variation of the frequency of infrared absorption with the conformation of polypeptides and polyamides.

Theoretical methods of polymer infrared-spectra analysis are presented very briefly – the symmetry of chain vibrations selection rules, intensity and polarization of vibrations.

The book is written in perspicuous language and is well illustrated; the bibliography includes 143 references. It will be found useful by experts in infrared spectroscopy as well as by anyone investigating the physico-chemical properties and structure of polymers and biopolymers.

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Methods of molecular quantum mechanics. By R. McWEENY and B.T. SUTCLIFFE. Pp. ix + 307. London: Academic Press, 1969. Price 84 s. $ 13.50.

This book is the second volume in a series of monographs on theoretical chemistry with consulting editors D. P. Craig and R. McWeeny. The book contains 9 chapters: Introductory survey, Mathematical methods, Many-electron wrↄ ve functions, Digression: the nature of the electron