spread function, although the latter gave slightly better agreement for the 300 K data.

The Becker–Coppens mixed-type models gave no significant overall improvement over the type I models and, although the extinction parameters were less well determined, gave values for which $r \gg \lambda g$ indicating again the preference for a type I model. Inclusion of primary extinction in the mixed-type model also gave no significant overall improvement. It is concluded, therefore, that the most appropriate model for these results in the Becker–Coppens formalism is a type I model with a Lorentzian mosaic-spread function. This model gives slightly better agreement than the Cooper–Rouse model, but significance tests on the weighted discrepancy index (Hamilton, 1965) indicated that this difference is only significant at the 25% level.

In order to compare our results with those obtained by Faber & Lander (1976) we tabulate in Table 1 values for the parameters derived for the Becker–Coppens type I Lorentzian model (BCL) together with those derived by Faber & Lander (FL). There is clearly no significant difference between the parameters derived from these two analyses indicating that, at the level of extinction involved ($y_{min} \simeq 0{\cdot}6$), the unmodified Zachariasen model is also adequate, as would be expected for a type I crystal.

Table 1. *Parameter values derived for the Becker–Coppens type* I *Lorentzian model (BCL) and those derived by Faber & Lander (FL)*

		$T = 300$ K, $\lambda = 1{\cdot}05$ Å	$T = 80$ K, $\lambda = 0{\cdot}992$ Å	$T = 4{\cdot}2$ K, $\lambda = 0{\cdot}992$ Å
g	BCL	909 (70)	1076 (44)	1087 (41)
	FL	936 (73)	1110 (46)	1155 (43)
B_U (Å^2)	BCL	0·27 (3)	0·11 (1)	0·07 (1)
	FL	0·25 (2)	0·10 (1)	0·07 (1)
B_O (Å^2)	BCL	0·42 (3)	0·25 (1)	0·21 (1)
	FL	0·41 (2)	0·24 (1)	0·22 (1)

Table 2. *Results obtained from the final analysis*

	$T = 300$ K, $\lambda = 1{\cdot}05$ Å	$T = 80$ K, $\lambda = 0{\cdot}992$ Å	$T = 4{\cdot}2$ K, $\lambda = 0{\cdot}992$ Å
b_U/b_O	1·443 (3)	1·448 (7)	1·450 (2)
g	806 (38)	1022 (17)	1072 (18)
B_U (Å^2)	0·24 (2)	0·09 (1)	0·06 (1)
B_O (Å^2)	0·44 (1)	0·27 (1)	0·25 (1)
R (%)	1·49	0·64	0·42

Re-analysis of earlier measurements on a single crystal of UO_2 (Rouse, Willis & Pryor, 1968) gave a value of $b_U/b_O = 1{\cdot}43$, rather than 1·47, which was used by Faber & Lander (1976), and this lower value was used in the wavelength-dependence study (Sakata, Cooper, Rouse & Willis, 1978), together with a fixed value of $B_U = 0{\cdot}28$ Å^2. Analysis of the Faber & Lander 300 K data with these values of b_U/b_O and B_U gave $B_O = 0{\cdot}52$ (1) Å^2, in good agreement with the earlier value of $B_O = 0{\cdot}55$ (2) Å^2, but with a worse overall fit to the data. A further analysis was therefore carried out with the Becker–Coppens type I Lorentzian model and b_U/b_O refined, the results of which are given in Table 2. These give a weighted mean value of $b_U/b_O = 1{\cdot}448$ (2). Correlation between the other parameters was considerably less in this analysis than in that with $b_U/b_O = 1{\cdot}47$ and the parameters were therefore determined more accurately. The weighted discrepancy factors are also significantly less and it is concluded therefore that this represents the best model for these data.

Further details of this analysis are available elsewhere (Cooper & Sakata, 1978).

We are grateful to Drs J. Faber and G. H. Lander for details of their experimental results, for their permission to analyse them further and for their comments.

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Union Office, Change of Address

The Union Office, incorporating the Union secretariat and the technical editing office, has now moved to 5 Abbey Square, Chester CH1 2HU, England. All correspondence for the Executive Secretary and the Technical Editor should be sent to this address. The telephone number (Chester 42878), the cable address (Unicrystal) and the telex address (667325 COMCAB G, attention Unicrystal) remain unchanged.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

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Основы кристаллофизики. Ю. И. Сиротин, М. П. Шаскольская. Стр. 680, Рис. 177, таблицы 103, список литературы содержит 314 позиций. Москва, Издательсто Наука СССР, 1975. Цена 2р. 81к.

Особой помощью для читающего являются многочисленные ссылки на литературу и монографии, которые даются в конце большенства разделов. Кроме того в книге находится список употребляемых символов и приложения.

Ю. И. Сиротин и М. П. Шаскольская сочетают чисто формальный подход геометрической кристаллографии с анизотропией ряда физических свойств наблюдаемых в кристаллах и в этом смысле прокладывают путь между кристаллографией и физикой.

Для введения в кристаллофизику в рецензируемой книге даётся изложение геометрической кристаллографии и теоритическая подготовка. Виден здесь большой дидактический опыт авторов. Из-за постепенного развития математической базы читатель не нуждается в специальной подготовке.

Начиная с координатных систем и их ортогональных преобразований знакомимся с выбором кристаллографических и кристаллофизических осей координат в кристаллах. Основное в описании анизотропии физических свойств кристаллов понятие тензоров, их симетрии и связь с координатными системами ясно представлены. Описаны тензоры и псевдотензоры высших рангов и их алгебра. Математические выводы иллюстрируются примерами. Читатель находит методы получения симетрических тензоров и доказательство почему большинство тензоров в физике симетрически. Авторы развивают тоже дифференциальный анализ тензоров и вводят продвинутые понятия тензорного исчисления.

Введенные понятия и методы применены в ряде конкретных физических проблем. Они потверждают общий принцип Кюри, в применении к симетрии кристаллов и их физических свойств. Из этой точки зрения описаны тепловые, электрические, упругие, оптические и магнитные свойства кристаллов. Видно, что симетрия указательных поверхностей физических свойств (например указательной поверхности модуля Юнга) требует всех элементов симетрии точечной группы кристала, но может иметь и такие элементы, которых у кристалла нет.

По сравнению с другими вопросами, симетрия магнитных структур даётся в сжатой форме. Здесь авторы ссылаются на важнейшие статьи и монографии, однако не уделяют нужного внимания применению теории представлений групп Берто, которые существенным образом связаны с проблемами магнитной кристаллофизики.