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In face centered cubic crystals intrinsic and extrinsic faulting may readily be observed in low stacking fault energy materials and has also been recognized in materials [1] for which the stacking fault energy has a relatively high value, $\sim$20 ergs/cm^2. In the case of extrinsic-intrinsic node pairs a cross-linking dislocation often forms leading to the presence of a Shockley partial separating the intrinsically and extrinsically faulted regions. Both node pairs and a new extrinsic-intrinsic fault pair configuration, which also has a Shockley partial separating the extrinsic and intrinsic faults, are described more fully in [2], in which reference was made to contrast anomalies which arise from such dislocations. Normally, Shockley partials (for which $\underline{b}$ = 1/6 $\langle 112 \rangle$) are visible when $\underline{g} \cdot \underline{b} = \pm 2/3$ and invisible for $\underline{g} \cdot \underline{b} = \pm 1/3$, where $\underline{g}$ is the operative reflection [3]. As reported in [2], the Shockley partial separating extrinsic and intrinsic faults is visible for $\underline{g} \cdot \underline{b} = \pm 1/3$ and invisible for $\underline{g} \cdot \underline{b} = \pm 2/3$.

Contrast anomalies also exist when Frank partials separate extrinsic and intrinsic faults, and such a configuration arises in the double faulted loops reported by [4]. Calculations for the latter case [5] reveal that when allowance is made for the displacement vectors of the fault and of the partial dislocation ($\underline{b}$) the phase factor determining

the contrast is $\Delta\phi = 3\pi\ \underline{g} \cdot \underline{b}$ rather than the usual $\Delta\phi = 2\pi\ \underline{g} \cdot \underline{b}$, and that the same result is also obtained in the case of a Shockley partial.

Complete experimental verification of this prediction has been obtained in the present work for the case of a Shockley partial separating extrinsic and intrinsic faults. The fault pairs A and B illustrated for five different reflecting conditions in Fig. 1 are of the type described in [2] and consist of three parallel Shockley partials of the same Burgers vector. In Table 1 the phase factors applicable to the center partial in each fault pair, $\Delta\phi_A = 3\pi\ \underline{g} \cdot \underline{b}_A$ and $\Delta\phi_B = 3\pi\ \underline{g} \cdot \underline{b}_B$, are listed. Background intensity is expected for $\Delta\phi = 0$ or $\pm 2\pi$, and dark contrast for $\Delta\phi = \pm\pi$ or $\pm 3\pi$.

A comparison of Fig. 1 and Table 1 shows that in all cases the experimental results are in accord with the contrast calculated for a phase factor of $3\pi\ \underline{g} \cdot \underline{b}$.

ACKNOWLEDGMENT

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FIGURE CAPTION

Figure 1. Extrinsic-intrinsic fault pairs (A,B) observed under 5 different reflecting conditions.

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Predicted and Observed Contrast for the Partials Separating Extrinsic and Intrinsic Faults in Figure 1.

Foil Normal [110] Faults in $(11\bar{1})$ Plane $\Delta\phi = 3\pi\ \underline{g}.\underline{b}$

Figure	$\underline{g}$	Fault Pair A($\underline{b}_A$=1/6[$1\bar{2}\bar{1}$])		Fault Pair B($\underline{b}_B$=1/6[$\bar{2}1\bar{1}$])	
		$\Delta\phi_A=3\pi\underline{g}.\underline{b}_A$	observed	$\Delta\phi_B=3\pi\underline{g}.\underline{b}_B$	observed
a	$\bar{1}11$	2π	background	π	dark
b	002	π	dark	π	dark
c	$\bar{2}20$	3π	dark	3π	dark
d	$\bar{1}1\bar{3}$	0	background	3π	dark
e	$\bar{1}13$	3π	dark	0	background

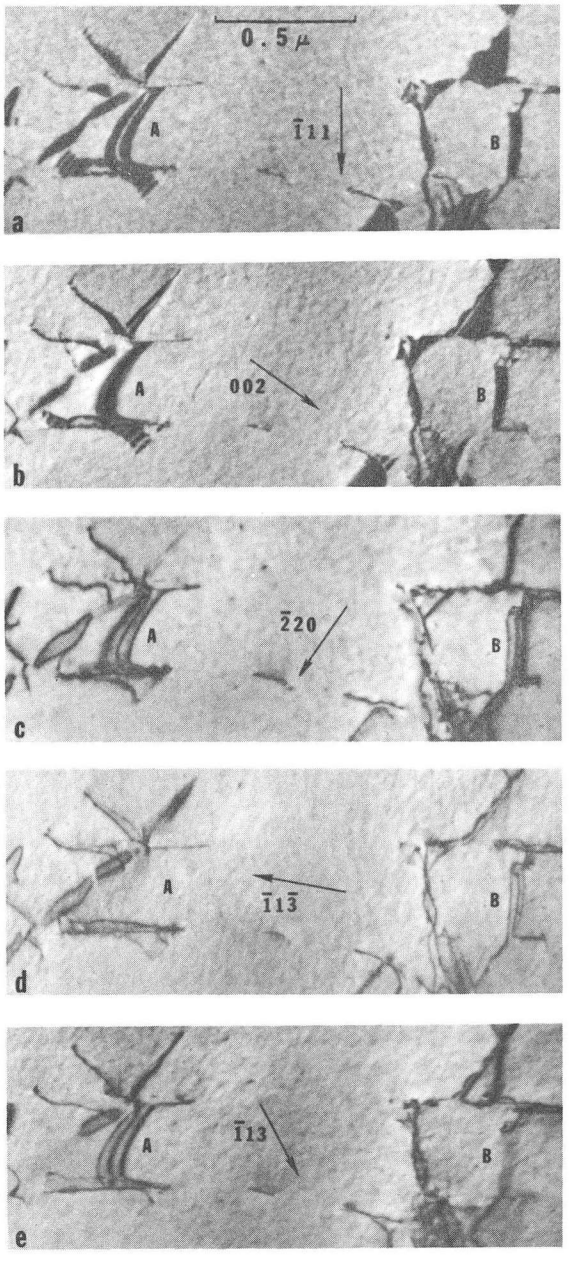

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Fig. 1