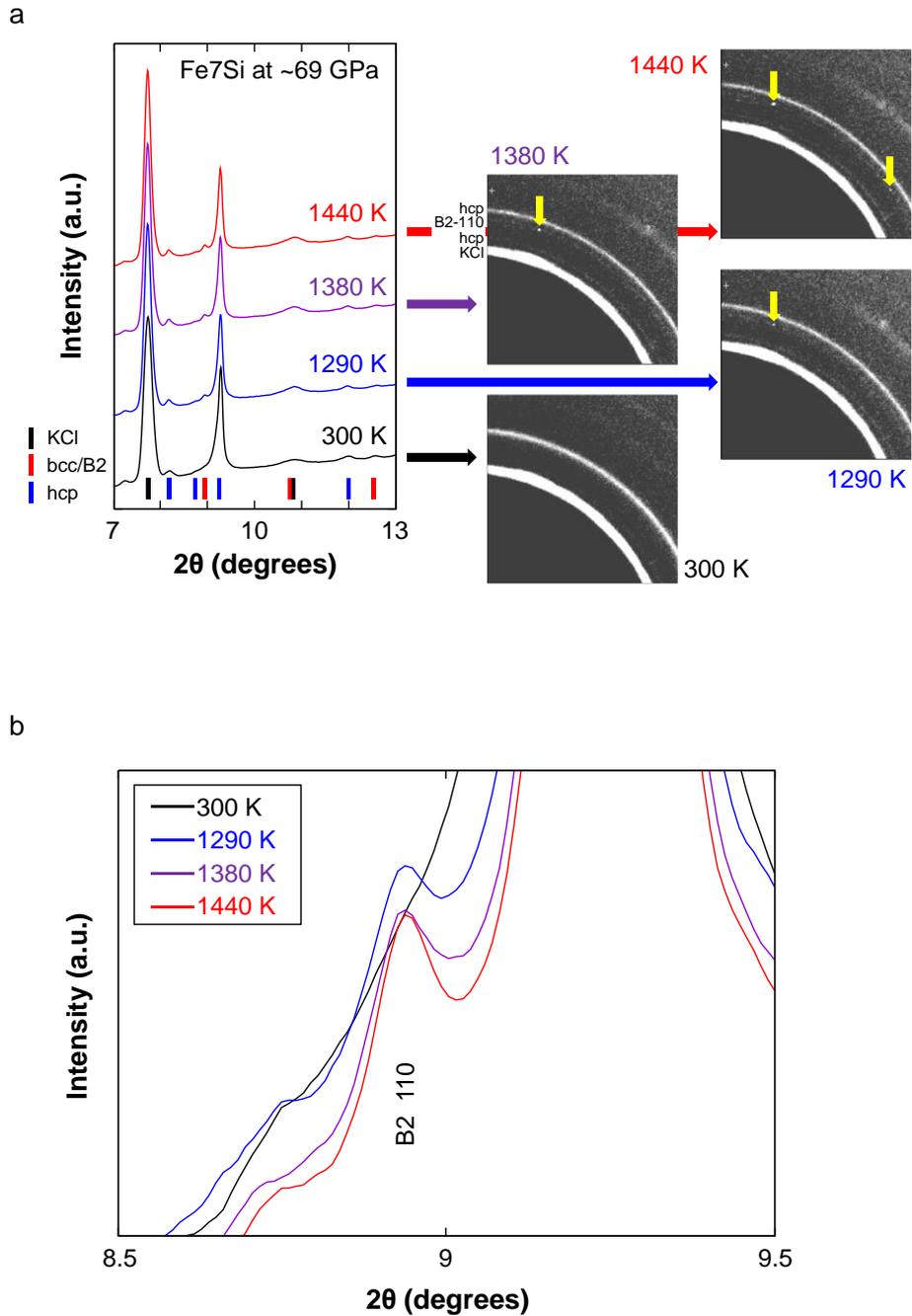
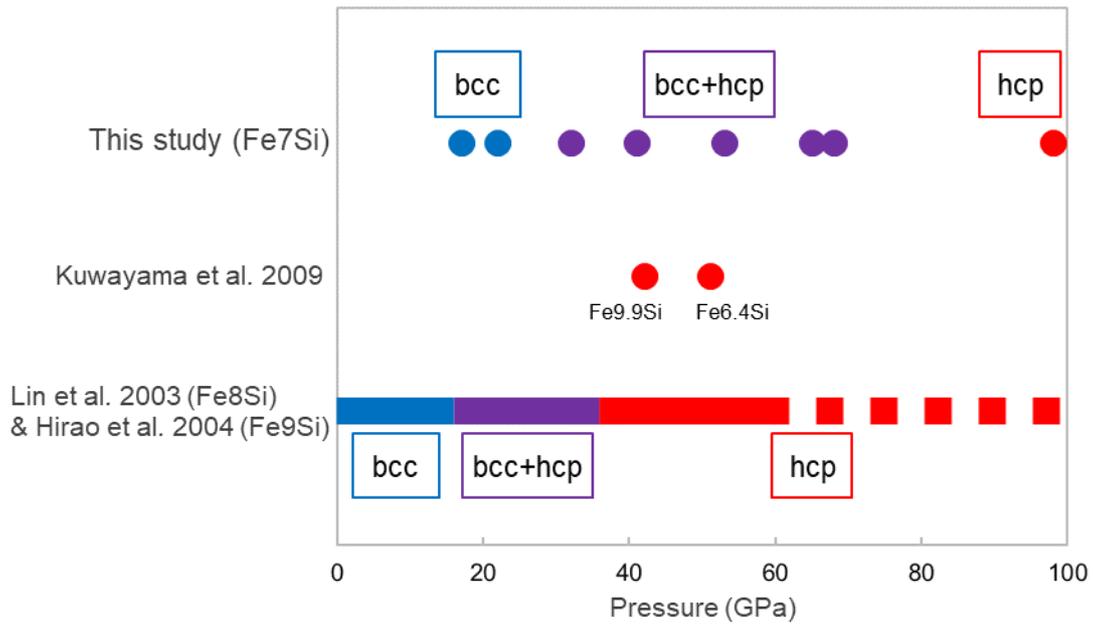


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SUPPORTING FIGURE 1. (a)X-ray diffraction patterns of Fe₇Si at ~69 GPa for increasing temperature (left) and enlarged images of 2D patterns around a 110 peak of B2 phase (right). Yellow arrows indicate bright spots formed by the grain growth. **(b)** Zoomed profiles of a 110 peak of B2 phase in XRD patterns in **a**.

Yokoo et al. (2023) *American Mineralogist*



SUPPORTING FIGURE 2. Comparison of observed phases in cold compression of starting material in this study and phases reported in literature studies at room-*T* and high pressure. Blue circles/line indicate bcc phase, purple indicate bcc+hcp, and red indicate hcp phase. The dotted red line shows the pressure range investigated only by Hirao et al. (2004).

Yokoo et al. (2023) *American Mineralogist*

SUPPORTING TABLE 2. Correlation coefficients between each parameter.

	$\frac{1}{2} \frac{d^2 K_0}{dX_{Si}^2}$	$\frac{dK'}{dX_{Si}}$	$\gamma_0 \Big _{X_{Si}=0.5}$	$\frac{d\gamma_0}{dX_{Si}}$	q
$\frac{dK_0}{dX_{Si}} \Big _{X_{Si}=0.5}$	0.9405	-0.6111	0.0647	-0.0374	0.0606
$\frac{1}{2} \frac{d^2 K_0}{dX_{Si}^2}$		-0.3705	-0.0327	-0.0719	-0.0700
$\frac{dK'}{dX_{Si}}$			-0.3857	-0.1917	-0.4947
$\gamma_0 \Big _{X_{Si}=0.5}$				0.6817	0.8504
$\frac{d\gamma_0}{dX_{Si}}$					0.3566