Electronic Supplementary Material (ESI) for CrystEngComm.

3C–, 4H–, and 6H–SiC crystal habitus and interfacial behaviours in high temperature Si-based solvents

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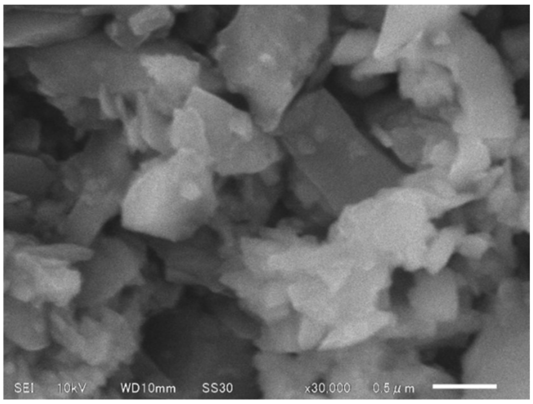

Figure S1 Original morphology for the raw 3C–SiC powder.

Figure S1 shows the original morphology for the raw 3C–SiC powder as an example. Although the shape of the raw SiC powder was not uniform, the particle maintained for 0 min, which was heated to the target temperature and cooled down immediately, showed the microstructure as shown in Fig. 2 by dissolution. In addition, the amount of SiC powder in the sample was approximately 20–1000 times greater than the solubility in the solvent according to the Ref. 19. Therefore, the grain size was able to evaluate with reference to the particle maintained for 0 min.

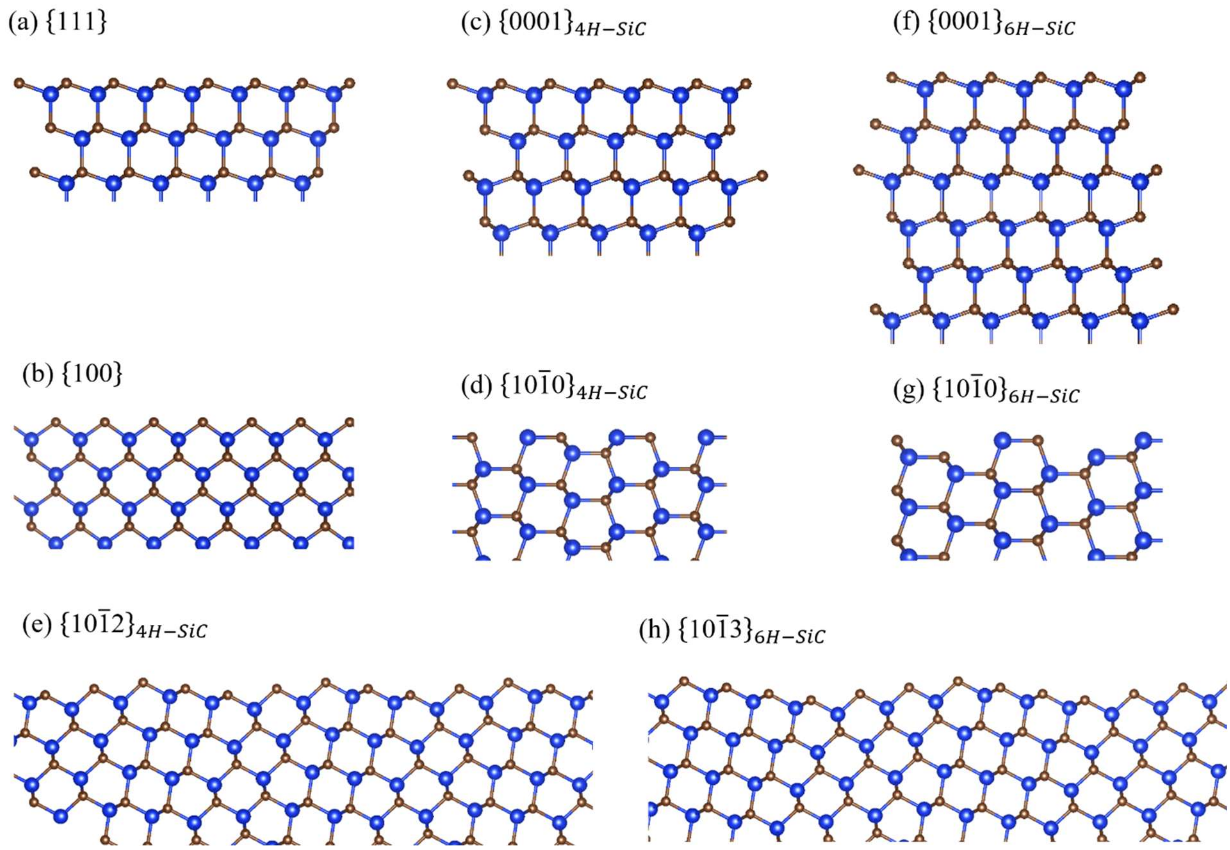

Figure. S2 Atomistic arrangement of habit planes of (a)–(b) 3C–SiC, (c)–(e) 4H–SiC, and (f)–(h) 6H–SiC; blue and amber atoms are Si and C, respectively.

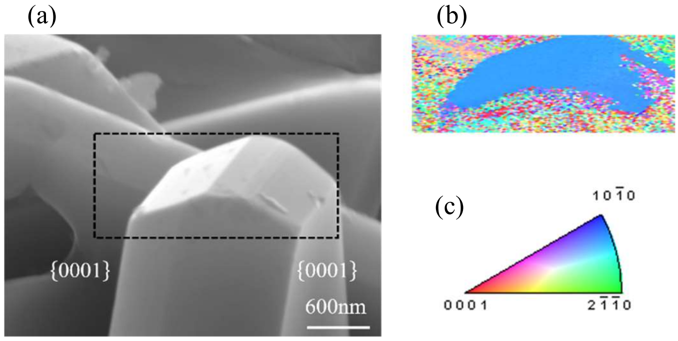

Figure S3 (a) SEM image of side plane of 4H–SiC, (b) EBSD colour map (normal direction) of the area shown in (a), and (c) the inverse pole figure of 4H–SiC [0001].

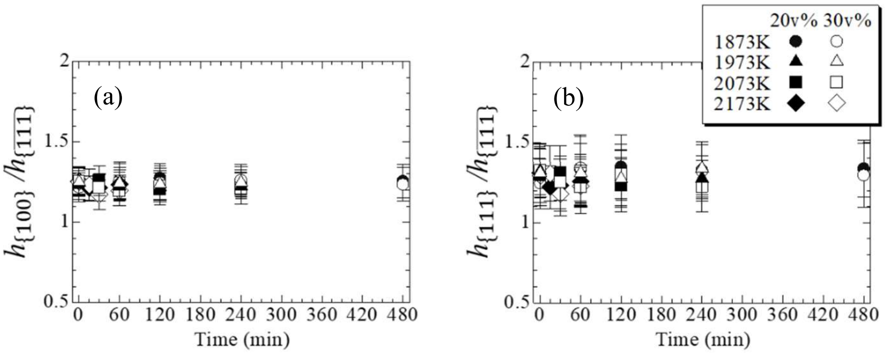

Figure S4 Change in (a) $h_{\{100\}}/h_{\{\overline{111}\}}$ and (b) $h_{\{111\}}/h_{\{\overline{111}\}}$ ratio of 3C–SiC in Si solvent at 1873–2173 K.

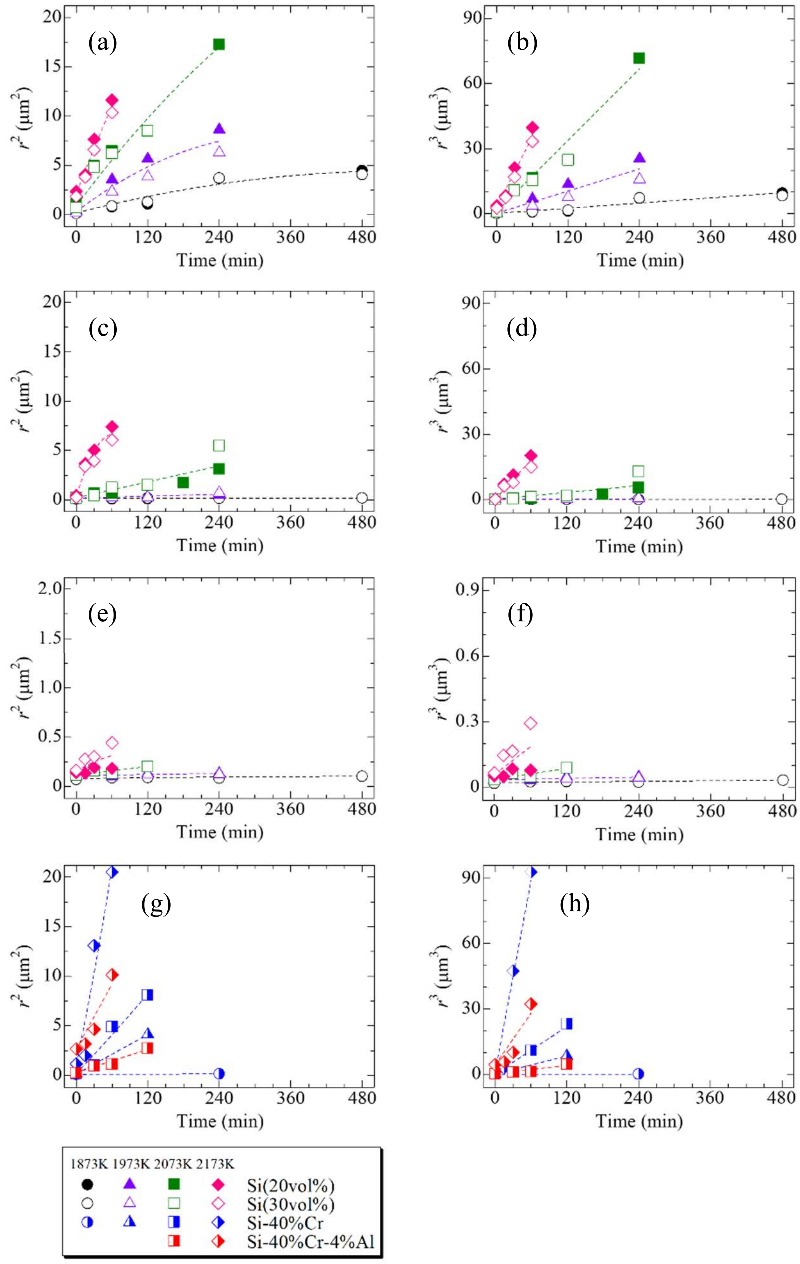

Figure S5 Correlation between the power of reduced mean particle radius of SiC and the holding time; (a, c, e, g) square law and (b, d, f, h) cube law; (a, b) 3C–SiC, (c, d) 4H–SiC, (e, f) 6H–SiC in Si solvent, and (g, h) 4H–SiC in Si–40 mol%Cr and Si–40 mol%Cr–4 mol%Al solvents.