Supplementary Materials

Directional orthorhombic phase precipitation and coarsening enable strength-ductility synergy in compositionally modified Ti_2AlNb-based alloys

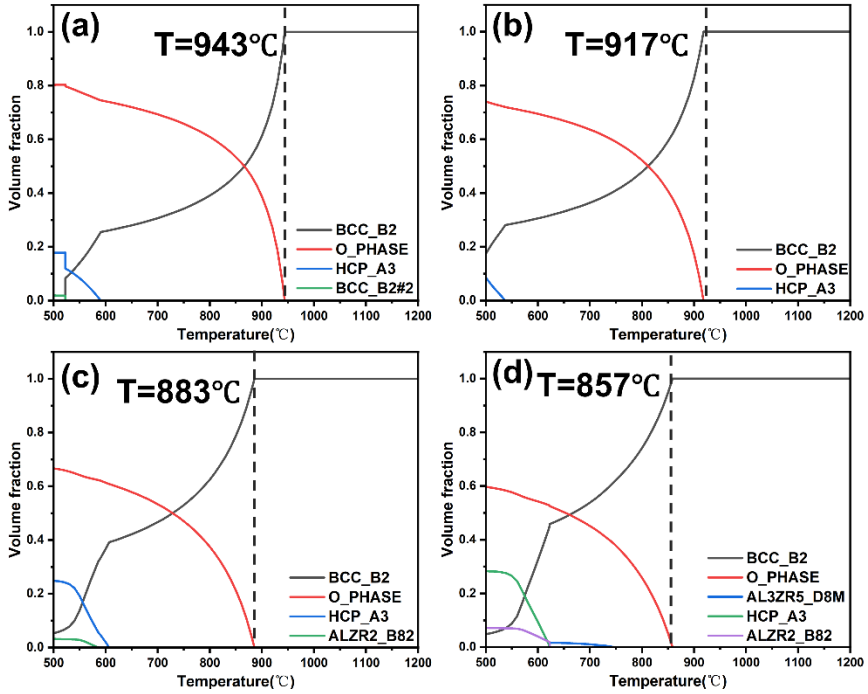
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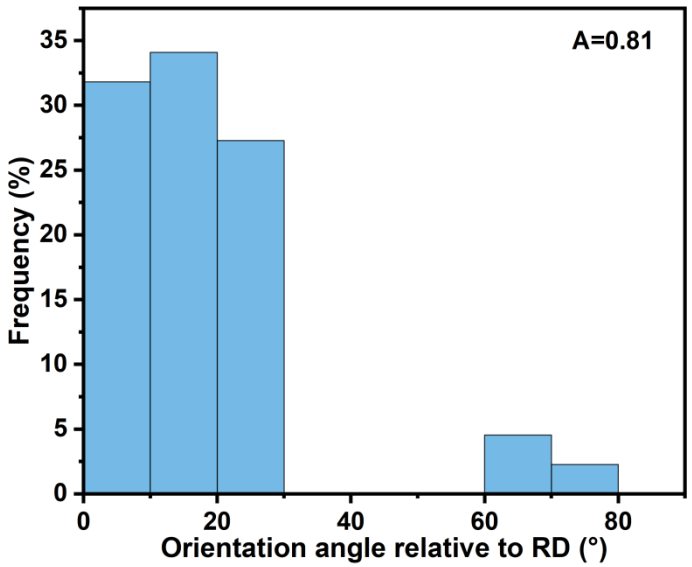
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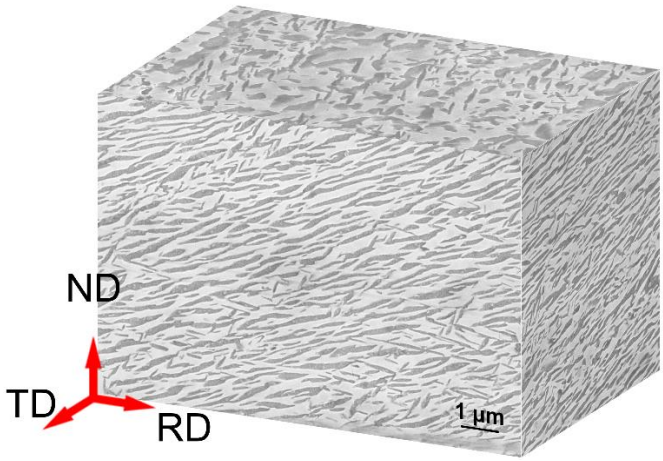
1. Supplementary Figures. S1-S4
2. Supplementary Tables S1-S2



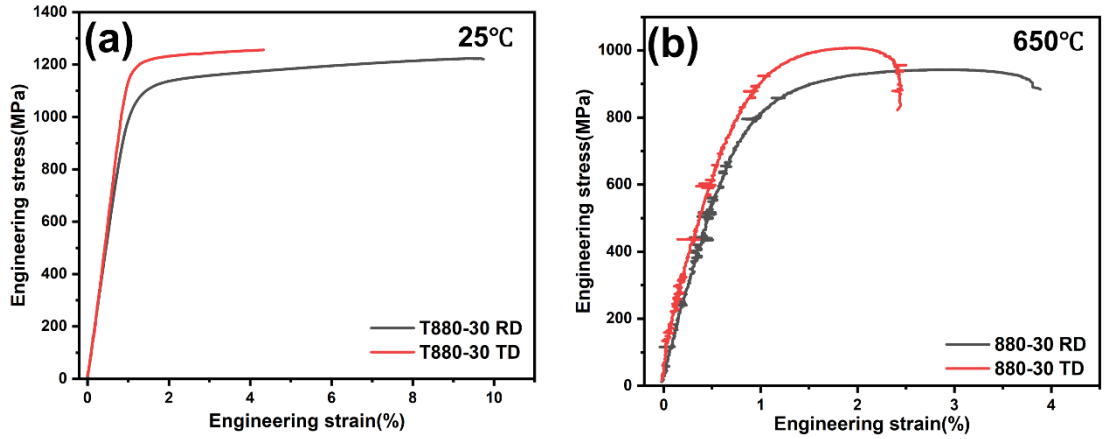
Supplementary Figure 1. Calculated equilibrium phase-fraction curves of the (a)A0, (b)A2, (c)A4, and (d)A6 alloys.



Supplementary Figure 2. Orientation-angle distribution of O-phase lamellae relative to RD in T880-2.



Supplementary Figure 3. Three-dimensional schematic composite of the T880-30 microstructure.



Supplementary Figure 4. Engineering stress–strain curves of the T880-30 specimen tested along the rolling direction (RD) and transverse direction (TD) at (a) room temperature (25 °C) and (b) 650 °C.

Supplementary Table 1. Room-temperature tensile properties of the T840-30, T880-30, and T920-30 specimens

Condition	σ_b /MPa	σ_y/MPa	$\mathcal{E}$/%
T840-30	1311	1160	4.79
	1323	1188	4.22
	1378	1147	4.35
	1337±35	1165±20	4.5±0.3
T880-30	1223	1046	9.67
	1170	1020	10.63
	1205	1043	8.69
	1199±26	1036±14	9.7±0.9
T920-30	1096	981	12.3
	1125	957	11.3
	1067	923	12.7
	1096±29	953±29	12.1±0.7

Supplementary Table 2. Microstructural parameters and room-temperature tensile properties of the samples aged at different temperatures for 30 min

Sample	O-phase area fraction /%	Spacing/nm	Thickness/nm	YS/MPa	UTS/MPa	A/%
T840-30	46±1.4	73.7±24.3	71.4±24	1165±20	1337±35	4.5±0.3
T880-30	40.4±0.8	122.5±48.7	96.9±33.3	1036±14	1199±26	9.7±0.9
T920-30	14.6±1.3	230.4±50.4	109.8±31.8	953±29	1096±29	12.1±0.7