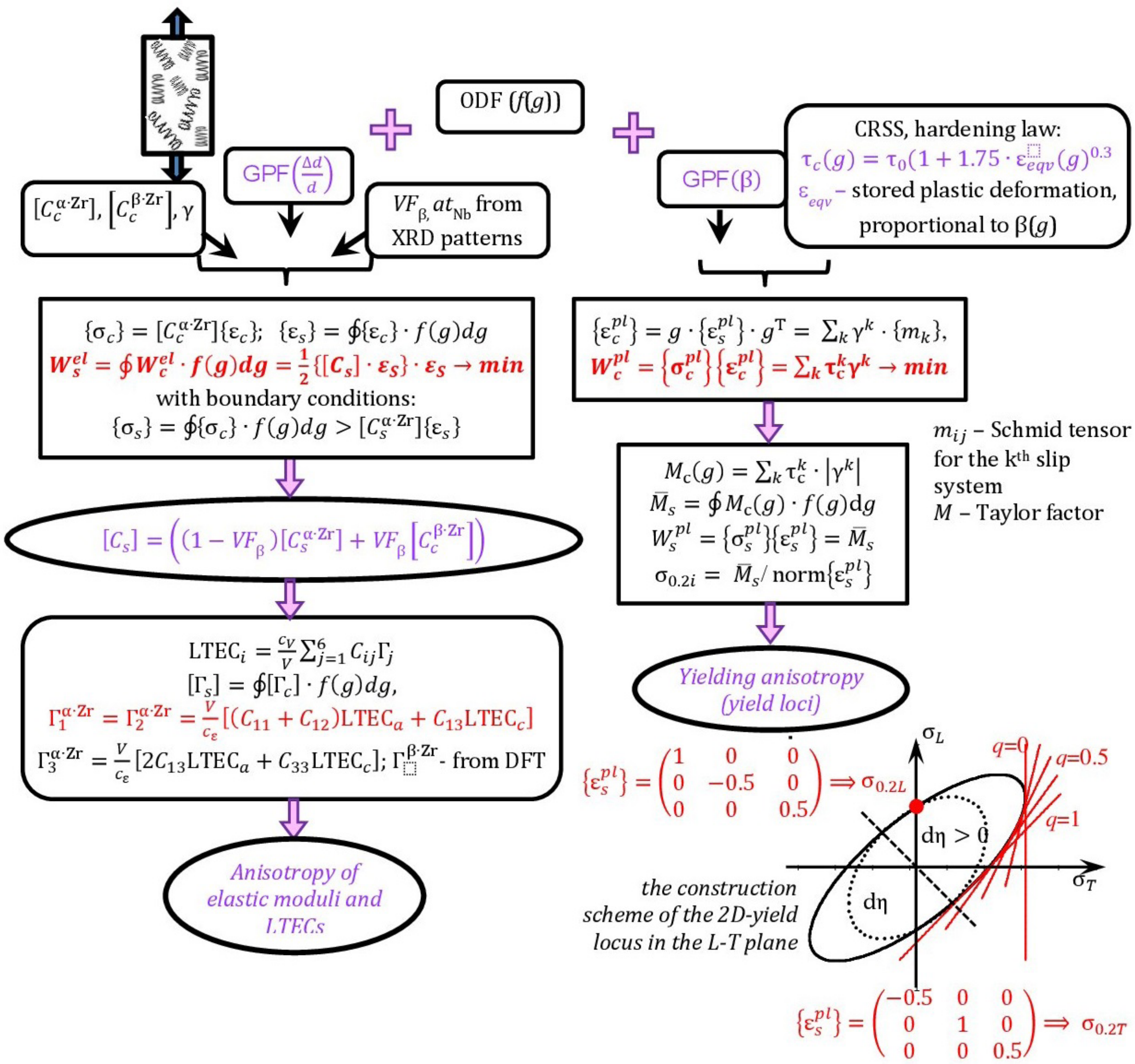
Supplementary material

Table S1. Calculated parameters of β-(Zr, Nb).

№	at.% Nb	a, Å	E, eV	Elastic constants C_{ij} (GPa)			$C_{11}-C_{12}$	Γ (300 K)
				C_{11}	C_{12}	C_{44}		
1	0.0	3.573	8.44	81.9	91.2	30.1	−9.3	0.96
2	12.5	3.554	8.67	108.2	88.7	25.1	16.0	1.10
3	25.0	3.518	8.88	120.1	87.6	30.6	30.5	1.20
4	37.5	3.481	9.08	133.7	92.7	28.3	39.4	1.25
5	50.0	3.446	9.29	151.3	96.3	25.3	53.6	1.36
6	62.5	3.410	9.51	172.0	103.7	24.2	70.0	1.50
7	75.0	3.375	9.74	197.2	110.0	21.5	89.0	1.55
8	87.5	3.341	9.97	223.4	119.5	19.5	105.3	1.52
9	100.0	3.308	10.22	248.4	132.9	14.4	115.5	1.60



a b

Fig. S1. (Color online) The generalized calculation algorithm of the properties anisotropy on the basis of GPFs data for elastic moduli and LTECs (a) and yield anisotropy (b).

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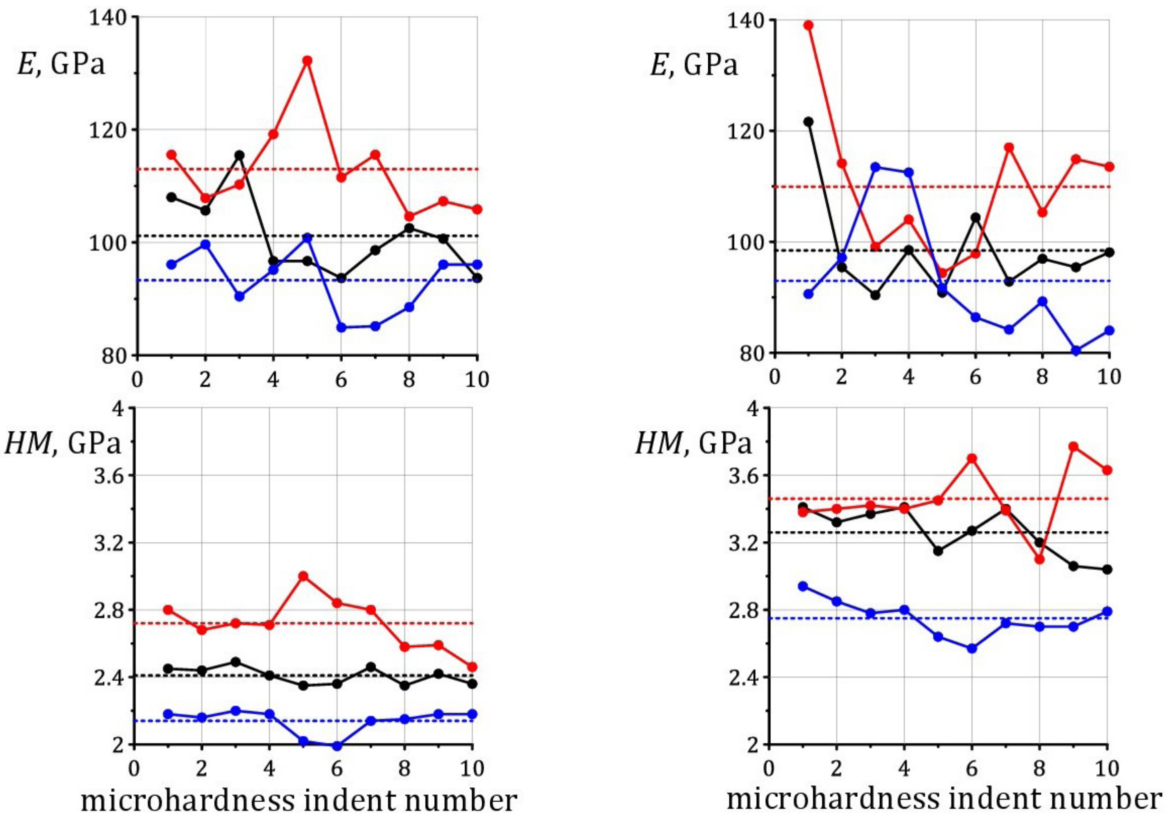
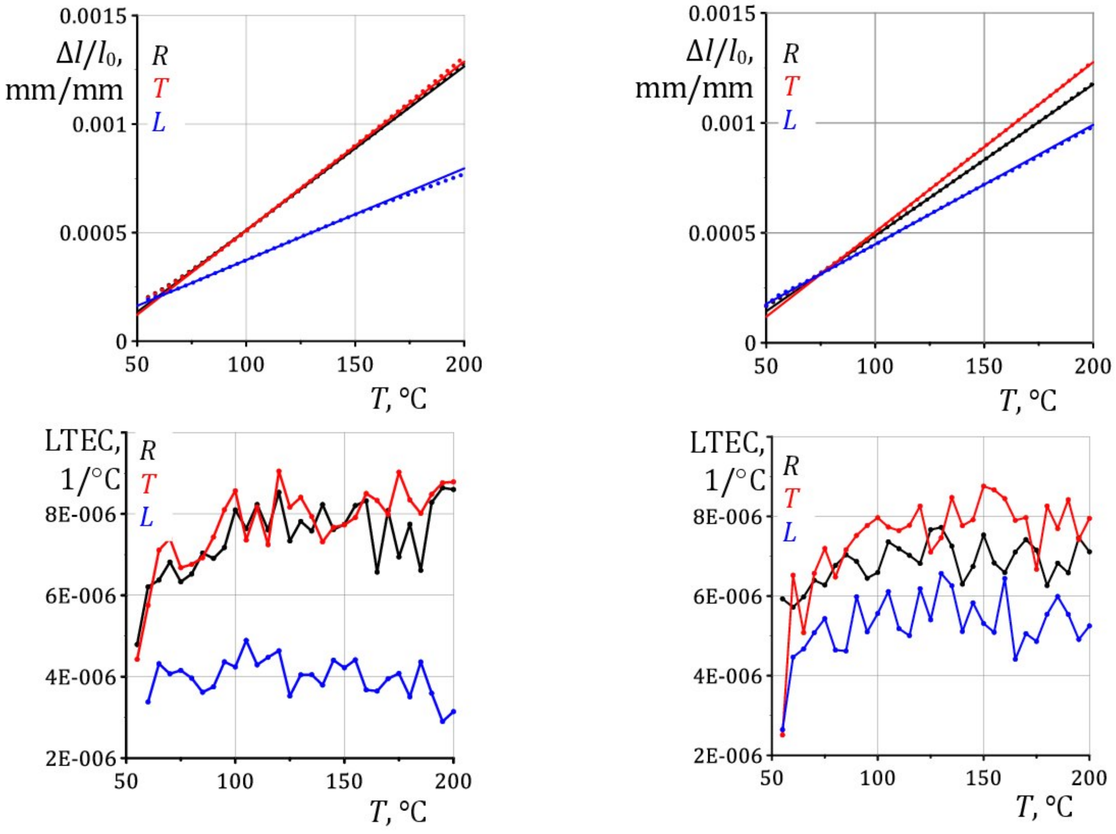


a b

Fig. S2. (Color online) Indentation parameters obtained for different directions of the deformed (a) and annealed (b) samples.



a b

Fig. S3. (Color online) Dilatometric curves and appropriate LTECs, calculated every 5°, obtained for different directions of the deformed (a) and annealed (b) samples.

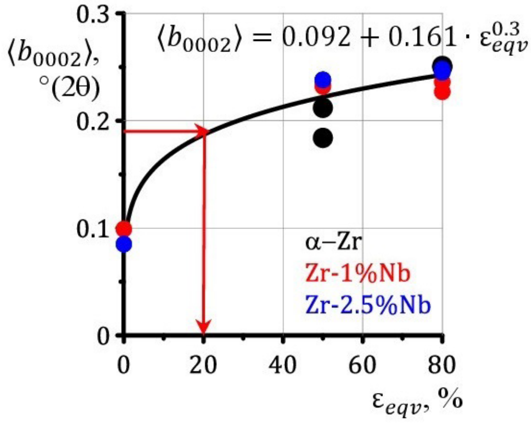


Fig. S4. (Color online) The dependency of the weighted average value $\langle b_{0002} \rangle$ on accumulated degree of plastic deformation during rolling for pure Zr and different Zr-Nb alloys.