Supplementary Material for the article:

**Phase constitution and microstructure of the NbTiVZr refractory high-entropy alloy solidified upon different processing**

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Figure S1. 3D XRD plot showing formation of the *bcc*#1 phase during crystallization of the undercooled NbTiVZr melt; this corresponds to the data shown in Fig. 1.



Figure S2. 3D XRD plot showing formation of the two additional bcc phases during cooling of NbTiVZr sample from semisolid state; this corresponds to the data shown in Fig. 2.



Figure S3. Magnified SEM/EDX images of the NbTiVZr solidified from the semisolid state; this corresponds to the panels (c, d) in Fig. 5.

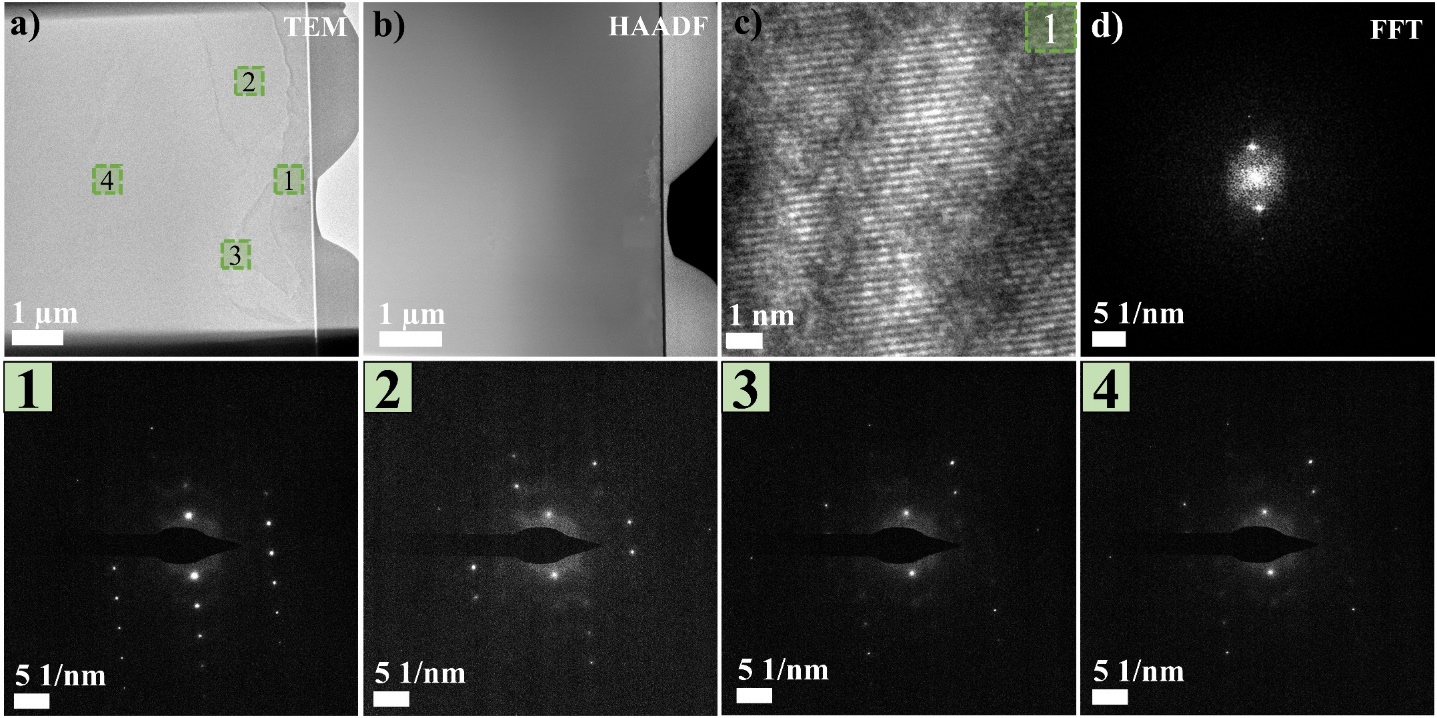


Figure S4. a) TEM image showing the cross-section of the matrix. The numbered green regions correspond to the points where the SAED patterns were collected and presented in the bottom numbered row; b) HAADF image of the same region presented in panel (a); c) high-resolution TEM image of region 1 and its fast Fourier transform (FFT) shown in panel (d).

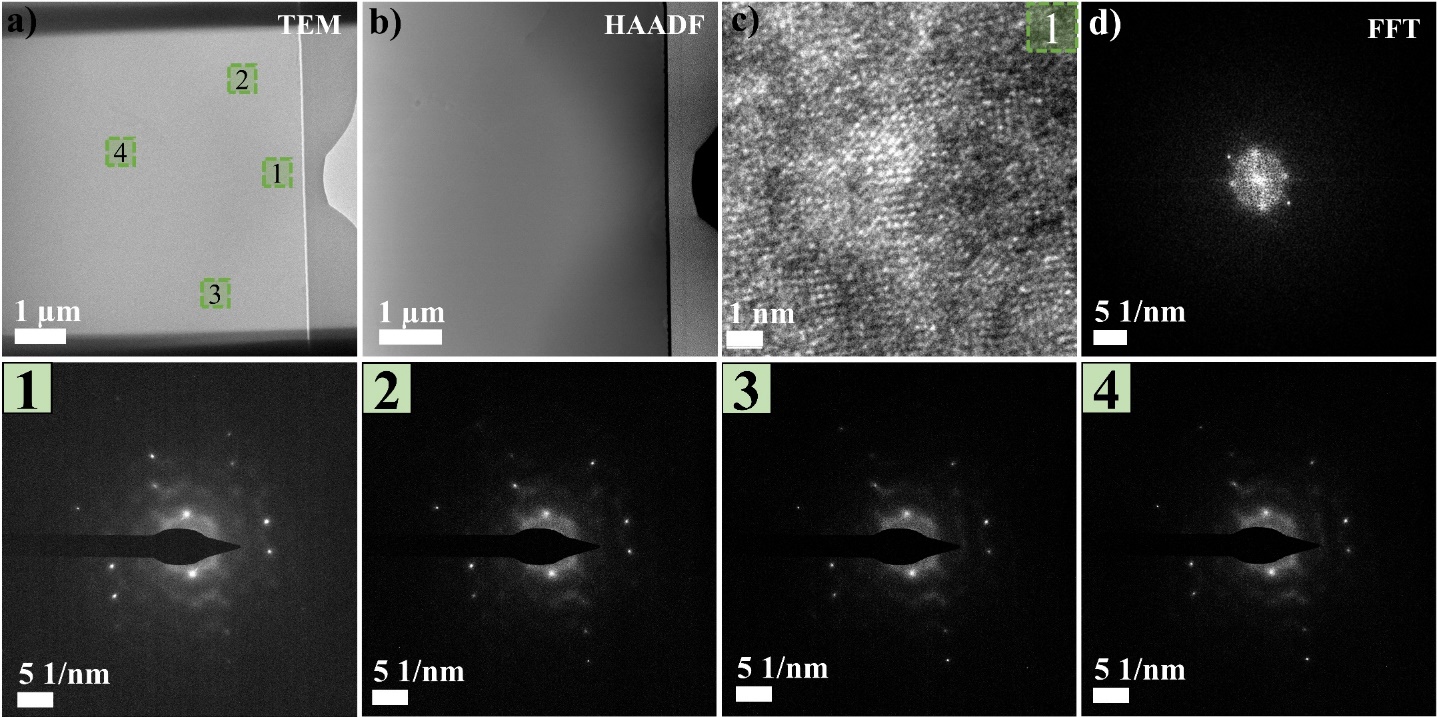


Figure S5. a) TEM image showing the cross-section of the matrix. The numbered green regions correspond to the points where the SAED patterns were collected and presented in the bottom numbered row; b) HAADF image of the same region presented in panel (a); c) high-resolution TEM image of region 1 and its fast Fourier transform (FFT) shown in panel (d).

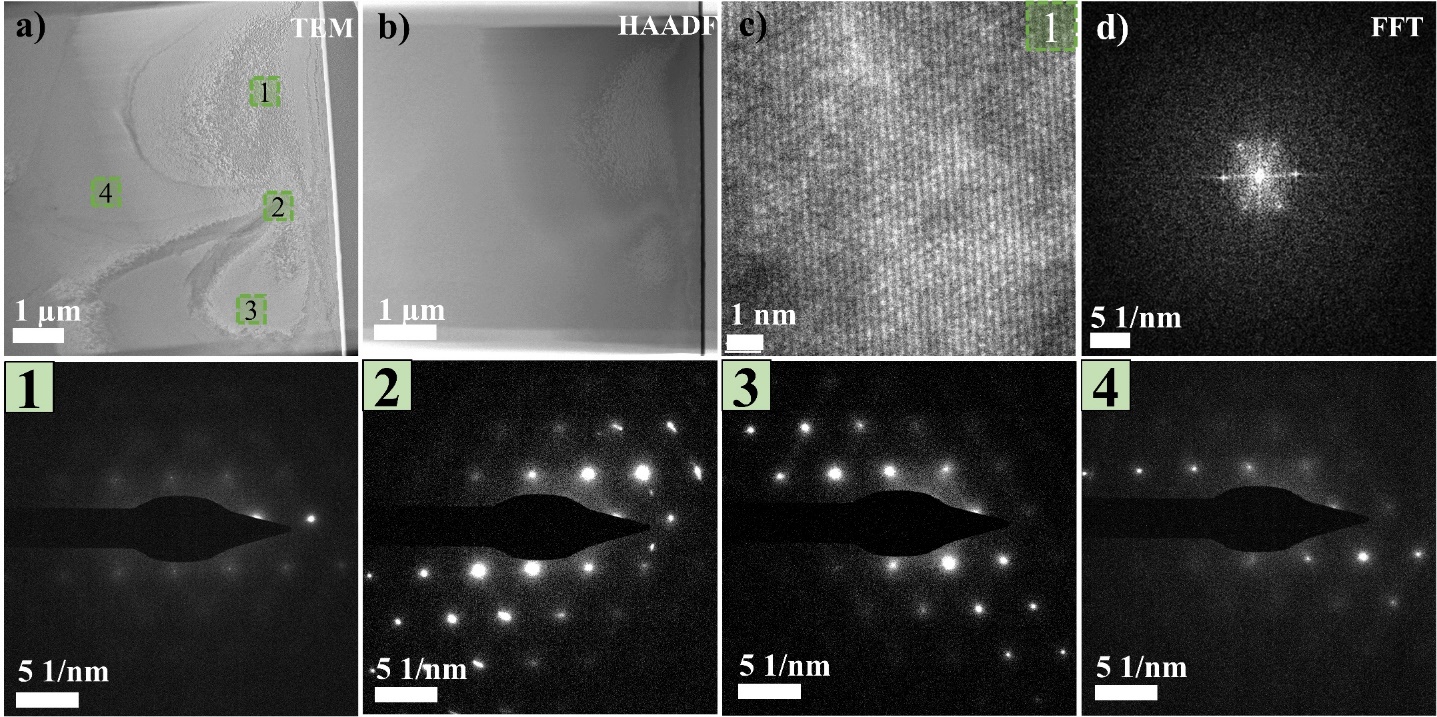


Figure S6. a) TEM image showing the cross-section of the matrix. The numbered green regions correspond to the points where the SAED patterns were collected and presented in the bottom numbered row; b) HAADF image of the same region presented in panel (a); c) high-resolution TEM image of region 1 and its fast Fourier transform (FFT) shown in panel (d).

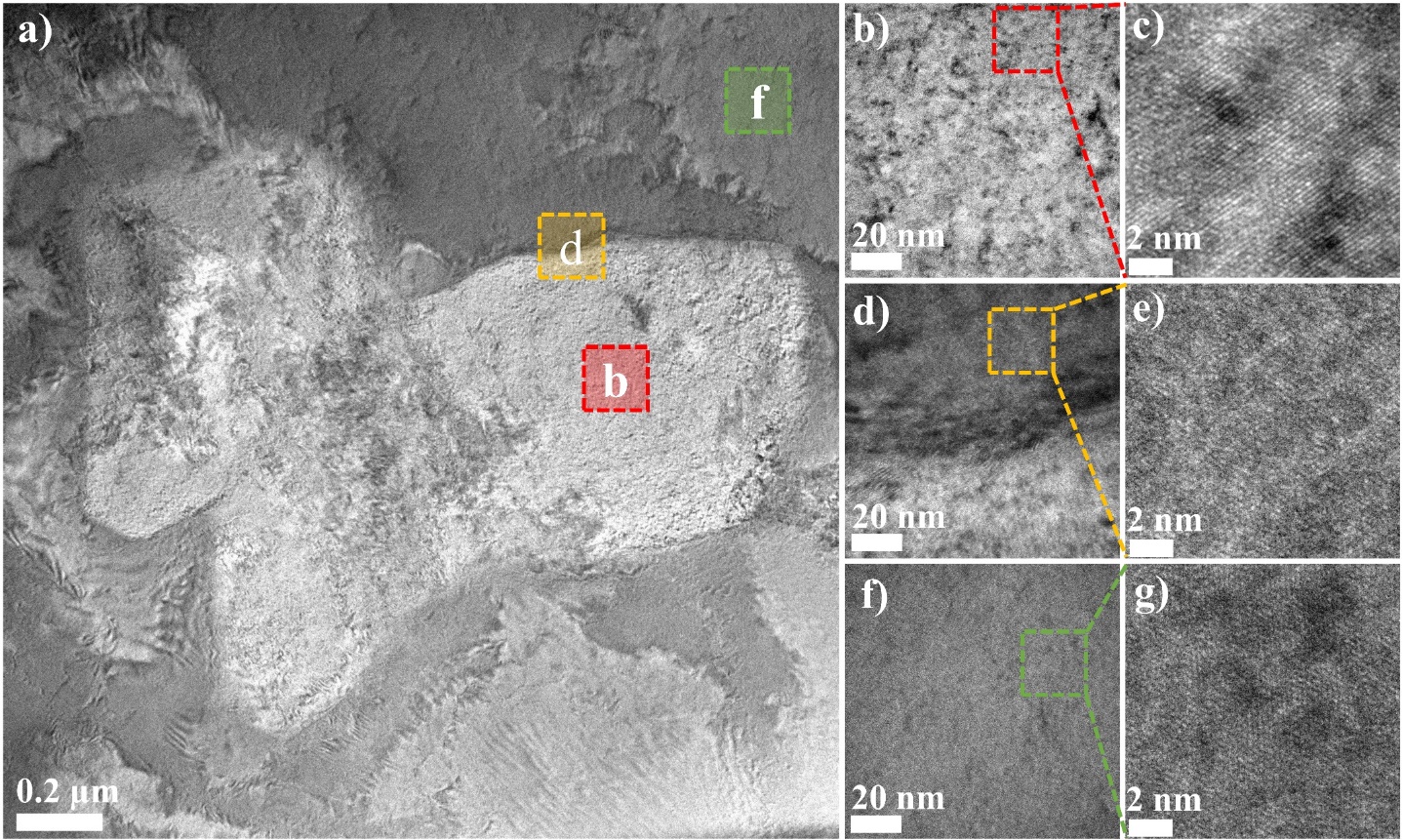


Figure S7. a) TEM image showing the three coexisting *bcc* phases; b) V-rich region; d) interface between V-rich and Zr-rich regions; f) matrix. Panels (c), (e), and (g) correspond to high-magnification TEM images of the V-rich, Zr-rich, and matrix regions, respectively.

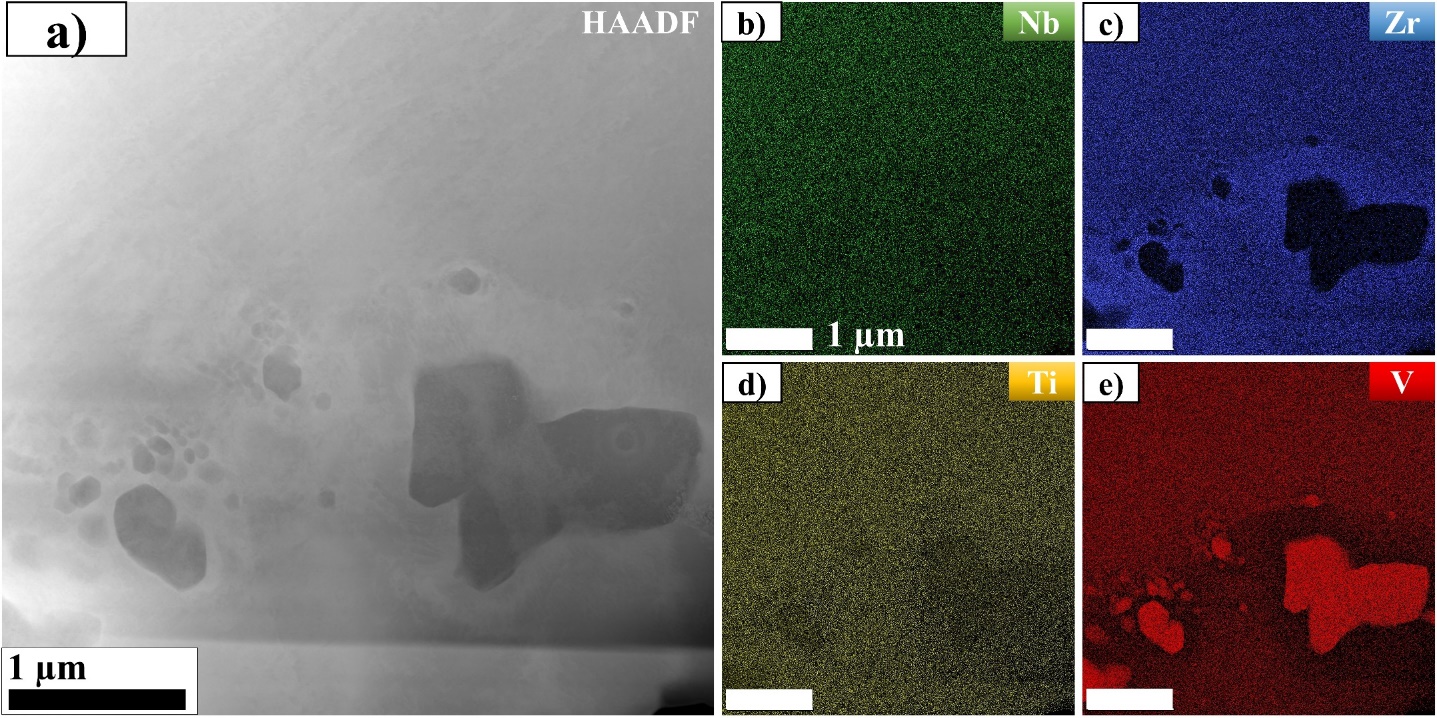


Figure S8. a) High-magnification HAADF image showing the V-rich regions in dark contrast; b, c, d, e) EDX element maps for Nb, Zr, Ti, and V, respectively.