Supporting Information

Table S1. Spatial parameters of $V_{1.13}Se_{0.72}Te_{1.28}$ and $V_{1.10}Se_{0.42}Te_{1.58}$. The refined Se occupancies are designated with $\varepsilon_1 = 0.36(3)$ and $\varepsilon_2 = 0.21(3)$.

Atom	Position	*x*	*y*	*z*	Occupancy	U_{eq} (Å²)
$V_{1.13}Se_{0.72}Te_{1.28}$						
V1	1*a*	0	0	0	1	0.0582(13)
V2	1*b*	0	½	0	0.128(11)	0.028(6)
Se	2*d*	⅓	⅔	0.235(3)	ε_1	0.0212(7)
Te	2*d*	⅓	⅔	0.265(1)	$1 - \varepsilon_1$	"
$V_{1.10}Se_{0.42}Te_{1.58}$						
V1	1*a*	0	0	0	1	0.0469(10)
V2	1*b*	0	½	0	0.099(12)	0.035(8)
Se	2*d*	⅓	⅔	0.214(3)	ε_2	0.0088(16)
Te	2*d*	⅓	⅔	0.266(1)	$1 - \varepsilon_2$	0.0186(5)

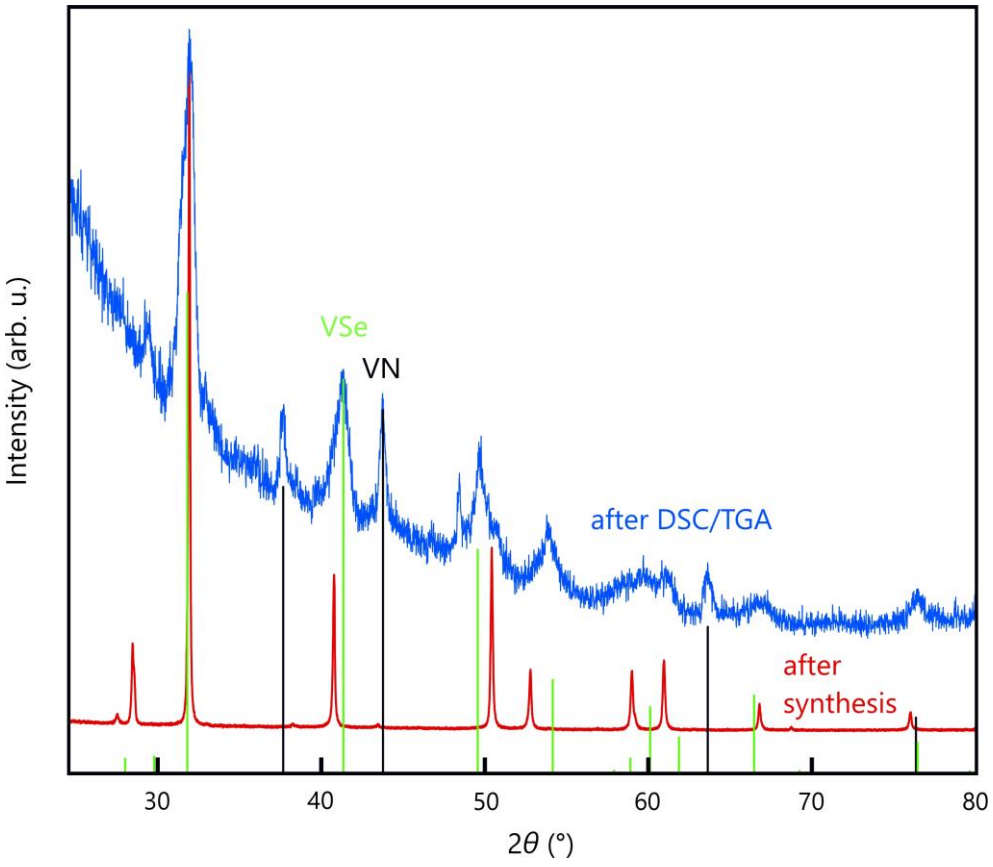

Figure S1. Comparison of $VSe_{0.72}Te_{1.28}$ powder X-ray data after synthesis (red), after DSC/TGA (blue), and Bragg positions of VSe [28] (green) and VN [29] (black).

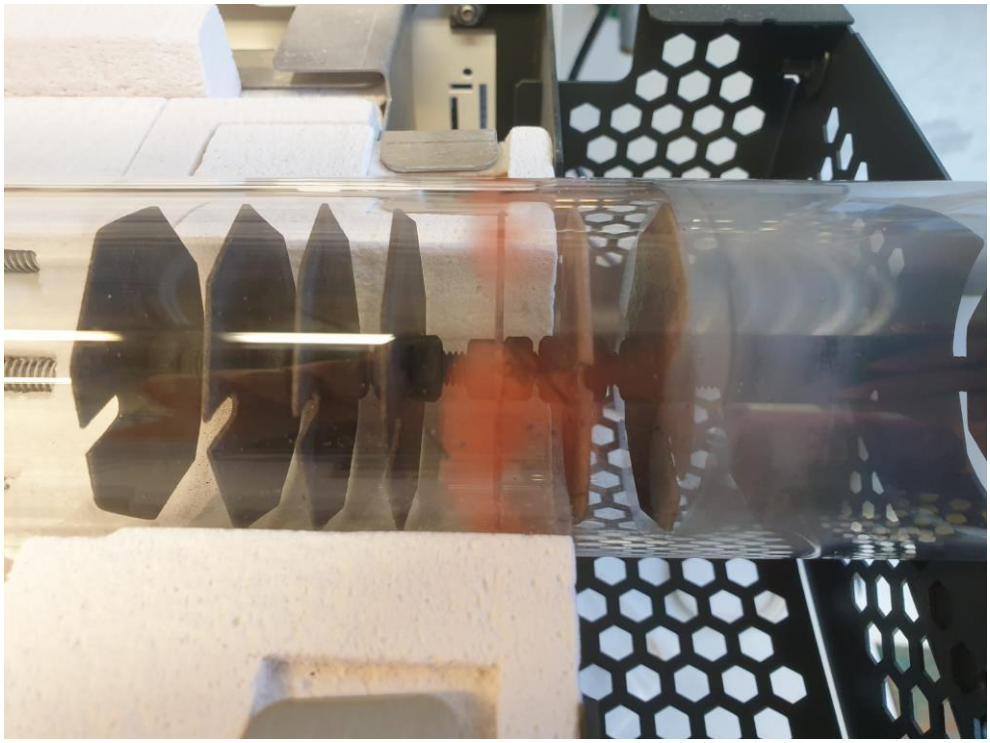

Figure S2. Glass tube of the furnace with orange and gray layers after heating in argon atmosphere.

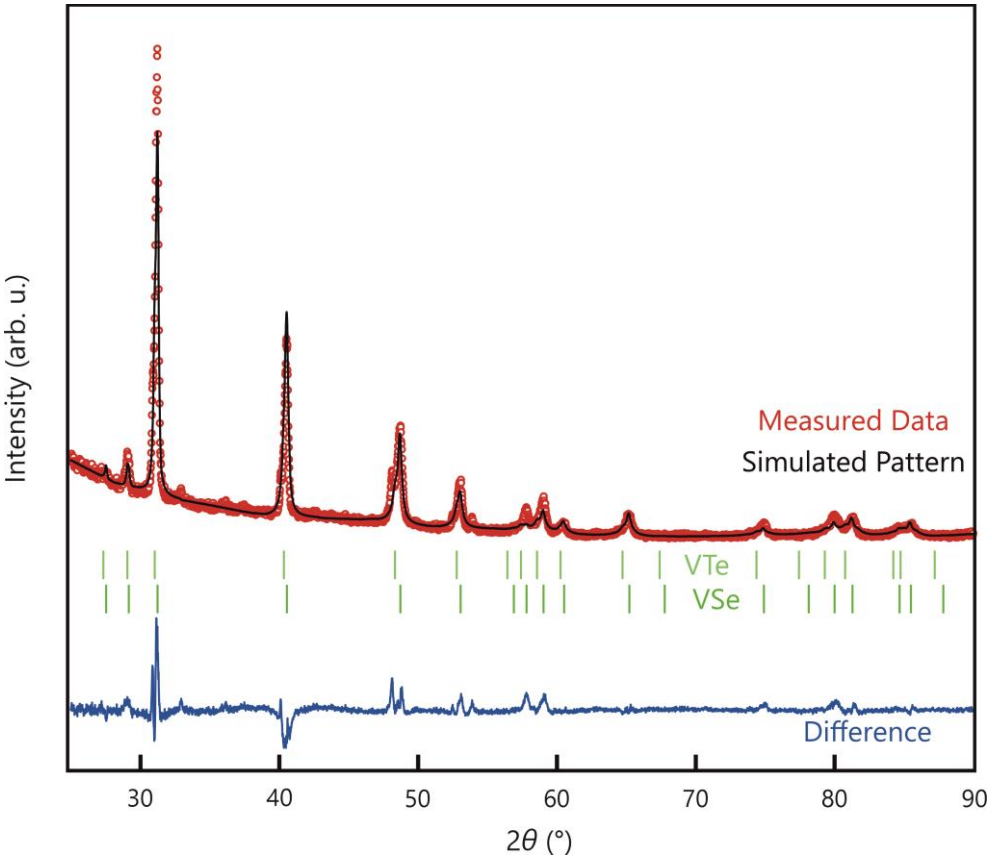

Figure S3. Rietveld refinement of the $VSe_{0.72}Te_{1.32}$ powder after being heated in argon atmosphere with measured data in red, simulated pattern in black, Bragg positions in green, and the difference between measured and calculated pattern in blue.

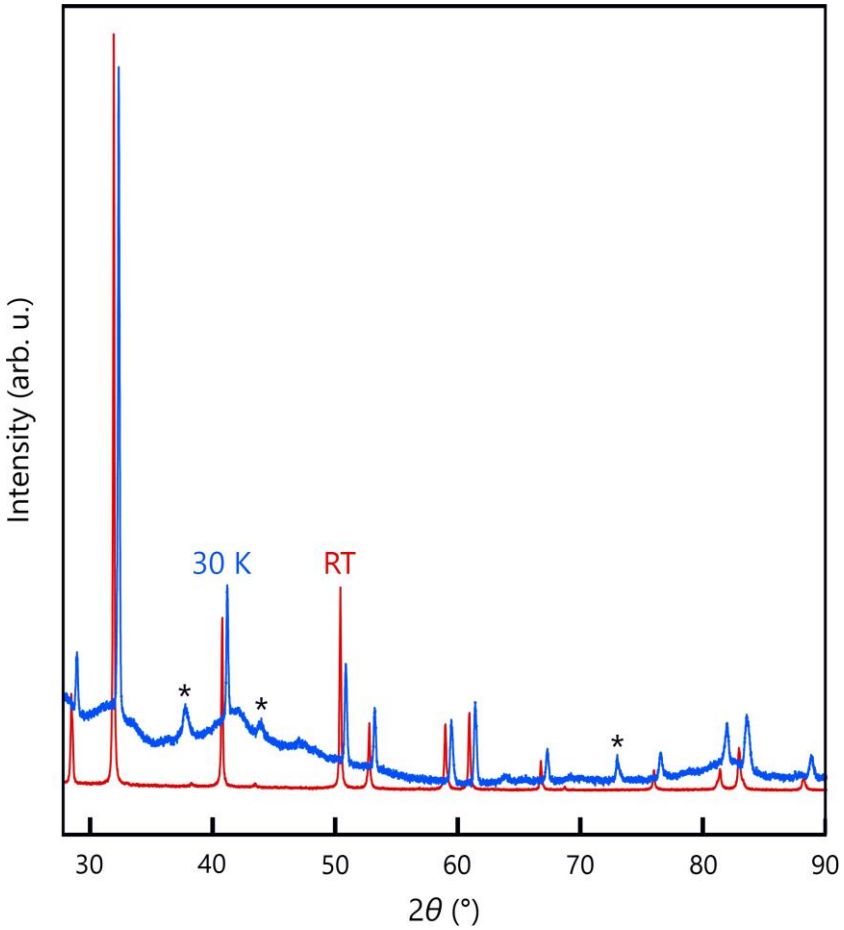

Figure S4. Comparison of $VSe_{0.72}Te_{1.28}$ powder X-ray data at room temperature in red and at 30 K in blue. The asterisks mark additional reflections, most likely of the sample holder.