Supplementary Data

Novel Condensation of Au-centered Trigonal Prisms in Rare-Earth-Metal-Rich Tellurides: $Er_7Au_2Te_2$ and $Lu_7Au_2Te_2$.

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Table S1. Anisotropic displacement parameters ($Å^2 x\ 10^3$) for $Er_7Au_2Te_2$. The anisotropic displacement factor exponent takes the form: $-2\pi^2[\ h^2\ a^{*2}U^{11} + ...\ + 2\ h\ k\ a^*\ b^*\ U^{12}\ ]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
Er1	16(1)	10(1)	10(1)	0	4(1)	0
Er2	20(1)	11(1)	10(1)	0	6(1)	0
Er3	14(1)	12(1)	12(1)	0	4(1)	0
Er4	17(1)	10(1)	12(1)	0	4(1)	0
Er5	16(1)	12(1)	13(1)	0	5(1)	0
Er6	14(1)	10(1)	11(1)	0	5(1)	0
Er7	16(1)	16(1)	9(1)	0	4(1)	0
Er8	17(1)	12(1)	10(1)	0	7(1)	0
Au1	17(1)	10(1)	13(1)	0	4(1)	0
Au2	19(1)	11(1)	15(1)	0	6(1)	0
Te1	16(1)	12(1)	11(1)	0	6(1)	0
Te2	14(1)	9(1)	12(1)	0	4(1)	0

Table S2: Bond Distances [Å] and −ICOHP Values (eV/bond mol) for Different Interactions in $Er_7Au_2Te_2$ (cut off for distances is set at 4.0 Å)

Interaction	Distance (Å)	-ICOHP (eV)	Number /cell
Au1–Er4$_{cap}$	3.659(1)	0.153	1
Au1–Er3$_{cap}$	3.451(2)	0.409	1
Au1–Er8$_{cap}$	3.170(1)	0.763	1
Au1–Er5	2.976(1)	1.234	2
Au1–Er4	2.948(1)	1.012	2
Au1–Er6	2.896(1)	0.984	2
Au2–Er5$_{cap}$	3.733(1)	0.110	1
Au2–Er2$_{cap}$	3.550(1)	0.476	1
Au2–Er7$_{cap}$	3.042(1)	0.770	1
Au2–Er2	2.979(1)	1.024	2
Au2–Er1	2.908(1)	0.924	2
Au2–Er3	2.879(1)	1.096	2
Er1–Er2	3.960(2)	0.107	1
Er1–Er5	3.872(2)	0.053	2
Er1–Er7	3.452(1)	0.179	2
Er1–Er3	3.448(2)	0.139	1
Er2–Er3	3.608(2)	0.218	2
Er2–Er7	3.635(1)	0.147	1
Er2–Er3	3.676(2)	0.181	1
Er2–Er2	3.685(2)	0.268	2
Er3–Er5	3.449(2)	0.249	2
Er3–Er6	3.555(2)	0.145	2
Er4–Er8	3.594(1)	0.162	2
Er4–Er4	3.632(2)	0.168	2
Er4–Er6	3.718(2)	0.105	1
Er4–Er6	3.898(2)	0.030	2
Er4–Er5	3.920(2)	0.119	1
Er5–Er8	3.498(1)	0.264	2
Er5–Er6	3.592(2)	0.246	1
Te1–Er6	3.023(2)	0.723	1
Te1–Er1	3.030(1)	0.698	1
Te1–Er8	3.043(2)	1.024	1
Te1–Er5	3.143(2)	0.765	2
Te1–Er4	3.154(2)	0.709	2
Te2–Er3	3.071(2)	0.812	1
Te2–Er1	3.134(2)	0.602	2
Te2–Er7	3.154(2)	0.692	1
Te2–Er2	3.201(2)	0.677	2
Te2–Er6	3.213(2)	0.513	2
Au1–Au1	3.982(2)	0.029	2
Au2–Au2	3.982(2)	0.027	2

Table S3. Complete list of distances (Å) in $Er_7Au_2Te_2$ <4.0 Å.

Er1	Au2	2.9080		Er6	3.8976		Er5	3.4984
	Au2	2.9080		Er6	3.8976		Er5	3.4984
	Te1	3.0298		Er5	3.9197		Er5	3.4984
	Te2	3.1344		Er4	3.9820		Er4	3.5943
	Te2	3.1344		Er4	3.9820		Er4	3.5943
	Er3	3.4481	Er5	Au1	2.9762		Er4	3.5943
	Er7	3.4523		Au1	2.9762		Er4	3.5943
	Er7	3.4523		Te1	3.1432		Er8	3.9820
	Er5	3.8718		Te1	3.1432		Er8	3.9820
	Er5	3.8718		Er3	3.4492	Au1	Er6	2.8964
	Er2	3.9603		Er3	3.4492		Er6	2.8964
	Er1	3.9820		Er8	3.4984		Er4	2.9484
	Er1	3.9820		Er8	3.4984		Er4	2.9484
Er2	Au2	2.9792		Er6	3.5921		Er5	2.9762
	Au2	2.9792		Au2	3.7335		Er5	2.9762
	Te2	3.2007		Er1	3.8718		Er8	3.1698
	Te2	3.2007		Er1	3.8718		Er3	3.4504
	Au2	3.5499		Er4	3.9197		Er4	3.6588
	Er3	3.6079		Er5	3.9820		Au1	3.9820
	Er3	3.6079		Er5	3.9820		Au1	3.9820
	Er7	3.6353	Er6	Au1	2.8964	Au2	Er3	2.8790
	Er7	3.6353		Au1	2.8964		Er3	2.8790
	Er3	3.6761		Te1	3.0232		Er1	2.9080
	Er2	3.6852		Te2	3.2132		Er1	2.9080
	Er2	3.6852		Te2	3.2132		Er2	2.9792
	Er1	3.9603		Er3	3.5547		Er2	2.9792
	Er2	3.9820		Er3	3.5547		Er7	3.0418
	Er2	3.9820		Er5	3.5921		Er2	3.5499
Er3	Au2	2.8790		Er4	3.7184		Er5	3.7335
	Au2	2.8790		Er4	3.8976		Au2	3.9820
	Te2	3.0710		Er4	3.8976		Au2	3.9820
	Er1	3.4481		Er6	3.9820	Te1	Er6	3.0232
	Er5	3.4492		Er6	3.9820		Er1	3.0298
	Er5	3.4492	Er7	Au2	3.0418		Er8	3.0428
	Au1	3.4504		Au2	3.0418		Er5	3.1432
	Er6	3.5547		Te2	3.1535		Er5	3.1432
	Er6	3.5547		Te2	3.1535		Er4	3.1536
	Er2	3.6079		Er1	3.4523		Er4	3.1536
	Er2	3.6079		Er1	3.4523		Te1	3.9820
	Er2	3.6761		Er1	3.4523		Te1	3.9820
	Er3	3.9820		Er1	3.4523	Te2	Er3	3.0710
	Er3	3.9820		Er2	3.6353		Er1	3.1344
Er4	Au1	2.9484		Er2	3.6353		Er1	3.1344
	Au1	2.9484		Er2	3.6353		Er7	3.1535
	Te1	3.1536		Er2	3.6353		Er2	3.2007
	Te1	3.1536		Er7	3.9820		Er2	3.2007
	Er8	3.5943		Er7	3.9820		Er6	3.2132
	Er8	3.5943	Er8	Te1	3.0428		Er6	3.2132
	Er4	3.6318		Te1	3.0428		Te2	3.9820
	Er4	3.6318		Au1	3.1698		Te2	3.9820
	Au1	3.6588		Au1	3.1698			
	Er6	3.7184		Er5	3.4984			

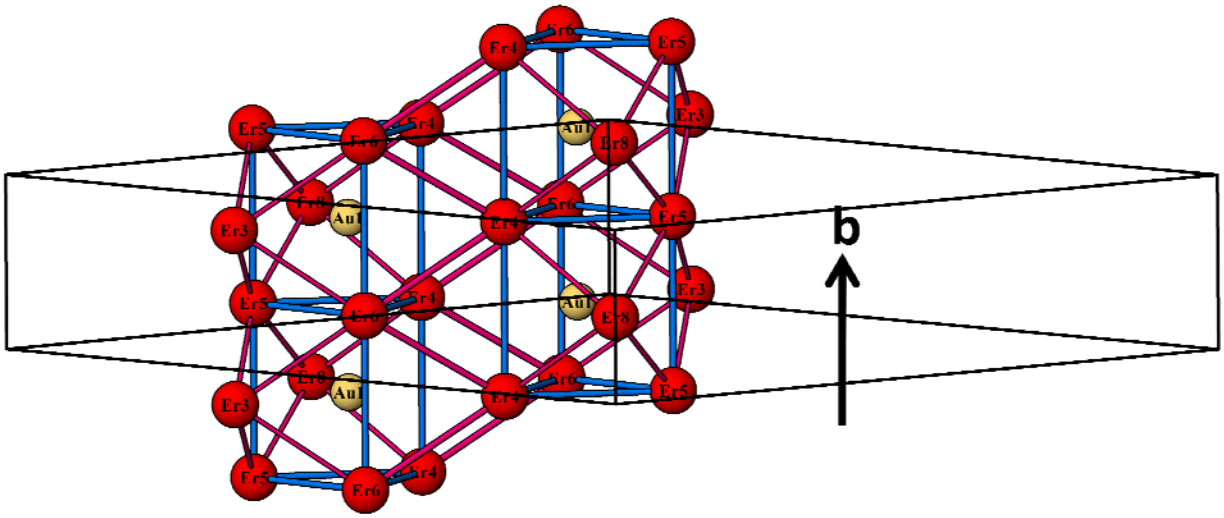

Fig. S1. Side view of the condensation of tricapped trigonal prisms of Er in $Er_7Au_2Te_2$. The prismatic–face-capping connections are marked in red.

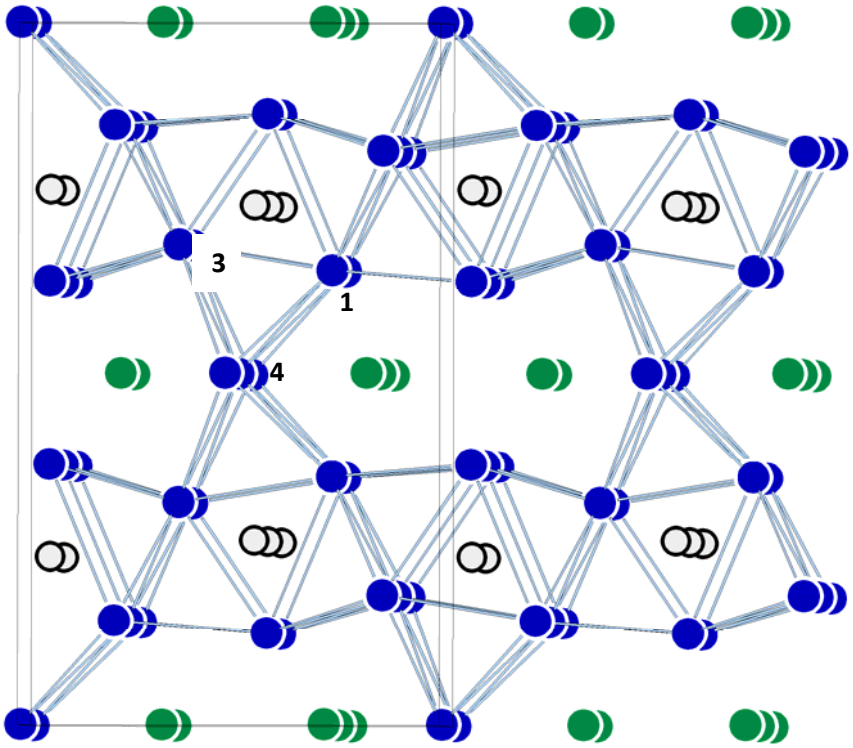

Fig. S2. Projection of the orthorhombic (*Imm*2) $Dy_7Ir_2Te_2$ structure along the short *a* axis. Note the distorted Dy configuration around the Dy_4 atoms that interbridge the horizontal puckered sheets of condensed Ir-centered TCTP of Dy. (*c* is horizontal.)