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Supporting information for article:

Phase transition and structures of the twinned low-temperature phases of (Et₄N)[ReS₄]

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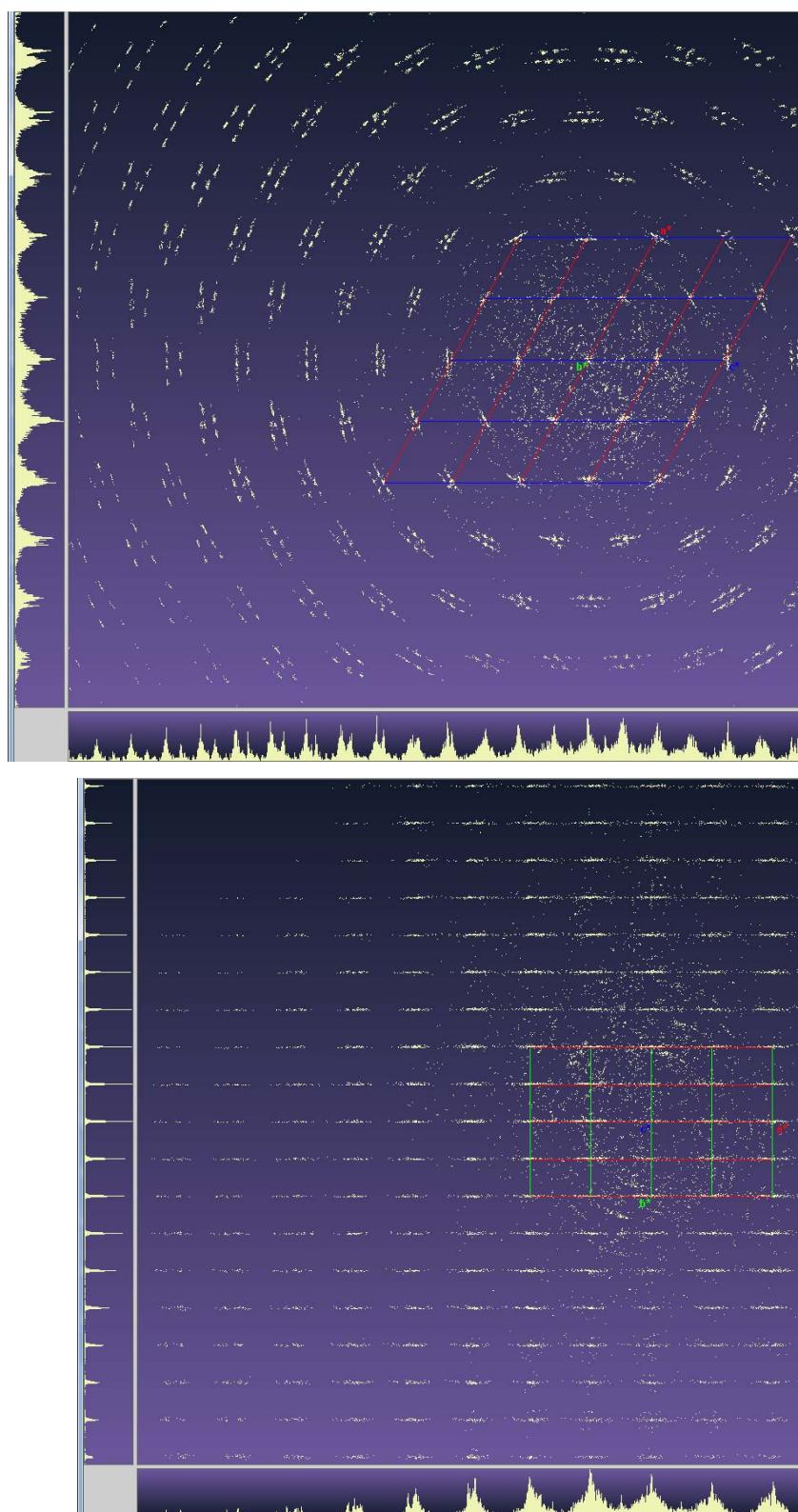


Figure S1 Reciprocal space plot for Ic (along b^* axis) and (along c^* axis). Ewald Explorer (1.0.5) (*CrysAlisPRO*, 2016)

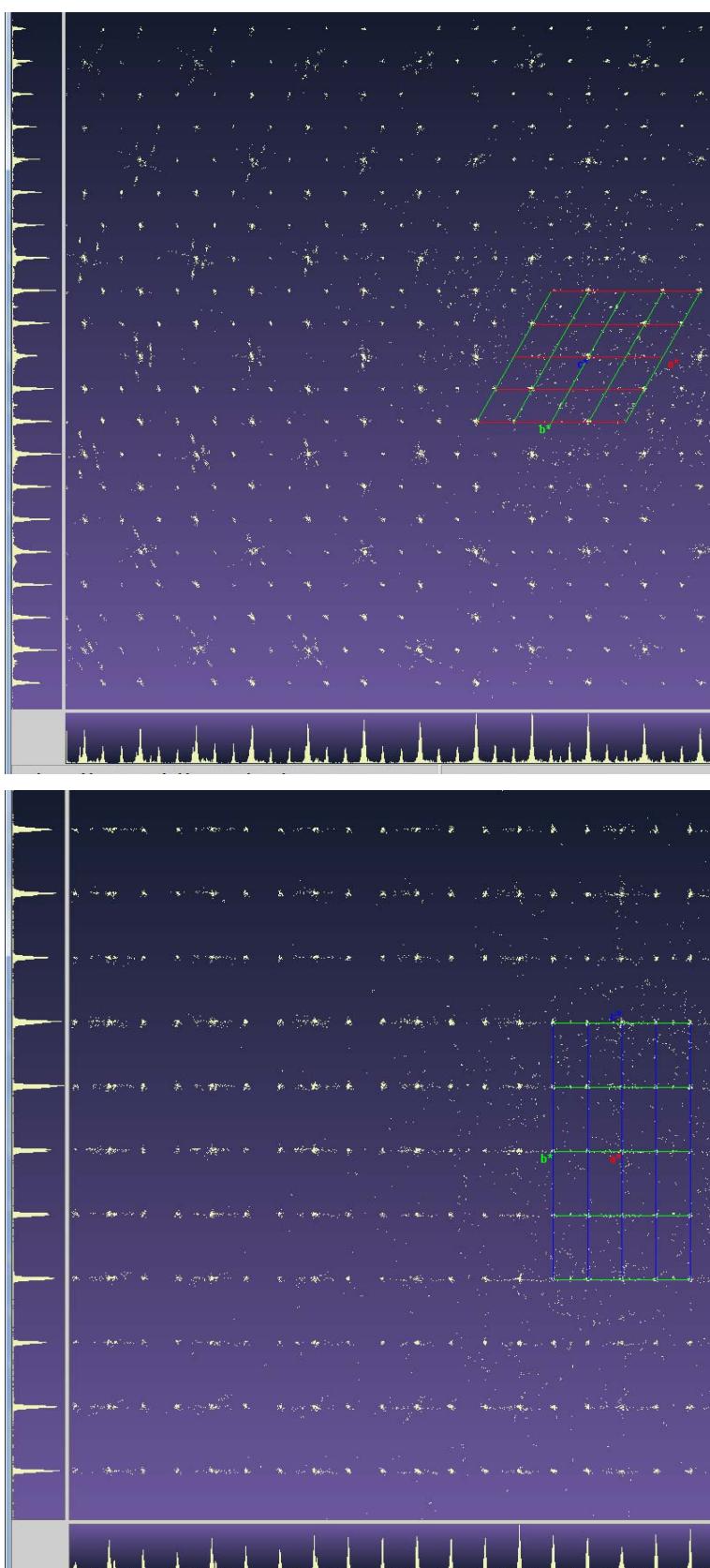


Figure S2 Reciprocal space plot for **1b** (along c^* axis) and (along a^* axis) Ewald Explorer (1.0.5) (*CrysalisPRO*, 2016)

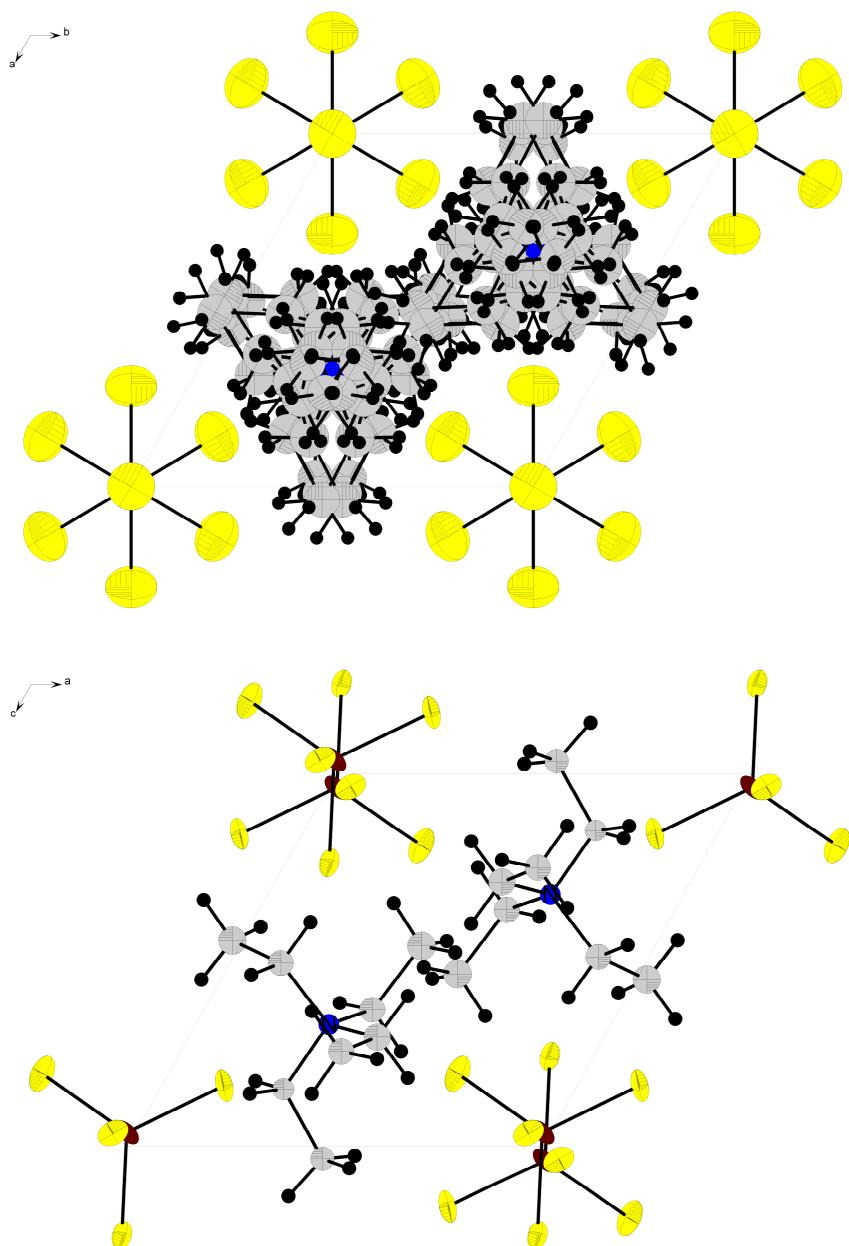


Figure S3 Displacement ellipsoid plot the unit cell of **Ia** at 297 K and **Ic** at 150 K (50% probability level).

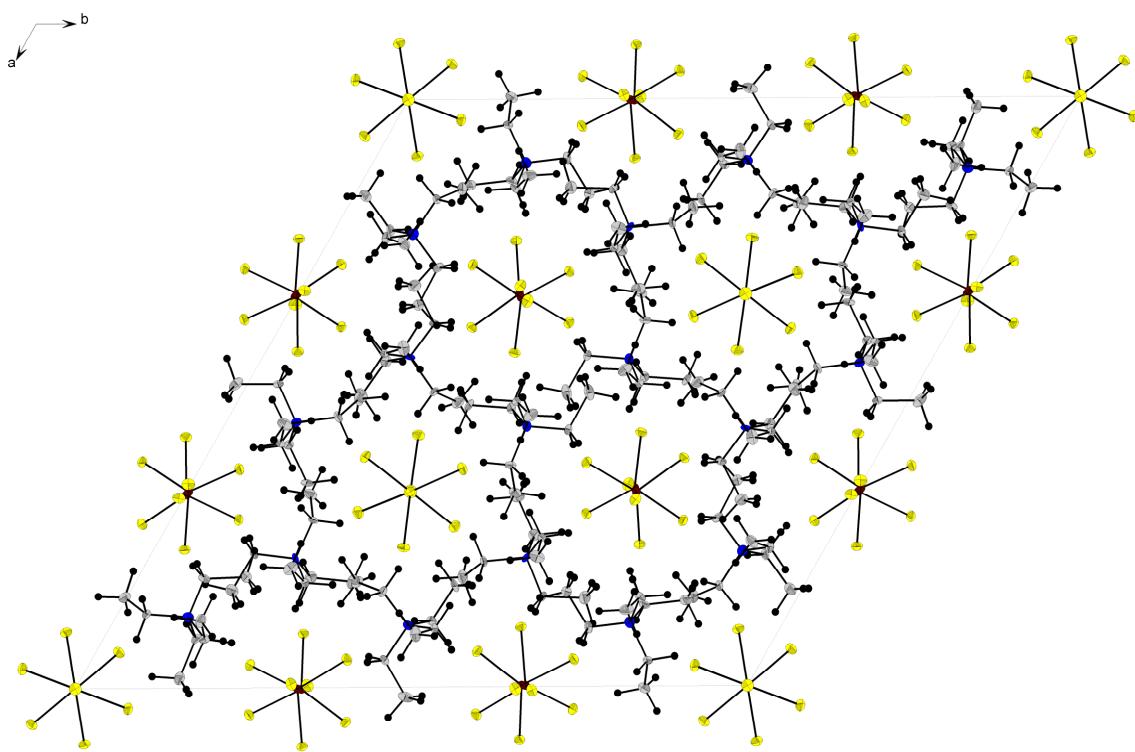


Figure S4 Displacement ellipsoid plot the unit cell of Ib at 110 K (50% probability level).

Table S1. Twin components in **Ic**

| Twin components | $h,k,l;i^*$ $i = -h-l$ | 12 component | 6 component | sum from 12 component refinement |
|-----------------|---------------------------|--------------|-------------|--|
| 1 (1) | $h,k,l;i$ | 0.14(3) | 0.178(7) | 0.18 {1+7} |
| 2 (2) | $l,k,i;h$ | 0.18(3) | 0.213(7) | 0.22 {2+8} |
| 3 (3) | $i,k,h;l$ | 0.06(3) | 0.080(7) | 0.08 {3+9} |
| 4 | $-l,-k,-h;-i$ | 0.00(3) | | |
| 5 | $-h,-k,-i;-l$ | 0.05(3) | | |
| 6 | $-i,-k,-l;-h$ | 0.04(3) | | |
| 7 | $-h,-k,-l;-i$ | 0.04(3) | | |
| 8 | $-l,-k,-i;-h$ | 0.04(3) | | |
| 9 | $-i,-k,-h;-i$ | 0.02(3) | | |
| 10 (4) | $-l,k,-h;i$ | 0.08(3) | 0.084(7) | 0.08 {4+10} |
| 11 (5) | $-h,k,-i;l$ | 0.19(3) | 0.233(7) | 0.24 {5+11} |
| 12 (6) | $-i,k,-l;h$ | 0.16(3) | 0.212(7) | 0.20 {6+12} |

* The fourth Miller index is the sum of -h and -l, because the transformation from $P6_3mc$ to $P2_1$ causes the 6_3 -axis along the y-axis