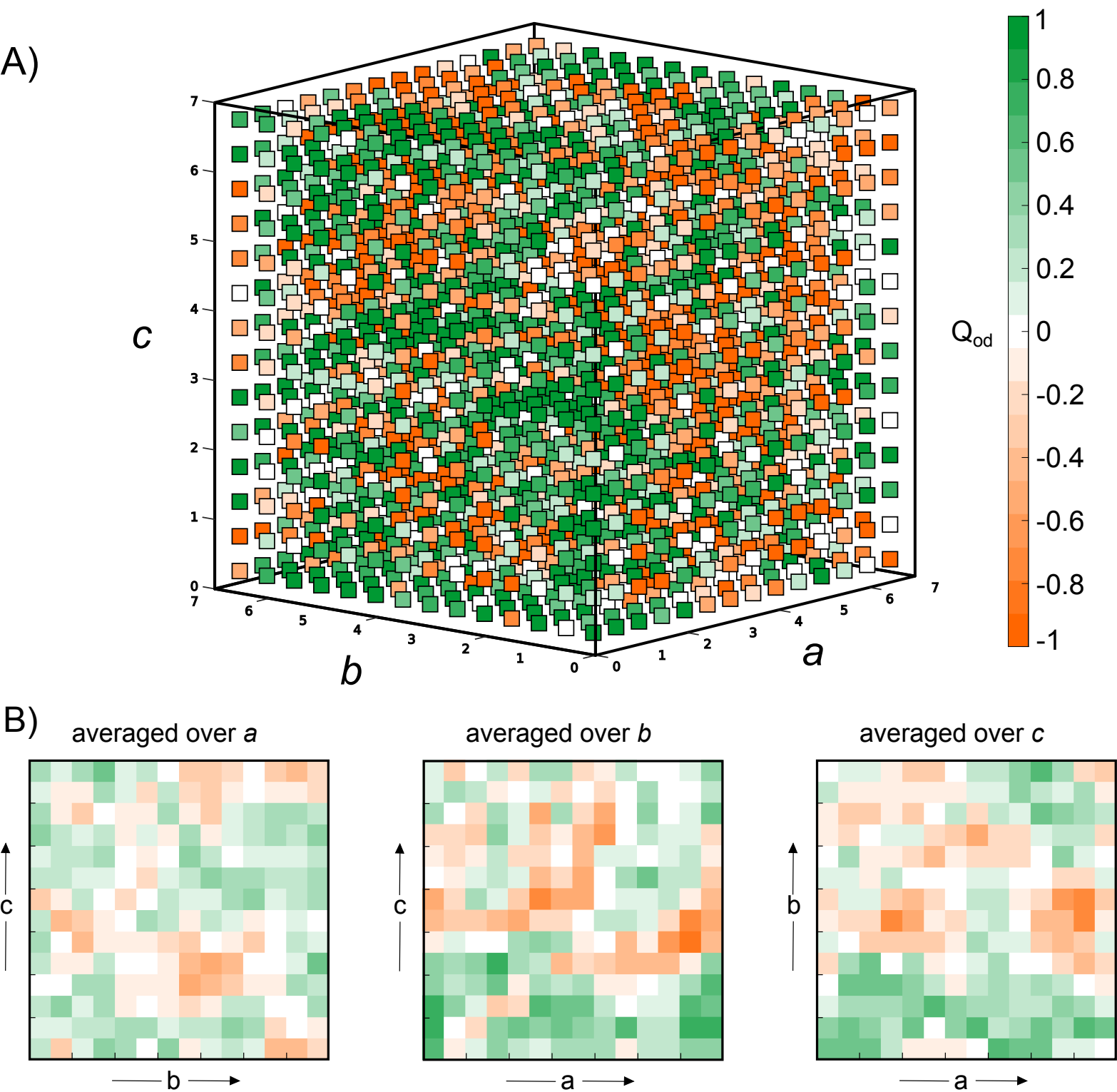


Supplementary Material 2.



A) Local value of ordering (seen through the parameter Q_{od} as defined in the main text) averaged over subdivisions of the conventional unit cell (Fig. 1B), over a length of half the unit cell parameter in each direction. This results in 8 subdivisions per conventional unit cell, for a total 2744 subdivisions in Fig. 5. Each subdivision contains 4 tetrahedra.

B) Averages of A), summed over each axis direction. When Q_{od} is positive (green), ordering prevails and Si and Al are in their own site. Negative values of Q_{od} (orange) indicate anti-ordered regions (Si generally in Al site, Al generally in Si site).

Micro-domains appear as lenses elongated along b and c , showing much greater contrasts in B) than along a . All values on the same colour scale, distances have crystal cell units ($a b c$ as axes on an orthonormal basis).