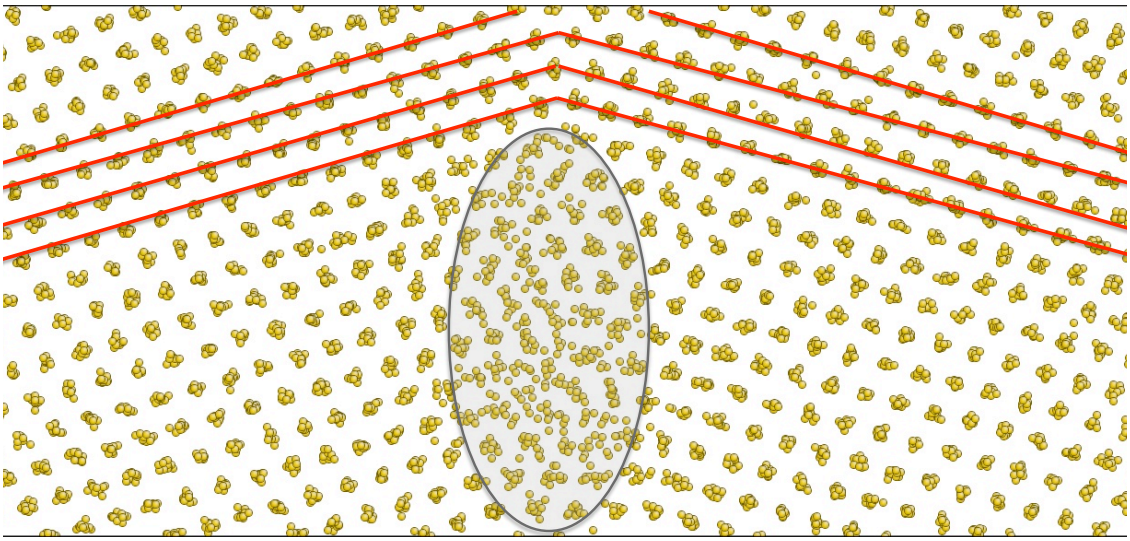

FIG. 8: Snapshot of the Σ9 tilt boundary at 1708 showing the non-uniform structural disorder in the grain boundary. The grey ellipse shows the regions with high disorder while the red lines highlight the ordered bridges.

which is far too large for its structure to be described in terms of separated grain-boundary dislocation cores, the non-uniform nature of the structural disorder and the presence of solid "bridges" is qualitatively very similar to the types of structures observed in Ref. [19].

It should be emphasized, however, that the structure of the Σ9 boundary observed in the MD simulations is highly dynamic (c.f., Fig. 5) such that the solid bridges form and disappear rapidly on the time scale of the simulations. This behavior could have interesting consequences for the shear response of such boundaries, as the solid bridges are expected to offer enhanced resistance to shear which would otherwise be expected to be very limited for a premelted grain boundary (e.g., [26]). The shear response of such boundaries would thus be an interesting topic for future MD studies.

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