Superlattice

BINARY alloys AB and AsB (for instance CuZn) usually have ordered structures with short periods. However, some ordered alloys, such as CuAu, CusAu, CusPd and CusPt, have structures with long periods. The period is as large as 10 lattice constants in CuAu. The characteristics of these alloys are that they are mainly composed of noble metals and their crystal lattices are basically face-centred cubic.

ordered long-period superlattice structures can be generated by the occurrence of periodically arranged antiphase domain boundaries(APBs) APBs are formed by shifts of the base lattice ~i.e., the simple ordered structure! along some lattice vectors linking different atoms.

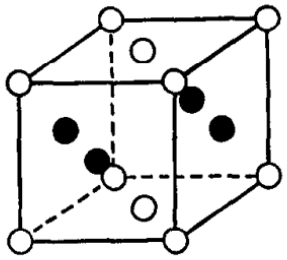

FIG. 1. The unit cell of CuAu I (○ Cu atom, ● Au atom).

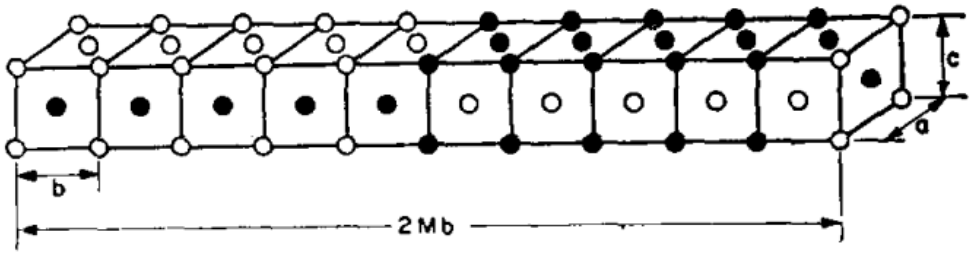

FIG. 2. The unit cell of CuAu II (○ Cu atom, ● Au atom).