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INDEPENDENT SLIP SYSTEMS IN CsC1-TYPE CRYSTALS

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July 25, 1963

In a recent paper, Groves and Kelly (1963) examined the slip systems observed in a number of simple ceramic materials to see whether they allow the crystal to undergo an arbitrary strain without change in volume. In this paper they stated that the slip systems in CsCl-type crystals were the $\{100\}$ $\langle 010 \rangle$ referencing a paper by Rachinger and Cottrell (1956). Actually, Rachinger and Cottrell showed that slip occurs on the $\{110\}$ $\langle 001 \rangle$ slip systems in CsCl-type crystals which tend toward ionic bonding such as the thallium halides, LiTl, MgTl, AuZn, and AuCd, while in the case of CuZn in which bonding is of metallic character slip occurs on the $\{110\}$ $\langle 111 \rangle$ slip systems. Johnson and Pask (1963) have recently shown that in CsBr slip occurs on the $\{110\}$ $\langle 001 \rangle$ slip systems.

The $\{110\}$ $\langle 001 \rangle$ yield three independent slip systems and, thus, a general deformation is not possible. Extensions parallel to the crystal axes cannot be produced. There are 16 ways of choosing the 3 independent slip systems from the 6 physical slip systems. The $\{110\}$ $\langle 111 \rangle$ slip systems are the same as found in bcc metals and are discussed by Groves and Kelly in their paper.

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