II. LITERATURE REVIEW

Rare Earth Diantimonides

All of the rare earth monoantimonides are known and have been studied extensively because of their semiconductor properties. Brixner has summarized the crystallographic data for these compounds except for EuSb and LuSb (9). They all exist in only the NaCl cubic structure. EuSb was prepared by Bruzzone(10) and LuSb by Przybylska (11) and Iandelli (12).

Three rare earth - antimony systems have been studied quite extensively and phase diagrams have been prepared for them. In 1954 Vogel and Klose studied the La-Sb system and found the compounds La_2Sb, La_3Sb_2, LaSb and $LaSb_2$ (13). This was the first rare earth diantimonide reported. In 1966 Olcese found Ce_2Sb, Ce_3Sb_2, CeSb and $CeSb_2$ by X ray examination of the Ce-Sb system (14). In 1967 Bodnar and Steinfink studied the Yb-Sb system and reported the compounds: $YbSb_2$, YbSb, Yb_5Sb_4, Yb_4Sb_3, Yb_5Sb_3 and Yb_5Sb_2 (15).

In 1966 Hohnke and Parthe reported the synthesis of R_4Sb_3 type compounds where R was La, Ce, Pr, Nd, Gd, Tb, Dy, Ho or Yb (16). These compounds were cubic with the anti