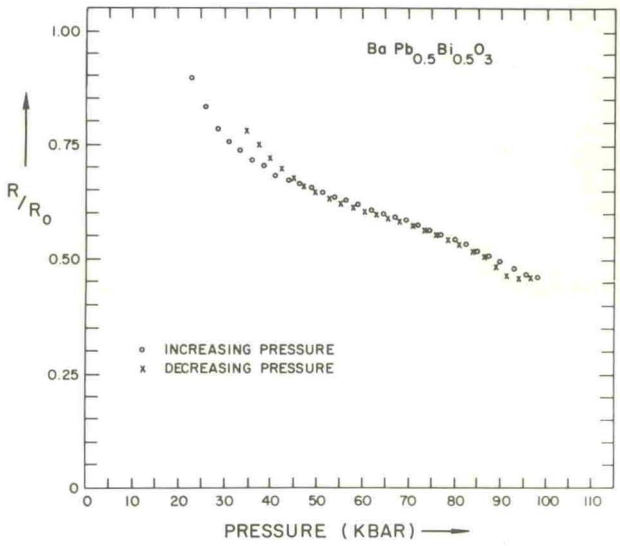

Fig. 3. Results obtained from 2-wire resistance measurements on increasing and decreasing pressure for $BaPb_{0.5}Bi_{0.5}O_3$.

slope change on increasing and decreasing pressure supports the suggestion that it is related to a phase change, as opposed to simple intergranular resistance effects in the polycrystalline sample.

Sleight *et al.*[2] discussed the possible schematic energy level diagram for $BaPbO_3$. They postulated that the 6*s* band would split above $x = 0.35$ in the compounds $BaPb_{1-x}Bi_xO_3$ and thus cause their semiconducting properties. In the light of the above considerations it would seem that the application of sufficient pressure could cause the band gap to close.

The bismuth ions were earlier[4] thought to have the unusual 4+ valency. Such a situation would probably have yielded a metallic $BaBiO_3$. From the latest structural data[5] available for $BaBiO_3$, using X-ray and neutron diffraction techniques, the true valence state appears to be $Ba_2Bi^{3+}Bi^{5+}O_6$. This valence situation would appear to be better suited to the semiconducting properties of the compound.

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