The Electrical Anisotropies of Pyrolytic Graphite and Its Compounds

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Abstract

The electrical resistivities and the electrical anisotropy of the pyrolytic graphite compounds containing silicon (0.02-4wt% Si; PG(Si)) or bromine (0.1–12 wt% Br; PG(Br)) have been examined at room temperature. The anisotropy of PG(Si) was closely related to its preferred orientation which depends on the deposition temperature. The anisotropies of PG and PG(Si) are attributed to discontinuity in the stacking of the crystallites, as proposed by Guentert and Klein; the discontinuity increases with preferred orientation. Low values of the anisotropy for PG(Si), containing large amounts of silicon and having the considerably high preferred orientation, result from the disappearance in the discontinuity because of the presence of SiC between the crystallites. The anisotropy of PG(Br) increases with the amount of bromine. Almost all the bromine atoms may be ionized in PG(Br) according to Blackman *et al.* The effect of ionization on the anisotropy is not clear.

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