"GRAPHITIZATION OF BORON PYROLYTIC GRAPHITE" (15 Min.)

W. V. Kotlensky, R. N. Donadio, L. M. Hagen

Raytheon Company
Research Division
Waltham, Massachusetts

The degree of graphitization of boron pyrolytic graphite (BPG) is not only a strong function of boron level but also a strong function of time at temperature. For as-deposited BPG containing 0.7% boron, the degree of graphitization is equivalent to that of pyrolytic graphite (PG) annealed at 2600°C for one hour.

In this study, samples from four plate deposits (1) PG deposited at 2100°C, (2) BPG containing 0.03% boron deposited at 2100°C, (3) BPG containing 0.7% boron deposited at 1850°C, (4) BPG containing 0.7% boron deposited at 2000°C were heat treated over the temperature range from 2200° to 2800°C for various lengths of time.

Heat treating was carried out in a graphite resistance heated tube furnace. The annealed specimens were contained in a pyrolytic graphite crucible which could be rapidly placed in and removed from the hot zone. One minute was typically required for the cold pyrolytic graphite crucible to heat up to the heat-treating temperature. The C_o lattice spacing was used to follow the increase in degree of graphitization with time and temperature.