BN - Boron Nitride

Electrical properties

Basic Parameters

Basic Parameters for Zinc Blende crystal structure
Basic Parameters for Hexagonal crystal structure


Basic Parameters for Zinc Blende crystal structure

Breakdown field	$(2 \div 6) \times 10^6$ V cm^{-1}	300 K	*Brozek et al. (1994)*.
Mobility electrons, μ_n	$=< 200$ cm2 V^{-1} s^{-1} 300 K, for $N_d = 6 \times 10^{16}$ cm^{-3}		*Waters et al. (1995)*.
Mobility holes, μ_p	$=< 500$ cm2 V^{-1} s^{-1} 300 K, carrier concentration $p = 5 \times 10^{18}$ cm^{-3}		*Litvinov et al. (1998)* .
Diffusion coefficient electrons	$=<5$ cm2 s^{-1}	300 K	
Diffusion coefficient holes	$=<12$ cm2 s^{-1}	300 K	

The majority of papers published are devoted to zinc blende modification: *Bam et al. (1976)*, *Mishima et al. (1987)*, *Bar-Yam et al. (1992)*, *Taniguchi et al. (1993)*, *Lu et al. (1996)*, *Litvinov et al. (1998)* .

Unintentionally doped BN films are p-type with carrier concentrations in the high 10^{16} to low 10^{17} cm^{-3} levels. It had been suggested that the unintentional dopants are nitrogen vacancies [*Bar-Yam et al. (1992)*].

Basic Parameters for for Hexagonal crystal structure

Breakdown field $(1 \div 3) \times 10^6$ V cm^{-1} 300 K *Lopatin (1994)*
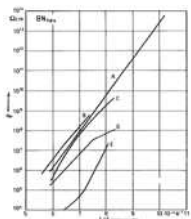
BN, hexagonal. Resistivity vs. temperature above 700°C.
A: from bulk resistance of a disk measured in c direction.
B--E: literature data for comparison.
Carpenter & Kirby (1982)