

**substance: boron compounds with group I elements**

**property: properties of boron-hydrogen alloys**

**energy gap**

(see also Fig. 1):

$E_g$	1.10(5) eV	$T = 300\text{K}$	9 at % H; ellipsometry (see Fig. 1)	80B
	1.15(5) eV		11 at% H; ellipsometry (see Fig. 1)	
	1.7(1) eV		24 at% H; ellipsometry (see Fig. 1)	

**phonon wavenumbers**

(ν/c)	2560 cm <sup>-1</sup>	$T = 300\text{ K}$	B – H stretching mode	80B,
	1108 cm <sup>-1</sup>		B – H bending mode	79B
	1900...2000 cm <sup>-1</sup>		hydrogen three-center bridge bond	79T

**dielectric constant:** see Fig. 2

On the interaction of hydrogen (and oxygen) with boron powder and the kinetics of removal of the gases [81T].

Preparation of hydrogenated amorphous boron films (B-H bonds proved) by electron cyclotron resonance plasma chemical vapor deposition and characterization [90S1, 90S2].

A comparative study of Mayer's indexes in B<sub>n</sub>H<sub>m</sub> species [92S].

Transient and steady state photoconductivity in hydrogenated amorphous boron [84S].

Adsorption of monoatomic hydrogen in icosahedral borides [92H].

The structure and stability of B<sub>n</sub>H<sup>+</sup> clusters [97R].

**B<sub>12</sub>H<sub>12</sub>**

Calculation of ground and excited states energies of the B<sub>12</sub>H<sub>12</sub> cluster, in particular as a simulation for the B<sub>12</sub> cluster in β-rhombohedral boron in [97F].

**BH<sub>m</sub>Cl<sub>n</sub> compounds**

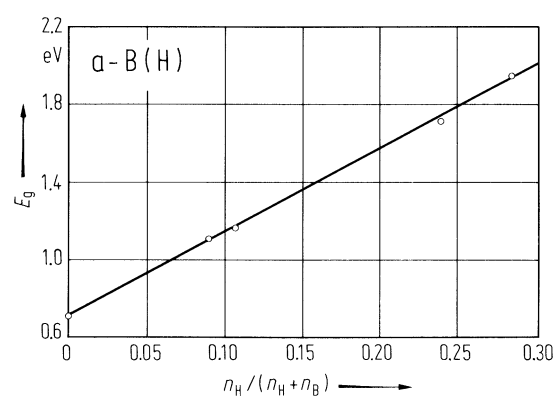
Thermochemistry of BH<sub>m</sub>Cl<sub>n</sub> calculated at the G-2 level of theory [94S].

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**Fig. 1.**

a-B(H). Optical energy gap  $E_g$  vs. atomic fraction of hydrogen [80B].



**Fig. 2.**

a-B(H). Real and imaginary parts  $\epsilon_1$  and  $\epsilon_2$  of the dielectric function vs. photon energy for samples deposited at three different reaction temperatures (290°C, 340°C, 400°C). The low energy structure of the curves is due to the onset of back reflection from the substrate [80B].

