

**substance: boron compounds with lanthanides**  
**property: properties of lanthanide hexaborides: GdB<sub>6</sub>**

### Structure, chemical bond

#### lattice parameters

$a$	4.1056(1) Å	$T = 300$ K	96G
	4.1066 Å		91S

#### Impurities and defects

ESR study of EuB<sub>6-x</sub>C<sub>x</sub> including the comparison with some corresponding YbB<sub>6-x</sub>C<sub>x</sub>, SrB<sub>6-x</sub>C<sub>x</sub>, Eu<sub>1-x</sub>Gd<sub>x</sub>B<sub>6</sub>, Eu<sub>1-x</sub>Sr<sub>x</sub>B<sub>6</sub> and Eu<sub>1-x</sub>La<sub>x</sub>B<sub>6</sub> compounds in [81T].

#### Lattice properties

Force lattice parameters [90Y]

For vibrational frequencies [88T, 90Y, 93Y]

#### Optical properties

IR diffuse reflection and Raman spectra (La, Nd, Gd, Tb, Dy, Yb)B<sub>6</sub> in Fig. 1 [88T, 93Y].

#### Further properties

##### entropy

(in J mol<sup>-1</sup>K<sup>-1</sup>)

$S$	126.37(21)	cited from russian handbooks	86B
	104.6(60)		86B

##### microhardness

$H_K$	2420 kg mm <sup>-2</sup>	$T = 300$ K	cube, average value; load 20 g	96G
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##### melting point

$T_m$	2510 °C	melting with decomposition	96G
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**Fig. 1.**

Metal hexaborides. IR diffuse reflectance spectra of representative  $\text{MB}_6$  compounds with two-valent Ca, Sr and Yb, and three-valent Nd, Gd, La, Tb and Dy metal atoms [88T, 93Y].

