

## PHONON STRUCTURE OF LUMINESCENCE AND IR ABSORPTION OF hBN AND BN NANOTUBES

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Hexagonal boron nitride is wide band gap semiconductor, which can be produced in different forms. One of these forms is a bulk powder (hBN) and other is nanotubes (BNNTs) which have perspective application as UV and visible light emitters.

We studied photoluminescence, its excitation and IR absorption spectra in 80K–300K temperature range for both the hBN (produced in Aldrich Corp.) and BNNTs, with outside diameter from 5 to 30 nm (produced from hBN in Centre of Nanotechnologies of Wake Forest University, USA). We observed a wide photoluminescence band with fine structure centred at 395 nm (3.14 eV) in both materials (*Fig. 1*). According to our previous investigations the origin of this band could be related to the excitonic processes [1, 2]. In order to better understand the processes of luminescence fine structure formation the IR absorption spectra were measured for both materials at different temperatures. The main IR absorption band is located at 1375 cm<sup>-1</sup> which is in a good agreement with 170meV energy obtained from luminescence spectra characterizing the energy of optical phonons.

### References:

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